COMMUNICATION, IT AND ELECTRONIC COMPONENTS

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▶ MRC-320/E Marine Radio Communication System

MRC-320/E marine radio communication system is a digital Software Defined Radio (SDR). It is secure and resisted against Electronic Warfare (EW) with the capability of establishing plain/ciphered voice and data communication in fix frequency/frequency hopping mode. This radio can be operated in various warships, speedboats, boats, and coast stations for establishing communication between boat and boat and boat and coast.

The frequency range of the MRC-320/E is 136~174 MHz and as a result communication with non-military boats can be established as well as civil boats due to the wide frequency band of the radio in comparison with other marine radio communication systems.

MRC-320/E is equipped with the DSC capability as an obligation for marine standard communication. Benefitting this capability, the DSC messages including emergency messages, positional information, emergency message retransmission, etc. can be received via the guard independent receiver as well as answering them proportionally.

▶ MIT-310/E Marine Internal Telephone

MIT-310/E marine internal telephone operates for making internal telephone calls between different divisions of a ship. Using this system, voice communication can be established between two points with dialing capability. MIT-310/E is considered as an IP telephone set and can be programmed according to the user's request for managing some data and communication control. This system does not need to the switching independency as any comprehensive interface for special operation.

▶MIS-310/E Marine Intercommunication System

MIS-310/E marine intercommunication system is operated for establishing communication between all divisions of a ship. This system is capable to establish voice communication and can be programmed for establishing some data and control communication too. Operating the MIS-310/E, subscribers in a group can establish communication, but momentarily voice of the operator whose PTT button is pressed at first is heard by the other systems of the group.
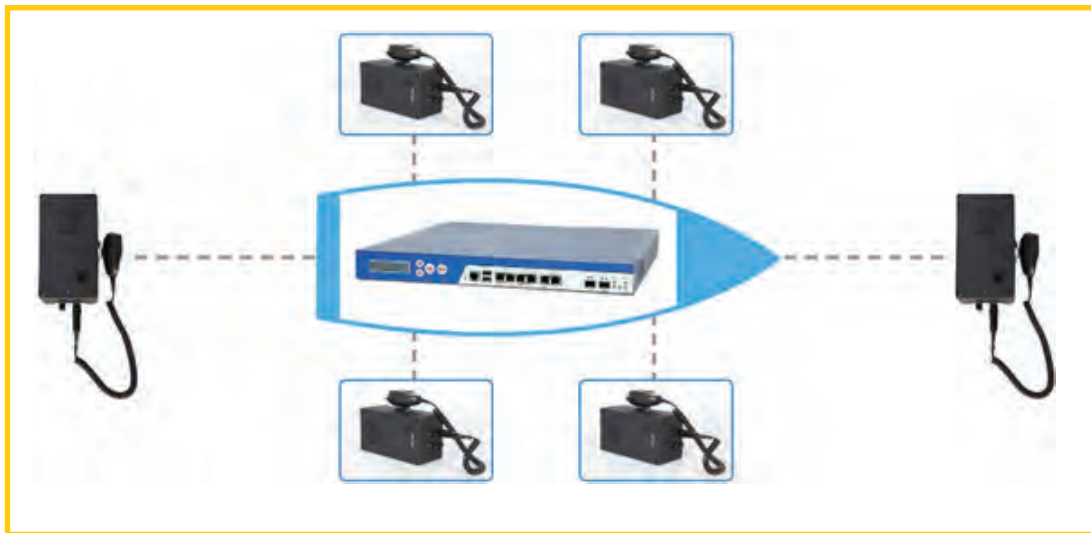
▶GRC-620/E Ground-Based Radio Communication System

GRC-620/E is a Ground-based Radio Communication system in the VHF (118~174 MHz)/UHF (225~400 MHz) frequency

the band considered for establishing Ground-to-Air communication in air traffic control towers, radar sites, ROC, and ... as well as installing inside the Command Posts (CPs).

ATC-720/E Air Traffic Control Tower

Main goals of using an air traffic control tower are to provide communication hardware/software systems and infrastructures for necessary controlling and observing to prevent events/accidents in the covered area (e.g. accident of planes and helicopters), acceleration and regularity of flights, presenting the needed/useful information to make the flights safe, and helping the planes and helicopters in an emergency. One of the most important capabilities of this system is the possibility of establishing it in various ecological conditions as well as tactical usage and capability of moving easily in field airports.

DTN-910/E DMR Digital Trunking Network

DTN-910/E digital trunked network designed under the ETSI DMR Tier III the standard is an IP-Based digital trunk infrastructure system designed especially for establishing integrated voice network and distributing and managing capacity between several different geographical zones in the missions and critical situations. Using this upgradable and flexible trunk network solution, an economic and secure infrastructure can be established for the organizations and emergency sections.

▶ Mission Critical POC (Push To Talk Over Cellular)

Push to talk over Cellular (PoC) is a wireless two-way cellular communication allowing instant and global mobile connectivity with the ability to communicate on a push of a key.

Push to talk over cellular uses the Push-To-Talk communication (PTT) principle, where the receiver does not need to answer the call as there is always an active connection between two individuals or groups. The communication can be started on a push of a key one user at a time.

PoC combines Push-To-Talk (PTT) operational advantages with interference immunity and other mobile phone advantages. For example, PoC uses half-duplex communication (only one call may be transmitted by a user) and one call may be received by one or more users. This feature is more useful when a single user wants to talk to a group without making multiple calls.

Full-duplex communication was traditionally applied to mobile networks and devices, which require connection using a dialed phone number or an answered call. This connection was active until the call ended or the connection failed from a signal loss.

▶ NSD-4281 Network Security Device

Transmission systems as one of the most important communication network components are involved in network development directly. Continuous efforts are made to develop information highways, worldwide. One of the key projects in this field is to establish high capacity fiber optic networks and bandwidth development as well as increased signal transmission rate in transmitting lines. Considering the requirements necessary to carry out this project, NSD-4281 network security device is designed and manufactured to secure communication in the SDH network and STM1.This encryption system is considered as an independent module in the source and destination.

GCN-910/E Cellular GSM Communication Network

GCN-910/E is a completely tactical and cellular network which is designed in a single rack to provide mobile telephone services according to the last global standards. Via this rack, communication can be established between the subscribers and there is no need for other networks. Besides, benefitting from the system, wider zone coverage, and expanded network can be established in the two Master and ETS methods. Considering centralization of all the GSM network elements such as MSC, BSC, BTS, TRC, HLR, and VLR in a rack, several networks could be connected to this system to establish a comprehensive network with the rooming facility. Establishing communication with the IP and ISDN/PSTN external link, local PABX, and Inter and Intra Cell Handover are other applicable capabilities of this system. Also, the GCN-910/E network can be operated in critical situations.

FES-1173 Facsimile Encryption System

FES-1173 facsimile encryption system is designed and manufactured to protect the documents sent/received by a G3 facsimile machine via the communication channels. By connecting this system to a facsimile machine, the document can be sent in cipher/plain mode (selectable by the operator) and while receiving, the mode is recognized automatically.

Easy installation and operation are important capabilities of the FES-1173 system.

Using a management software (SMT-6513), keys are injected into the device through the computer's serial port.

WTM-210/E Winch Telescopic Mast

WTM-210/E is one of the newest products of the company designed and manufactured for communication and tactical operations. This mast can be used stationary and on a vehicle.

IPD42(G) DMR Handheld Radio

IPD42 (G) civil handheld radio is the new generation of civil radios under the DMR Tier II/III standard. This radio is operated in the civil radio networks as a handheld radio. Using repeater, the radio coverage range of these radios can be increased. Benefitting from the two analog and digital modes, communication is established between the IPD42(G) and old analog networks. Also, operating this radio set, private/group communication can be established as well as SMS sending and data transmission. The large size of the display screen, keypad with the capability of defining the short keys, supporting the 12.5/20/25 kHz, 1024 preset channels, scanning the channels, defining high/low power levels and setting the short keys, high receiving sensitivity, meeting international standards, dual-purpose antenna for the GPS and wave transmission, and capability of selecting the GPS as an optional facility are other features of the IPD42(G).

IMD52(G) DMR Mobile Radio

IMD52 (G) civil vehicular radio is the new generation of civil radios under the DMR Tier II/III standard which is used for covering and establishing reliable high-quality communication in each level of organization. This radio is operated as a vehicular/stationary radio to exchange vital and online information. High-quality voice transmission due to available Codecs and digital error correction processes, a best-quality voice in noisy circumstances and borders of network radio coverage, supporting digital and analog modes, SMS sending/receiving, establishing private/group/broadcast/emergency communication, establishing encrypted communication due to encryption technology of the radio in digital and analog modes, reliability and excellent quality, benefitting from the GPS module optionally and capability of observing geographical location, different expanding ports, large size, and color display screen, keypad for different functions (such as SMS sending/receiving and changing the radio parameters), and defining short keys are some technical features of the IMD52(G) radio set.

IRD62S Mobile Radio Repeater

IRD62S mobile radio repeater as the center of a cell in the single-sight/multi-sight radio network under the DMR Tier II standard with capability of high reliability and analog/digital facilities is proper to establish an advance full digital communication. This repeater can be operated in both analog and digital modes whereas, it is compatible with available analog networks. Based on the type of the received signal, IRD62S switches between analog and digital modes automatically. Many requirements of the operators are met due to the high output power of the repeater (50W). Installing this repeater inside the 19' racks easily, establishing secure communication due to software encryption process, powerful cooling fan, establishing radio network and communication with the other repeaters based on the IP network are other advantages of the IRD62S. All in all, in civil radio networks, the rack-mount digital repeater is considered to establish reliable and high-quality communication for covering more operators and exchanging vital and online information.

NSD-1811 & NSD-1871 Network Security Device

Changing the infrastructure of communication and computer networks from the TDM systems to IP, network routers play a major role in great networks especially the WAN networks. Due to security considerations in the networks, the user equipment should be secured extremely. Benefitting from high-security local routers with competitive hardware and software capabilities, an efficient and reliable network is established.

PSS-2430/2440 Local Layer 2 Switch

A switch is a device in a computer network that connects other devices. Multiple data cables are plugged into a switch to enable communication between different networked devices. Switches manage the flow of data across a network by transmitting a received network packet only to one or more devices for which

the packet is intended. Each networked device connected to a switch can be identified by its network address, allowing the switch to direct the flow of traffic maximizing the security and efficiency of the network.

Fiber Optics

Manufacturing capacity in a year: more than 10000km
Variety of manufactured cables:
• Buried (MM, SM & NZ-DSF)
• Channel (MM, SM & NZ-DSF)
• Naval (SA, DA, TA)
• Airborne
• Tactical

Equipment of Testing, Measuring, and Executing the Fiber Optic Networks
• Cable finder
• Fusion equipment of the fiber optic
• Fiber optic path test system
• Supply and measuring equipment of the fiber
• optic passing power

Passive Equipment of the Networks Based on Fiber Optic
• Various connection joint (buried, airborne, and naval)
• Various connectors
• Various adapters
• Various types of duct and sub-duct
• Various executing tools
• Various distributors

Capabilities and Advantages

Preventing the systems from various operations

Decreasing the operator's mistakes

Controlling performance of the systems and operators in different locations

Helping with quick decision making

Establishing a communication link with other centers via network and fiber optics infrastructure

Consoles including touch screen with Graphical

User Interface (GUI)

Storing all operations and settings and effective reporting

Intercommunication and Entertainment Systems of Ships

Different systems are used in a ship for establishing intercommunication and entertainment. These systems manufactured/provided by us are both analog and digital as follows:

- Intercommunication system
- Switchboard and ordinary telephone
- Entertainment system (music/movie playing)
- Wireless intercommunication systems
- CCTVs (Closed Camera Televisions)
- Paging system
- IP telephone system
- Satellite television
- Magnetic telephones
- Battery-less telephones
- Various maritime maps

Battery-less Emergency Telephone

Battery-less emergency telephone is considered for making calls between the ship crew in an emergency condition. In this system, the desired operation is selected without using a switchboard, and broadcast calls can be made by the commander in an emergency. Supply of the system is provided by charging high capacity capacitors using a mechanical generator manually so that a long time call can be made by turning the generator one round and charging the capacitors. There is no need for the switchboard for setting up the system and the telephones are connected via terminal.

▶ Radio Coverage Analyzing System

Because of increasing air traffic and developing radio communication and as a result accumulation in the electromagnetic spectrum, planning and optimizing radio networks and operating control systems are very important. The most important considerable aspects are limitation in the frequency spectrum, maximum coverage, and minimum interference. Therefore, powerful analyzing and calculating tools are needed to design the airborne radio network.

To estimate radio coverage for the UHF/VHF GSM and LTE systems and radio links, Asset, Atoll, and UV Plannet are considered as proper software.

- Interference recognition
- Coverage determination
- Frequency allocation
- Radar coverage
- Link performance determination
- Spectrum display
- Information management
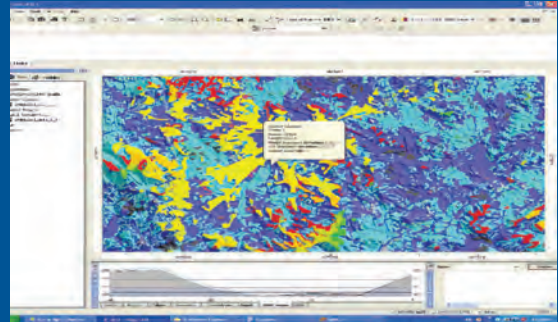
▶ TETRA Trunk Network

TETRA Trunk Network is provided for establishing digital data/voice selective and Group communications. Due to the repeaters and mobile base stations, these networks are very flexible. Therefore, reliable infrastructure can be developed possibly for non-military organizations and emergency divisions. This network includes manual/vehicular terminals and base stations.
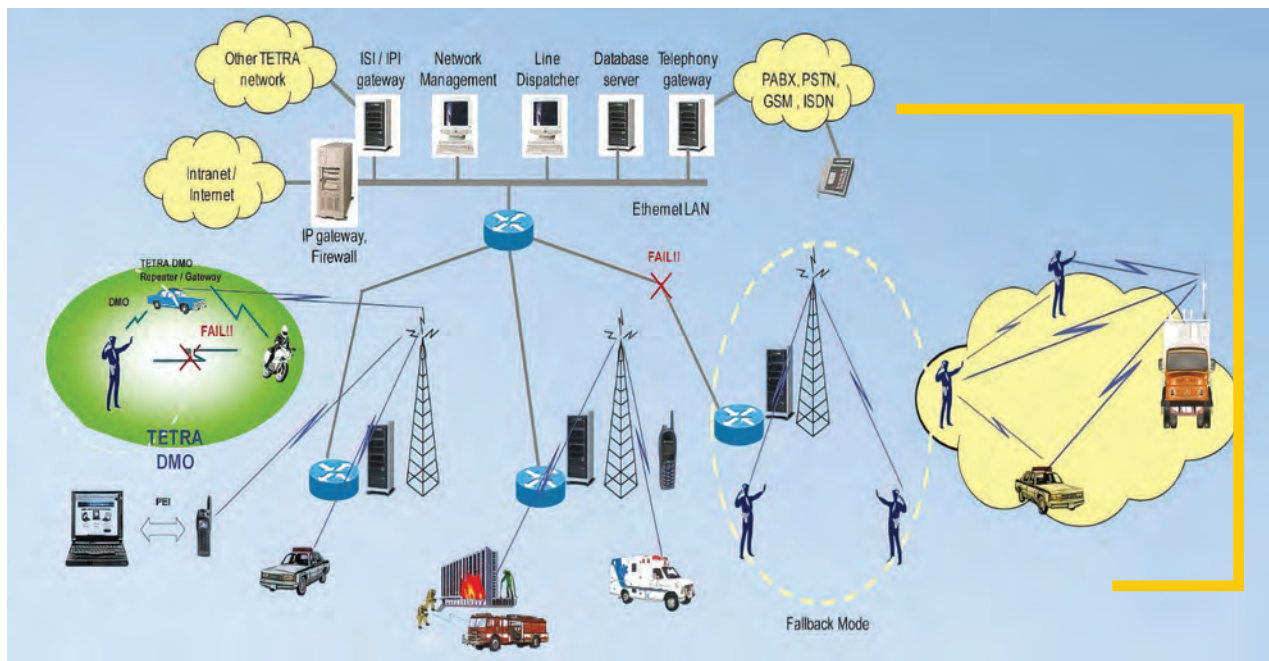
▶ Digital Trunk Network

DTN-910 Digital Trunk Network designed considering the ETSI DMR standard is a digital Trunk infrastructure system based on the IP network. It is designed especially for establishing an integrated audio network, capacity distribution, and managing several different geographical zones in missions and critical conditions. Due to the Trunk network updating capability and its flexibility, establishing a secure and economical infrastructure for organizations and emergency divisions is possible.

General specifications
- Maximum number of base stations: 50
- Maximum operator's capacity in each base station: 16
- Number of the operators: 50000
- The capacity of the group call: 5000
- The capacity of the Dispatcher system: 200
- The capacity of the NMS terminal: 64
- Connecting to the MPT network (number of gateways: 10
- Connecting to the PSTN network (number of gateways/channels):   60   (2×E1)
- Time of establishing the group call (ms): < 360

▶ PT-580H TETRA Handheld Radio Communication System

This radio is used in TETRA cellular network for voice and data communication. The radio should be registered in the network and then the communication will be established via base stations. Besides connecting to TETRA cellular network (TMO mode) this radio could be connected to other conventional radios directly in DMO mode. The connections could be established via dialing or pressing PTT, duplex, or half-duplex.

▶ MT-680 TETRA Vehicular Radio Communication System

This radio is designed to be installed in a vehicle to establish communication in the TETRA network in two modes of direct (DMO) and trunk (TMO). High reliability and easy operation are the main features of the radio. In direct mode, the output power of the radio is 10W which covers a wide range. In trunk mode, the radio covers a vast range of facilities in the network. 4W output, TETRA voice and SMS services, high precision GPS, ciphered voice communication, and fast access to the TETRA network is some facilities of the radio.

IPD43(G) DMR Anti-Explosive Handheld Radio Communication System

This radio is the new generation of ATEX radios.

IPD43 (G) is designed following the strict requirements of European ATEX and North American FM standards. The radio works safely in the most hazardous environment.

BTS System

The self-propelled mobile BTS system is designed and manufactured for communication coverage of the GSM/3G/4G networks. Main parts of the system include:

• Communication container
• 6-ton truck
• 18m electrical/winch mast (minimum length of 3.2m)
• BTS/battery rack
• 15KVA power generator
• Electrical jack for disconnecting the container
• Mast holder
• BTS antenna

Video Surveillance as a Service (VSAAS)

Considering the ICI's integrated video transmission solution and benefitting from a secure private data network of mobile phone operators, video of the places under the CCTV coverage can be observed every time by organizational subscribers permanently, reliably, and securely using advanced surveillance equipment accepted by reference institutes.

▶Technical Service

NMS+OSS/BSS

Service Management	Product Management	Order Management	Control Plane	Dynamic Routing
SLA Management	Change Management	Capacity Management	Security Management	Fraud Management
Inventory Management Element/Network/Service	Event & Fault Management Element/Network/Service	Performance Management Element/Network/Service	Quality Management Element/Network/Service	Test Management Element/Network/Service
Topology	Online Monitoring	Mediation	Configuration Management	Provisioning Management
Discovery	Polling	Detail Record Collection	Event Collection	Batch Command Runner

Standard Management Protocols
SNMP/WMI/NETCONF/RESTCONF/ODBC/NETFLOW/IPFIX/SFLOW

Vendor Specific Drivers
Telnet/SSH/TCP/UDP/Serial/...

Voice Networks   Data Networks   Transmission Networks   Internet of Things

Active Elements   Passive Elements   Connections

IMS Solution

NGN/IMS/VOLTE/EPC
• Access & Interconnection Layer
• AVA IMS for IMS Core, Border & Service Layer
• P-CSCF & SBC
• LTE & IMS HSS

• I/S-CSCF
• MRFC/P
• Telephony Application Server (TAS) for Supplementary & Regulatory Services
• Value Added Services (VAS)

IMS is a type of multilayer system to provide multimedia services for all individual communication users independent from their network access method. It is the newest network to design, test, and implement the NGN. The final configuration of the IMS is substituted for present PSTN and mobile telephone networks. The main responsibility of the IMS is to transmit all information including voice, data, especial services, and signaling via a unique IP infrastructure under unique management in the network.

Planning and implementing secure infrastructure networks and network security

• Fiber optic networks
• FTTX networks
• Line of Sight radio networks and satellite links- Solutions of controlling the fiber optics path
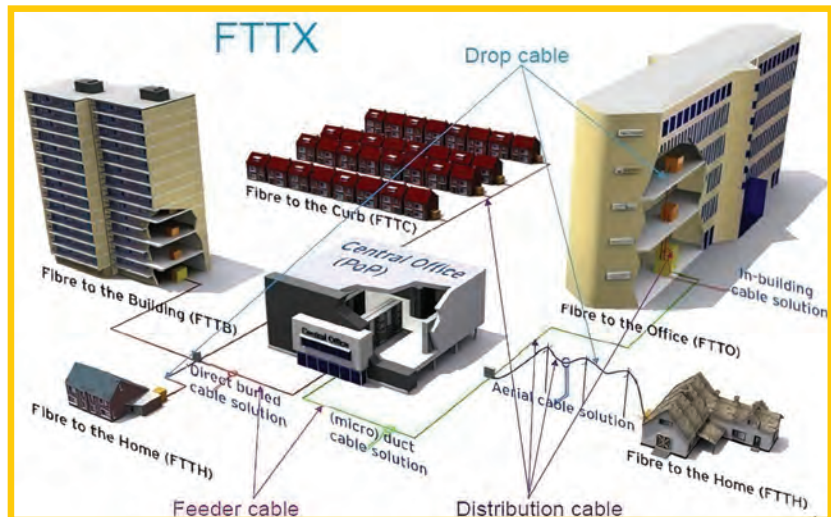
Planning and implementing the LAN and WAN networks

Planning services:

• Planning the switching infrastructure and layer of the LAN and Campus LAN networks

• Planning the routing infrastructure in the Campus LAN and Enterprise

• Planning the Resiliency structures including High Availability and Redundancy in the LAN and Data Center networks

• Setting up the network structure based on the Network Virtualization

• Planning the WAN structures with maximum efficiency and accessibility

• Planning the control structures and optimizing Quality of Services

• Planning the IP Planning structure of the LAN and WAN networks

• Examining and giving solutions to increase the efficiency of the networks

• Planning and providing solutions for upgrading and Migration

• Consulting and controlling execution process of the projects

• Examining and providing the LOM and Proposal

• according to the employer's requirement
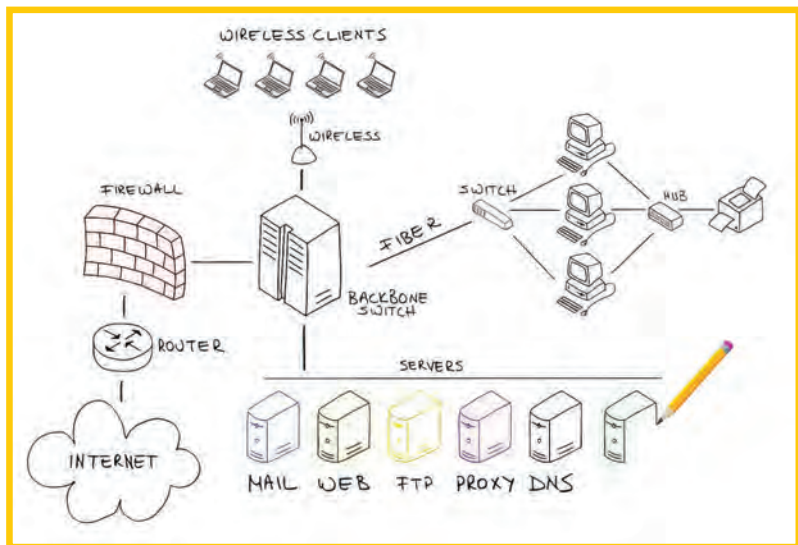
Installing and Implementing

• Campus LAN, LAN, Datacenter, and WAN networks

• Installation, setting up, and setting of the switching and routing equipment

• Installation and setting up the software of the network maintenance, control, and management

• Setting and setting up the communication/non-communication lines in the WAN communication

• Installation and setting up the NOC

Designing the LOS Networks

• Sight survey and designing the microwave links

• Designing and configuring the radio networks

• Analyzing required bandwidth in the radio networks

• Providing the LOM and LOP proportionate to customer's requirement

• Technical supporting and maintaining the radio networks

1.2GHz digital voice/data repeater and 10GHz microwave link
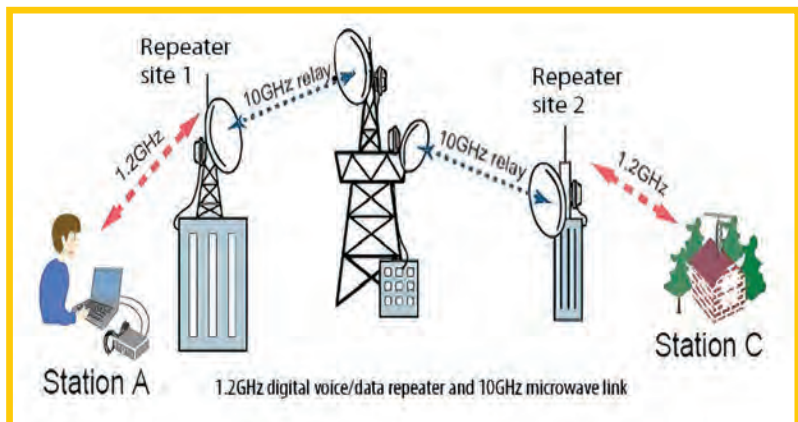
Planning and Implementing the Secure VOIP Networks

• Planning and implementing the VOIP networks as the WAN and LOCAL and clustering the centers
• Planning and implementing different scenarios for connecting individual VOIP centers
• Setting up the VOIP centers besides the TDM centers including FXS/FXO/E1
• Considering the peering capability for planning the Local/WAN networks

• Setting up the IVR in the VOIP centers
• The capability of implementing other capabilities
of switchboards such as the Call Group/Hunt Group, etc.
• Setting up the audio conference as a conference room in the VOIP centers
• Using the communication firewalls in the designed network
• Limiting accessibility of unauthorized IPs to the switchboard
• Using the SRTP-TLS-HTTPS security protocols for establishing secure communication
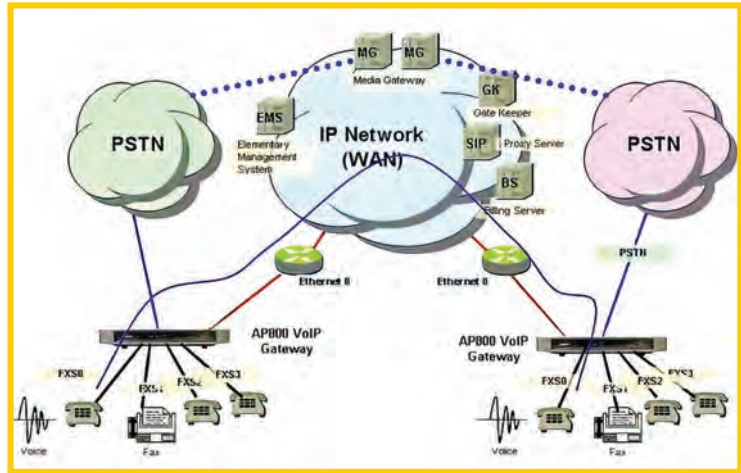
Planning and Installing Various Networks

• Integrated network management software
• Various scenarios of network security
• IP based networks
• Infrastructure networks
• Access networks
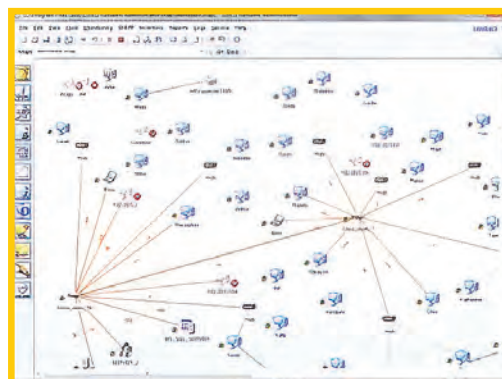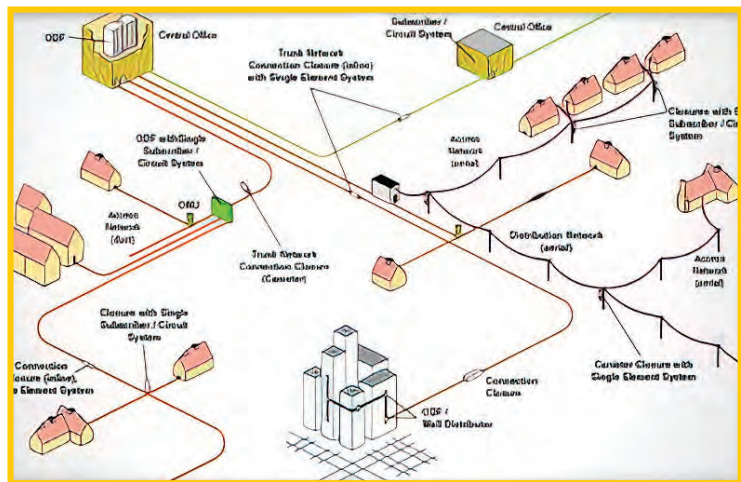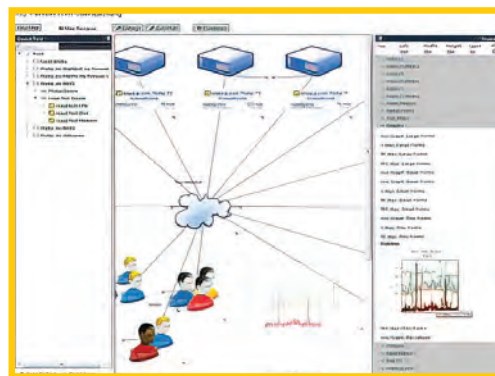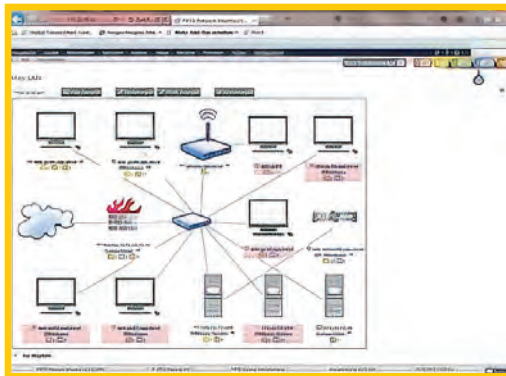
▶ Transmission Equipment

SDH (Synchronous Digital Hierarchy)
- High data transmission
- Flexibility in network architecture
- Integrated network management
- Data protection
- 4×STM4 ports
- 12×STM1 ports
- 32×10/100 Mbps ports
- Capability of installing the layer 2 switch card
- Supporting the SNMP protocol
- Equipped with the G.703 interface
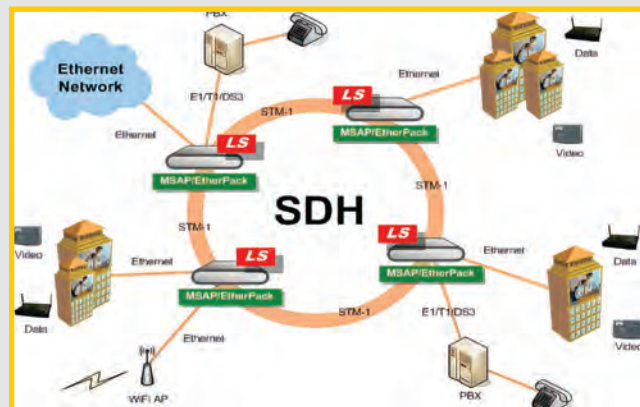
▶ SDH-930/E Synchronous Digital Hierarchy System

SDH-930 is a new generation of the SDH system with capability of transferring data and TDM traffic simultaneously over the STM-4 signal with bit rate of 622Mbps.

Benefitting from the four STM-4 interfaces, SDH-930 can be used in different structures e.g. combiner terminal, combiner with add/drop facility, and regenerator as well as various network structures such as linear, ring and mesh.

Due to different types of protection methods like SNCP, MSP, and hardware protection, this system is operated in transmission networks as a reliable system. In addition, variety of traffic interfaces, modularity, and cross connection facility in high and low levels cause considerable flexibility of network planning by the operator. SDH-930 can provide up to 32 Ethernet interfaces for data network traffic. Ethernet traffic can be written by separation of VC-3, VC-12, and VC-4 using different methods e.g. LAPS, GFP, LAPF, and PPP in STM-4 frame. In addition, for allocating variable bandwidth the LCAS could be used along with VCAT. Scheduling of the system can be extracted from different sources including the SDH interfaces, E1 interfaces, and BITS time reference in 2MHz or 2Mbps frames. While lack of external schedulers, this system can be operated in Holdover and Freerun statuses as well as using the system as scheduler of the other communication systems via the BITS output. SDH-930 includes an auxiliary card for making the EOW connection between different network elements. In addition, external alarms and one 64Kbps data channel is supported by this card.

OTN (Optical Transport Network)
OTN-MUXPONER 10GB/s systems

• Traffic aggregation
• Optimal use of available optical fiber capacity
• Support Traffic aggregation capability from 10*10GE to Multiplexing 10GB/s traffic by OTU-2 header

OTN-MUXPONER 100GB/s systems

• Support Traffic aggregation capability from 10*STM64 or 10*10GE to Multiplexing 100GB/s traffic by OTU-4 header

CWDM & DWDM (Coarse & Dense Wavelength Division Multiplexing) System
• Reduces the development costs
• System's capacity upgrade
• Upgrade 110-channels with 180GB/s to optical channels with a capacity of 1100 GB/s
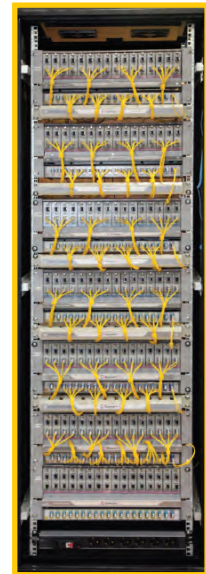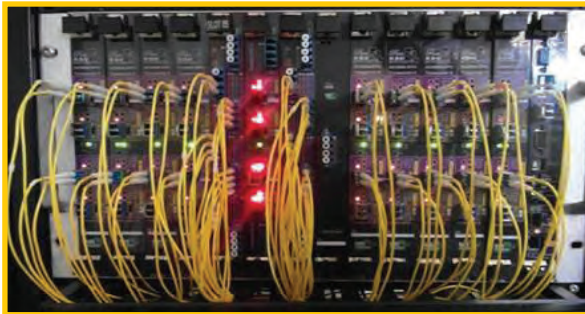

▶ Line Of Sight (LOS) System

• Site survey and designing the microwave links
• Designing and configuring the radio networks
• Analyzing required bandwidth in the radio networks
• Providing the LOM and LOP proportionate to customer's requirement
• Technical supporting and maintaining the radio networks

LOS system consists of a microwave radio link in frequency band of 4.4 ~ 5 GHz for digitally data transmission. Using this system, digital information is received/ transmitted according to the E1 and Ethernet standards. Configuring, settings, and observing the radio parameters are accomplished by the NMS (Network Management Software) and via the LAN port. These settings are performed remotely. Data is transmitted in the network according to the SNMP ver.3 and via the TCP/IP protocol. This system has been designed and manufactured in the two (1+1) and (1+0) types and its diversity is as the Hot standby so that tow similar radios (one radio is considered as the Main radio and another one is the Standby radio) are connected to a combiner.

▶Digital Microwave Radio

The Product is designed to provide high capacity transmission, flexibility & convenience for wireless communication network.

1. Radio SDH
- Performance: 1.46Gbps
- SFP Port, 16 E1
- Modes: 1+0 / 1+1 / 2+0 / 2+1 / 2+2
- Frequency Band: 6 ~ 38 GHz

2. Radio PDH
- Performance: 16 E1
- NMS, Webpage
- Frequency Band: 4.4 ~ 5 GHz
- Modes: 1+0 / 1+1

3. Radio IP (PTP & PTMP)
- Performance: 450Mbps
- NSM, Webpage
- Frequency Band: 2.4GHz & 5GHZ
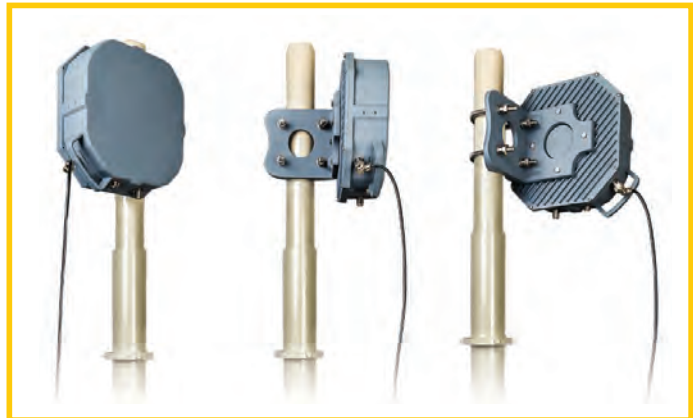
▶IP/MPLS

Secure Local Router

By changing the infrastructure of communication networks from the TDM systems to IP, network routers play a major role in great networks, especially in the WAN networks. Due to security considerations in the networks, the user equipment should be secured extremely. Manufacturing the local routers with high-security capabilities, the product is used for establishing a secure and efficient network by improving hardware/software capabilities competitively and being conversant with the software codes completely.

Capabilities

• Data routing securely in computer networks (internet, intranet, etc.)

• Routing and exchanging the data securely in industrial networks related to the IRI Ministry of Petroleum (refineries and petrochemical), Ministry of Energy (power plants and power dispatching centers), and the other ministries

• Routing capability in critical non-military networks and passive defense

• Protected against viruses and harmful factors in the network due to localized software and protocols.

Local Layer 2 Switch

Network switches can exchange data in organizational networks. Local switches provide standard and current capabilities in Ethernet networks of high quality. Hardware/ software designing and manufacturing these systems has been accomplished relying on the capabilities of Iranian

experts and engineers. Therefore users benefit highly by reliability, security, and technical supports.

Capabilities

• Exchanging the data securely between the computer networks (internet, intranet, etc.)

• Data switching in critical non-military networks and passive defense

• Protecting the industrial networks (IRI Ministry of Petroleum, Ministry of Energy, etc.) against viruses and harmful factors in cyber-attack

• Protecting critical non-military networks and passive defense against penetration, eavesdropping, cyber-attack, and the related disorders

• Manufacturing the product completely by Iranian experts and no need to use an American sample

▶ Service Equipment

IP Telephone Set
• Supporting three telephone lines
• The capability of installing the modular ciphering system
• Equipped with the POE
• Supporting the SIP protocol
• Supporting the G.711 and G.729 protocols
• Equipped with 20 quick access buttons
• Supporting the DHCP protocol

IP PBX
• IP Phone, IP PBX server, VoIP gateway
• Adding SDH card to high capacity IP/PBX new digital phone centers
• Providing communicating with access and transmission network from STM1/STM4 to E1 services
• SIP support
• Voice, Video service to IP-Phone (Saba 310) Subscribers
• Fax, IVR, Voice Mail services
• Support Call Encryption

Security Solutions
• Securing Computer Networks (Network Security)
• Implementation of Security Standards (ISO 27001)
• Implementation Security Operation Center (SOC)
• Network Security Penetration Test (PenTest)

Network Solutions
• Internet Service Provider (ISP)
• Internet Telephony Service Provider (ITPS)
• Installing Network (LAN & WAN)
• Implementing Server Farm (Data Center)

Modern Evolution and Vision in the Concept of Portal
With an integrated approach to e-business.
Dourtal is a collection of diverse and functional systems that provide standard solutions for a truly secure enterprise portal, aimed at innovation and development in e-business.
• Dourtal Solution Contain:
• Enterprise Content Management (ECM)

• E-Form and Workflow Builder
• Enterprise Application Integration (EAI)
• Web Service Management
• Report Generator
• E-Shop and e-Commerce
• Helpdesk and Knowledge Base

ADSL/HDSL

G242 (GPON)
• ONT Router
• 300 Mbps WiFi Wireless
• GPON interface (2.488 Gbps/1.244Gbps)
• 2 x LAN Ports (1GE + 1FE)
• 1 x FXS For Voice
• 1 x USB Port

V304F ADSL 2+ /VDSL
• Modem Router
• 5 dBi Wireless Antenna
• 4 LAN ports
• Up to 300 Mbps Wireless N ADSL+
• 2 x FXS Ports for Voice in VDSL

G242

A154

A304

Power Supplies
• Intelligent control system and manageable
• Modular designing
• Supporting the MODBUS/TCP/SNMP/HTTP protocols
• The capability of installing six 2KW/42A modules
• 48-59V adjustable output voltage
• Equipped with protected DC and AC divider modules
• Equipped with four battery banks
• Single-phase/three-phase input
• EMI protection
• Equipped with two main control units

E-HCLS3000 Voice Recorder

This system is designed as an Embedded and integrated standard 19" rack mount system with 3U height including a 7" color touch screen display, internal loudspeaker and SSD, 128G built-in ciphering system. Using the system, 8 or 16 analog/radiotelephone channels can be recorded simultaneously as well as increasing the capacity up to 120 channels and a combination of various analog telephone lines, digital/Panasonic, E1-PRI, and VOIP.

Applications
- Railway stations
- Fire stations
- Emergency centers
- HSE department in the IRI Ministry of Petroleum
- Call center of electricity and water events

HCLS3000 Professional Stationary Voice Recorder

This system is capable to record and play several communication audio channels simultaneously along with some details, e.g. conversation and its duration, receiver number, radio channel, and ...

Voice recorder modules are considered in a maximum one unit as an external industrial rack mount unit so that they can be connected to an industrial computer via the USB and LAN ports. Using the system, all wireless/analog telephone lines, BRI Panasonic digital lines, E1-PRI lines, and VOIP lines can be recorded with the SIP, H323, SCCP, MGCP, and MiNet protocols. The front panel is equipped with an LED indicator for indicating channel status. Although it is designed for analog lines, digital lines can be recorded too selectively.

M-HCLS3000 Professional Double Digital Stationary Voice Recorder (30/78 Channels)

This system based on a laptop is capable to record and play several audio channels simultaneously along with specifications and related information (e.g. conversation and its duration, receiver number, radio channel, etc.) The system can be installed on moveable vehicles. Every analog 30-channel module is considered as a unit approximately as well as the same unit for digital lines so that it is capable to install the two E1-PRI link and two 8-channel cards to record the Panasonic digital lines.

30-channel analog lines system

78-channel system (30 analog channels, 30 channels as an E1-PRI link, 8 Panasonic digital channels, and 10 VOIP channels with the SIP protocol)

SMX-4

• STM4, STM1, 3*Gbit Ethernet Ports
• Drop / Insert SDH Level System
• V-CAT & GFP Protocol Support
• Non-OS Platform

CORN E1

• AES 128/256 Encryption
• Flexible connection speed
• Ethernet over E1 up to 8Mbps
• GFP Bounding & Encapsulation Protocol

CORN STM1

• AES-256 Encryption
• Gigabit Ethernet over STM1
• Support GFP & V-CAT protocol
• Non-OS (FPGA-based) platform

▶ Electricity Transmission & Telecommunication Towers/Masts

Delivering high-quality products, complying with international standards, and flexibility in design and engineering to meet every project's conditions and requirements, all have made the ICI a successful and reputable EPC contractor in power transmission and telecommunication industries.

During years of overseas activities, ICI has established its affiliated companies and branches in several countries and has signed numerous protocols and partnerships around the world.

Besides, the presence of the ICI branches and its team of technical experts located in the target markets, contribute a great role in the improvement of the ICI services.

Field of Activities
• Designing and engineering high voltage power transmission lines
• Designing and manufacturing lattice and tubular towers for transmission and telecommunication
• Designing and manufacturing steel structures for high voltage substations
• Management and execution of EPC projects of power transmission lines
• Management and execution of EPC projects of telecommunication towers
• Installation, operation, and maintenance of photovoltaic power stations solar farms in the full package based on PV and CPV technologies- Installation, operation, and maintenance of complete package of distributed power generation plants (D.G.) and combined heat and power production (C.H.P)
• Designing and manufacturing of lattice and tubular low voltage (LV) and medium voltage (MV) towers and lighting poles

ICI is a pioneer company in designing and manufacturing the power transferring and communication towers and it is a known supplier for national/international communication operating companies. Benefitting from the creative designing team and the last versions of designing software, ICI ensures optimum design according to the related standards such as the TIA/EIA.
Communication towers are confirmed by international valid organizations and manufactured at a maximum height of 120m according to the customer's requirements.

3 Legs-Angular Lattice Tower				
Tower Height (m)	TYPE	Wind Speed-km	FPA-sqm	Footing (cm)
54	3 legs-Angular	130	13.5	617
48	3 legs-Angular	130	13.5	557
42	3 legs-Angular	130	13.5	497
36	3 legs-Angular	130	13.5	437

4 Legs-Angular Lattice Tower				
Tower Height (m)	TYPE	Wind Speed-km	FPA-sqm	Footing (cm)
84	4 legs-Angular	130	2.5	800
36	4 legs-Angular	130	11.47	144
30	4 legs-Angular	130	11.47	140
24	4 legs-Angular	130	11.47	136

On-Roof Guyed Lattice Tower			
Tower Height (m)	TYPE	Wind Speed-km	Footing (cm)
18	3 legs-Angular	130	43
15	3 legs-Angular	130	43
12	3 legs-Angular	130	43

On-Roof Self-Supporting Lattice Tower				
Tower Height (m)	TYPE	Wind Speed-km	FPA-sqm	Footing (cm)
12	4 legs-Angular	110	4	40

Lattice/Telescopic Bases of Low/Medium Power Transferring and Light

ICI is capable to manufacture galvanized metallic bases in the two lattice and telescopic types for transferring power in distributing networks and light systems with the following specifications:

• Designing, manufacturing, galvanizing, packing, and installing according to the related international standards
• Lightweight, long life, easy installation and operation, easy maintenance and repair, and high safety
• Manufacturing the lattice bases with 9m, 11m, and 14m length and different thickness
• Manufacturing the telescopic bases with 9m, and 11m length and different thickness
• Using high-quality raw materials
• Galvanized coverage according to the ASTM-A 123 standard

Also, ICI is capable to design and manufacture various metallic structures according to the customer's requirement as well as communication and power transfer lines.

Fence, Ladder, Tray, and Foundation

• Grounding equipment including earth busbars, lightning rod, and various lightning arresters
• Protecting the antenna against freezing
• Anchor bolt and template for laying the foundation
• Various ladders
• Various horizontal/vertical cable trays
• Providing equipment of alarm system including a photocell, various lights, lamp, cable, and the related tools
• Various work restrooms and platforms
• Various fences of communication sights
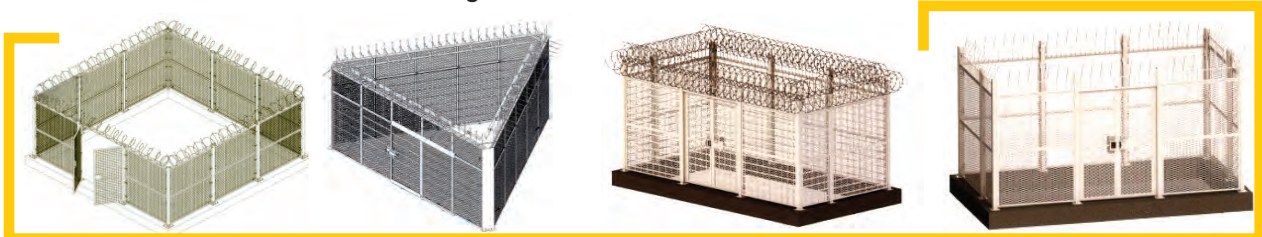
Energy Meter

PTA285 SINGLE PHASE MULTI-FUNCTION ENERGY METER
PTA285, a type of fully electronic active energy electricity meter, conforms to IEC 62053-21:2003, IEC 62052-11, IEC 62054-21, IEC 62056-61 and IEC 62056-21:2003. Installation and mechanical construction are according to DIN43857 and BS 7856 for the terminal block. The meter features its updated structure and reliable electric capabilities. It is a wise option for measuring household energy with time-of-use (TOU) as well as balancing mains electricity load better. Featuring high accuracy and reliability, it also prevents the illegal action of pilfering electricity. The reliability and service life of the meters have been greatly improved for the Meters' adoption of large-scale integration (LSI) and SMT as well as an international brand and long-life key components.

PTA541 Three-phase Meter (DT/CT)
PTA541 three-phase DT/CT type meter can support active/reactive energy measurement.

The multi-tariff function is available by internal control, and the status of consumed energy can be read from the load profile. Besides the common events, the meter supports events of open cover and magnetic influence. Moreover, it can also measure a variety of instantaneous quantities. The meter supports multi-communication methods, like optical communication and RS485. Meter configuration is available via the very flexible configuration software.

Forest Fire Recognition System

• Recognizing forest fire considering the atmosphere chemical analysis by the spectrometry system Using the sensor network as a complementary solution in critical and important zones
• Analyzing the air CO, CO2, temperature, pressure, and humidity parameters in advanced algorithms of fire recognition
• The individual capability of smoke due to fire and distinction between it and other smoky causes
• Using the Big Data platforms for analyzing the fire recognition models Capability of fire recognition in 15km radius by each spectrometry system
• Immediate and automatic surveillance round-the-clock in different locations of forest
• Announcing the alarm automatically to the control center and defining the accident location exactly
• Monitoring the climate conditions and estimating the fire extension
• Announcing the alarm to the control center in case of penetrating each sight limit
• Using the protocols with low energy consumption
• The capability of programming and updating the nodes remotely (OTAP)
• The capability of using the solar panel for providing the power in both of the systems

▶ In Time Intelligent Flood Recognition System

• The integrated solution of sensor network based on the LOT for in time flood recognition

• Measuring temperature, humidity, hydrocarbons, CO, CO2, NO2, CH4, H2S, and O3 parameters

• Automatic and immediate surveillance of environmental conditions

• Using the protocols with low energy consumption

• The capability of programming and updating the nodes remotely   (OTAP)

• Using the solar panel internally/externally

▶ Intelligent Air Pollution Recognition System

• The integrated solution of sensor network for recognizing the number of available air polluters

• Measuring temperature, humidity, hydrocarbons, CO, CO2, NO2, CH4, H2S, and O3 parameters

• Automatic alarm transmission to the control center in case that the polluters exceed the defined levels

• Estimating the analytic models according to different environmental   conditions

• Measuring the suspended particles (PM1/PM2.5/PM10)

• Calculating the air quality index

• High accuracy of the 0.1PPM measurement

• Automatic and immediate surveillance of environmental conditions

• Using the protocols with low energy consumption

• The capability of programming and updating the nodes remotely   (OTAP)

• Using the solar panel internally/externally

▶ Solution of Intelligent Civil Roads

The following solutions are presented for surveillance of road circumstances using the wireless sensors:

• 365/24/7 Surveillance over the under coverage zones

• Specifying the pollution location if it happens

• The capability of alarm transmission to the related responsibility as soon as water pollution is recognized

• The capability of making the rescue forces aware and sending the location coordinates in the minimum possible time
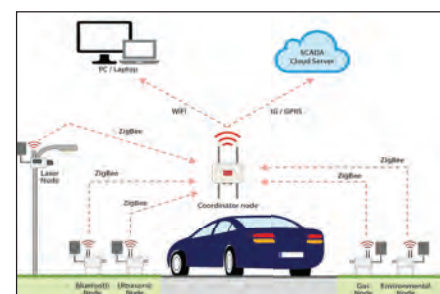
Satellite Communication Vehicle

VSAT-1200 Vehicular system is a satellite communication system for exchanging voice, data, and videos via the satellite.

Multi-Layer Radio Communication Vehicle

To establish communication between the centers and keeping away from radio propagation, communication equipment is considered inside the vehicle. Accessories are arranged inside a cabin.

Computer Assistance and Money Protection Vehicle

This system has been designed and manufactured for providing several services and establishing voice/data communication links internally, locally, and via the internet.

This system is considered as a mobile cell to provide cyber and computer aid services quickly for organizations and ministries that are under cyber threat and attack.

Rescue and Assistance Vehicle

This system is considered as a communication command and control center responsible for establishing various radio communication layers in unexpected critical conditions such as earthquakes, floods, etc.

Due to the easy movability, establishing, and setting up of the system, it is proper for operating in critical conditions.

Various communication layers of this vehicle are: Satellite terminal, HF and VHF radio communications, microwave, and GSM and Wi-Fi links

Radio Multi-Layer Communication Vehicle

This system equipped with the HF, VHF, and UHF communication layers is considered for establishing radio communication and digital data transmission. Besides, the system is capable to be equipped with the microwave communication layer.

▶ Field Hospital Communication Vehicle

This system is equipped with various communication equipment in different layers as well as a complete set of ICU (Intensive Care Unit) bed and video conference system for telemedicine in emergency conditions and inside the shelter's communication cabin. This system consists of a shelter with a maximum of 6m length (including communication-treatment cabin and cabin of communication equipment and infrastructure) and extra containers for carrying the accessories and power generator. For transferring the system to impassible zones, shelter and container are capable to be carried by helicopter.

▶ Crisis Operation Command Vehicle

This vehicle has been designed for meeting the communication reliability needs of organizations in emergency and crisis conditions so that immediate access to information, integrating and processing it, and quick decision making is possible by the system from commander level to operator level.

▶ Extendable Crisis Operation Command Vehicle

This system consists of two repeater and command center parts designed as Remote. It is located far from the command center system while operation and connection between the two parts are made via fiber optic.

▶ Manufacturing and Equipping Various Rooms of Command Status and Crisis Management

For synergy and quick analysis, the input data considering that managers cannot perform in time crisis management in critical zones, it is necessary to establish some stationary centers for coordinating between various fixed country centers, province centers, and city centers or equipping them with crisis managing equipment to coordinate with the related managers quickly in critical conditions such as on fire forest, flood, earthquake, etc.
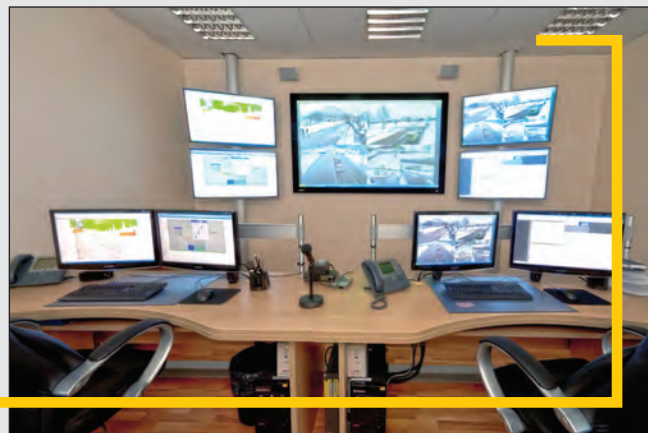
▶ RPV System

- The continuous flight up to 50
- Up to 3kg shipment carriage
- Up to 5km flight distance
- Up to 1km flight height
- Proper for up to 26m/s wind speed
- Proper for rainy/snowy condition
- Full HD day/night filming
- 80 minutes battery charging time

▶ Communication Solution & Systems

AMHS ATIS VHF RADIO Recorder VCCS

E E↑

Sign

Mobile ATC

Mobile ACC

Mobile SR

Lighting

▶ Navigation Solution & Systems

AIRBORNE TACAN RADAR ALTIMETER (FMCW) PULSE ALTIMETER

MSSR
PSR

DME MLAT TACAN - BEACON

PAR

▶ Air Traffic Control Tower (ATCT) Services

ACSPI has extensive experience in:
• Planning
• Designing
• Constructing
• Supervising
• Executing
• Training
(Core competencies: Low Cost, Time, Faulty/High Quality, Tech, Safety)

Designing a new ATCT includes::
• Architectural, structural, mechanical, electrical, plumbing, fire detection, and protection, etc.
• Communication & Navigation Systems
• Procurement
• Installation
• Commissioning
• Maintenance
Do Overhaul Old ATCT
Train Tower Staff Trainees
Design Criteria are derived from ICAO/FAA standards(FAA order 6480.7)

▶ Remote Virtual Tower (RVT)

Exchanging all commands, controls, and accesses of flight controller to a center far from the airport.

Advantages of the remote virtual tower
• Enhanced visibility and flight safety
• Efficiency for smaller airbase
• Cost-efficient tower alternative
• Quick ATC support for emergency landing strips
• Safety for remote landing sites
• Enhanced situational awareness
• Enhanced staff protection
• Information sharing and data fusion
• Additional detection capabilities
• Enhanced airbase security and efficient protection

Safety & Protection
- Protection of Operators
- Object and Threats detection

Flexibility & Efficiency Gains
• Service on demand
• Several bases managed remotely from one center
• Lower investment and expenses
• Decreased worked load by automation

Enhanced Vision
• Enhanced situational awareness
• Increasing night vision
• Blindspot coverage

▶ Control and Monitor Airport Traffic

• Vehicle Location
• The exact time of data transmission
• Instantaneous velocity
• Information of the accessories connected to the system digital inputs
• The voltage of the external supply and internal battery
• Status of the GSM network and GPS signal
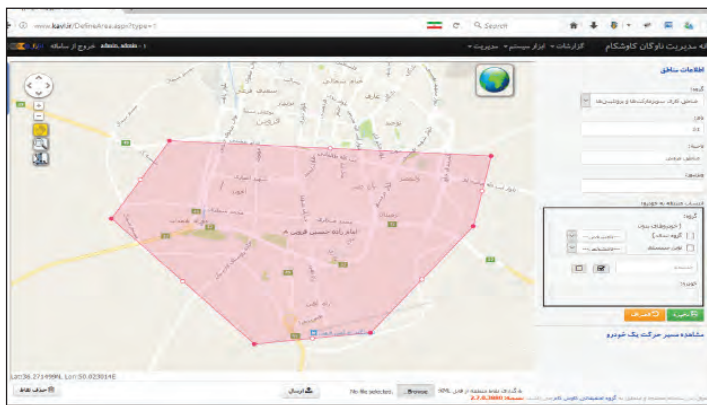
▶ Tracking, Monitoring & Managing Vital Information & Helicopter Flight Paths

Benefit/Feature

• Server with expandable and backup design
• Double Backup Server Stack
• Data Storing with Backup
• Double Backup Firewall
• Backup Network & Power Connection
• Receiving, processing and recording uninterrupted vital data & position
• Accessing information security with the ability to determine the access level
• Showing high-quality information on geographic maps
• Voice /Text exchange with the pilot to receive or notify emergencies
• Compressing information to reduce costs

▶ Airport Airfield Lighting

Benefit/Feature

• Design, Supply, Implementation and Maintenance category I, II, III
• All civil, builders and construction groundworks
• Heliport Lighting
• ALCMS, ILCMS

▶ Fire Training Simulator

Aircraft training simulators are systems in which various fire events that can occur in aviation, cockpit, underwing engine, undercarriage, fuselage, cargo, and more fire are represented both inside and outside of the aircraft.

A simulated fire in this facility can be fully controlled by an advanced user PC-SCADA operating system integrated into an independent 2-story command control tower.

▶ Airport Surveillance System Equipment

- Airside Airport
- Landside Airport
- Indoor airport terminal
- The perimeter of the airport
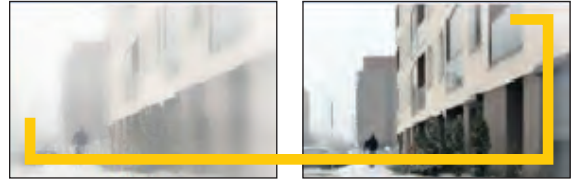
Airport Surveillance System Capabilities
- Ability to use all technology to identify the desired environment
- Possibility to control vehicle traffic with UVSS and ANPR technology
- Possibility to completely cover the 360-degree angle
- Ability to capture a color image in a dark area
- Possibility to create a panorama image
- Surveillance by using thermal cameras
- Ability to search based on the person's face
- Possibility of counting people traveling through CCTV cameras
- Possibility to detect queuing and accumulation by CCTV camera

▶ Runway Cleaning Solution (Water blasting)

- Surface Cleaning
- Oil Removal
- Water blasting can clean drained oil deposits on aircraft parking areas with no damage to concrete and aeroelastic.

▶ Airport Fueling Systems

ACSPI provides a full range of aviation fueling services Including engineering and consultancy, into-plane fueling, aviation fuel storage, and hydrant management with full HSSE and Quality.
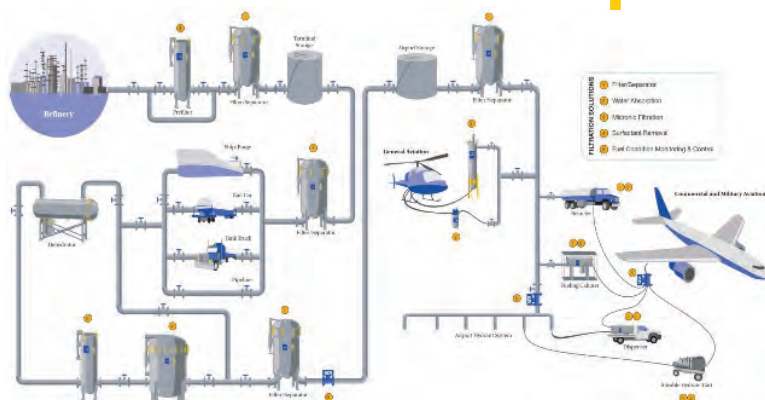
▶ATS Message Handling System (AMHS) - AIRTEXT

The "ATS Message Handling System (AMHS)" has been specified by ICAO to provide up-to-date messaging services that are above the level available with today's' operated AFTN and CIDIN. To take advantage of these enhanced messaging services at a global scale, states and organizations are encouraged to support AMHS communication as soon as possible.

AMHS services are primarily specified as an implementation of a functional subset of the ISO/IEC and ITU-T standard series for "Message Handling Systems (MHS)". Furthermore, the AMHS is embedded in the overall architecture of the ICAO "Aeronautical Telecommunication Network (ATN)" and makes use of common ATN services. The technical specifications are laid down in ICAO Doc 9880. Besides, Doc 9896 provides for the AMHS integration in an ATN architecture based on the Internet Protocol Suite (ATN/IPS).
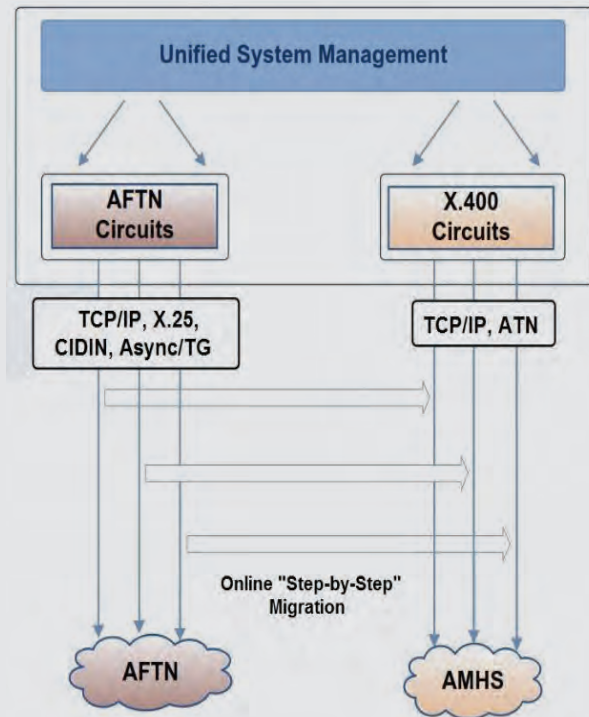
▶Automatic Terminal Information Service (ATIS)

Features
- Analog and digital outputs
- Automatic data import from meteorological sensors
- Automatic data import from METAR messages
- Multiple operator terminals
- Dualised architecture available
- Full Data-link compliance (D-ATIS/ D-VOLMET)
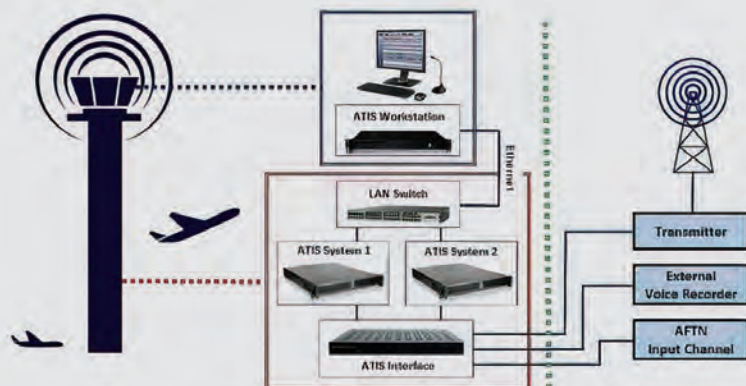
▶ Vessel Traffic Service (VTS)

VTS is considered for increasing safety, governmental surveillance and control, safe steering and increasing navigation efficiency to berth ships in ports, environmental conservation of seas and the country global waterways, and applying international laws and regulations to moving ships and boats through waterways of every country. In this system, data is transmitted via various sensors such as radar, AIS, radio direction finder (DF), CCTVs, and buoys, and meteorological sensors. Operators in operating stations control the traffic using the received information and operational equipment e.g. the VHF radios.

Usually, the VTS provides service at different levels as follows:
1. Notification
2. Navigation aids and services
3. Marine traffic control
4. Search and rescue
5. Marine pollution control
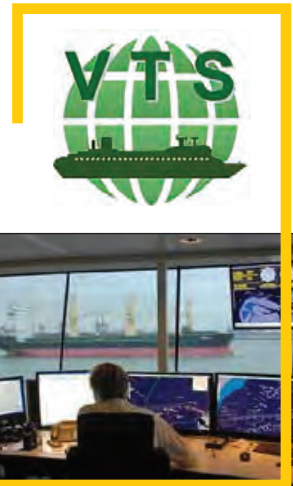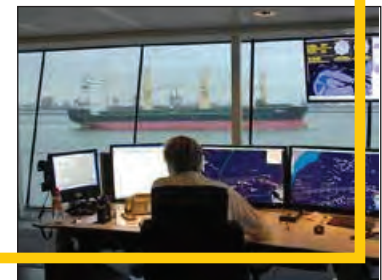
▶ Voice/Data Communication Network

One of the ICI's missions is to design and implement various voice, data, and video transmission systems as well as designing, implementing, and maintaining various long/sort distance radio communication networks, GSM networks, Tetra networks, 4G network, satellite links, high capacity LOS networks, high capacity Troposcatter network, and video transmission systems.

▶Integrated Communication System (ICS)

Considering various communication equipment in marine traffic control centers, integrating the equipment into a system is very useful. Using the ICS, there is no need to allocate the operator for each system and only one operator can operate all of the communication systems. One of the main advantages of the ICS is integrating display of the systems despite a variety of brands so that operators in all marine traffic control centers operate the systems with the same operation and as a result, training of the system is simple and it can be operated very easy. ICS provides different services such as Phone Patch, voice recording, storing the radios' settings, and communication between telephone lines and radios.

Capabilities and Advantages
• Preventing the systems from various operations
• Decreasing the operator's mistakes
• Controlling performance of the systems and operators in different locations
• Helping with quick decision making
• Establishing a communication link with other centers via network and fiber optics infrastructure
• Consoles including touch screen with Graphical User Interface (GUI)
• Storing all operations and settings and effective reporting
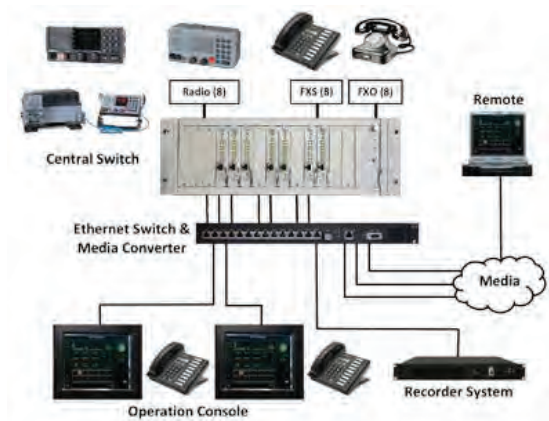
▶Boat Tracking System Based On the AIS (Automatic Identification System)

Considering a wide range of a country maritime zone and various organizational/business boats moving there such as fishing boats, passenger boats, cargo boats, yacht, security boat, etc., exact control over the boats is necessary for the boat owner and governmental responsible persons.

At present many corporations and organizations use the GSM mobile for tracking, but there are some problems of the GSM in the sea such as no maritime standard for the GSM mobile network and inspection problem in foreign ports, short operational distance in sea, cost of charging the SIM card, etc.

On the contrary, these problems may not exist using the AIS as well as the capability of localizing needed tracking equipment and securing data transmission infrastructure. AIS has many advantages such as free and standard maritime channels, no extra charge cost for the boat owners, very proper operational distance, and ...

In the AIS, a transmitter is installed inside the boat for transmitting the boat information to the AIS receiver on the coast site via the AIS infrastructure. After receiving the information, it is transmitted to the central server by the coast site.

To use the AIS information and tracking the boats, operators can receive the information via the server, mobile phone, computer, and or tablet in different Operating Systems e.g. Android, IOS, Windows, and ...

▶ Establishing Intelligent Ports

On the contrary, these problems may not be existed using the AIS as well as the capability of localizing needed tracking equipment and securing data transmission infrastructure. AIS has many advantages such as free and standard maritime channels, no extra charge cost for the boat owners, very proper operational distance, and ...

Using various intelligent media and designing various servers and applications in different Operating Systems such as IOS, Windows, and Android, ICI is experienced to fulfill intelligent projects hugely in ports via local networks using different infrastructures (Ethernet, Bluetooth, LoRaWAN, and NB-IoT).

▶Some of Space Group activities

Design of ZS3 remote sensing satellite in association with the foreign contractor (2000)

Sina satellite (the first satellite of the Islamic Republic of Iran) in collaboration with the Russian contractor (2005)
Main mission: remote sensing (Panchromatic Multi-Spectral Imaging) Auxiliary mission: transmission and reception of communication messages
Acquired products and technologies:
1- Entering the space club for the first time in Iran
2- Foundation of a center for satellite assembly, integration, and test
3- Foundation of a comprehensive team for satellite design and manufacture
4- Gaining familiarity with space standards
5- Acquiring satellite systems manufacturing and test capability

Design, manufacturing, and launch of Omid satellite (the first domestic Iranian satellite) (2005-2008)

• Orbital life: 82 days
• Base mission (a minimum measure of success): Reception of signals from the satellite after launch
Secondary missions:

• Determination of satellite orbital parameters after launch
• Telemetry of subsystem parameters throughout satellite lifetime
• Sending commands to the satellite
Acquired products and technologies:
First place award for "Omid satellite space system" in "Kharazmi" international festival "National Pride" award for "Omid national satellite" in the seventh "National production, national pride" festival, and second place award for TT&C station of Omid national satellite in the defense sciences, research and technologies festival
Fully indigenous space system engineering

Stationary station for reception of satellite images (2007-2010)

Mission: the reception of images from remote sensing satellites
Acquired technologies:
1- Manufacturing of antenna feeders
2- Manufacturing of pedestals
3- Manufacturing of image reception, processing and generation unit
4- Manufacturing of the sophisticated demodulator unit

Fajr series satellites

Mission: remote sensing
Acquired products and technologies:
1- Realization of the first cold gas propulsion system for increasing orbital altitude and lifetime
2- Indigenous location determination receiver
3- Multi-Spectral imaging payload (Panchromatic: 60 m, and Multi-Spectral: 100 m)
4- Attitude control technology in the field of active spinning stabilization
5- Attitude determination technology using magnetic and sun sensors

Space systems control center (2009-2018)

Mission: This center was founded with the objective of domestic space systems platform control and payload programming and having the capability of simultaneous guidance and control of multiple satellites. The design of the software subsystem of space systems guidance and control is underway with a comprehensive approach. This software subsystem can be implemented on the hardware platform.

Characteristics:

Capacity: 24 working stations as nodal points of the network of ground stations

Ports:

Safe communication lines via fiber optics (voice, video data)

Internet

Safe mobile phones (voice, data)
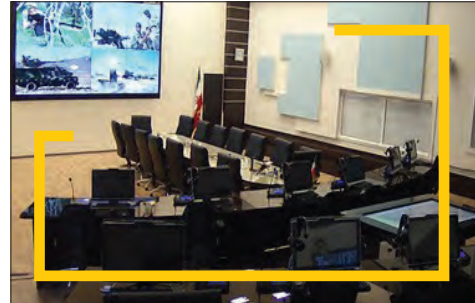
Network of ground guidance and control TT&C stations (2008-2017)

Mission:

Operation and maintenance of TT&C ground stations network

Reception of telemetry data from satellites and transmission of data to the center for guidance and control of space operations in real-time or offline

Reception of commands from the center of space operations guidance and control and transmission of commands to satellites in Access time

Center for integration, test, and verification of space systems (2008-2015)

Mission:

as one of the major and most important centers for integration and test of space systems in the country, this center meets domestic requirements at the highest international scientific level using the most advanced technologies, facilities, and expert human resources.

Facilities and capabilities

• Environmental and mechanical test laboratory number 1
• Impact
• Vibration
• Determination of center of mass
• Determination of inertial moment
• Mass balance
• Environmental and mechanical test laboratory number 2
• Constant acceleration
• Determination of deviation of thrust vector
• Environmental and thermal tests laboratory Simulation of vacuum environment along with thermal cycles
• Thermal cycling EMI/EMC test RS-103 test BER test
• Attitude determination and control laboratory Simulation of the space environment in terms of light and magnetic field
• Energy laboratory
• Electronics laboratory

- Communications laboratory
- Hardware-In-the-Loop laboratory
- Simulation of GPS signal
- Simulation of energy generation by solar arrays
- Mechanical workshop
- Manufacturing the required fixtures for tests

Tolou-1 satellite (2009-2016)

Mission:

Imaging with a spatial resolution of better than 25 m, with two imaging modes: real-time (over Iran) and save and transmission (over the rest of the world)

▶ Omid
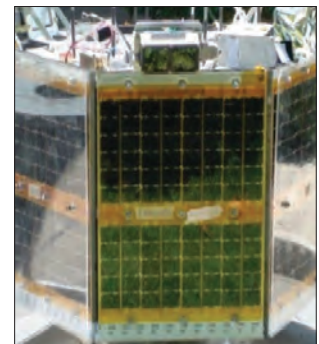
▶ Fajr-2

▶ Navid
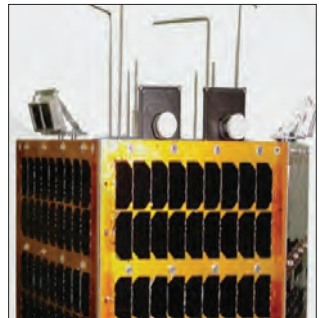
▶ Fajr-4

▶ Toloo-1
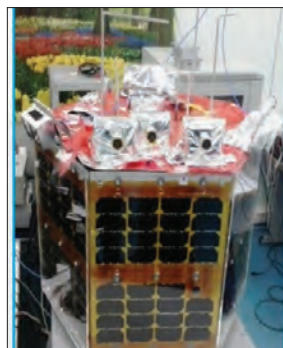
▶ Fajr-3

▶ Fajr-1
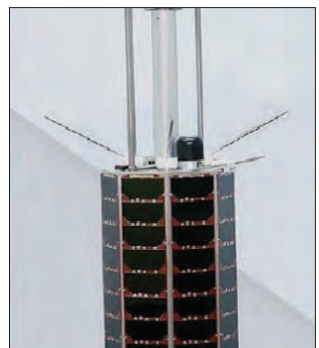
▶ Rasad
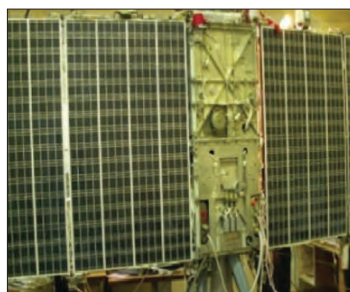
▶ satellite

▶ Fajr-5
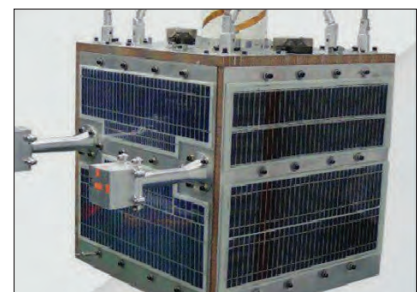
▶ Tadbir

▶ The most important equipment available in the center for integration and test of space systems

Small thermal cycling chamber

Thermal vacuum chamber

Cleanroom for integration and test of space

Large thermal cycling chamber

Helmholtz coil

Semi-spherical simulator
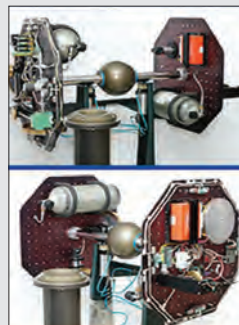
Dumbbell simulator

EMC chamber

Moment of inertia

Shock table

Mass balance

Thrust vector

Shaker

Center of mass

Flexible linear simulator
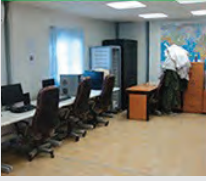
2 Degrees of freedom table for calibration and test of sun sensors

▶ Ground stations network

Small thermal cycling chamber
Missions of the ground stations network include reception, processing and storage of imaging data, reception of telemetry data, assessing the accuracy of operation of payload and bus subsystems, and transmission of operational commands in individual and collective forms to satellites

TT&C	Small thermal cycling chamber	TT&C

Mobile station 1

Mobile station 2

Mobile station 3

Mobile station 4

Internal station 4

Internal station 5

Internal station 6

Internal station 1

External station 1

Internal station 2

External station 2

Internal station 3

▶ Space systems control center

Main equipment indigenized in association with the partners' network

High-reliability,
high-performance
electronics unit

High-reliability modular
Power management
unit (PMU)

Very-high-reliability
electronics unit
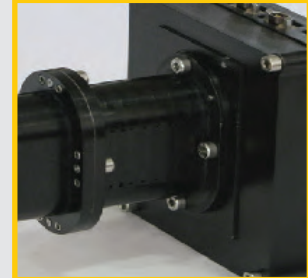
Small-dimension
multispectral and
panchromatic camera

High-reliability
Data and command
interface and
power distribution unit

A view of processor,
sampling, signal
generation and storage
subsystems of the SAR
payload

Medium-resolution
panchromatic and
multispectral camera

High-reliability
Panchromatic imaging
payload

L-band downlink
transmitter
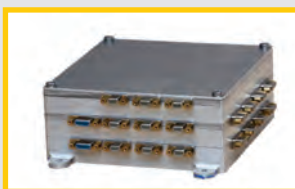
High-connectivity,
High-performance
electrons unit

UHF-band downlink
transmitter

High-reliability Power
Control Unit (PCU)

VHF-band uplink receiver

Reaction wheel: applicable to different classes of satellites

S-band downlink transmitter

S-band uplink receiver
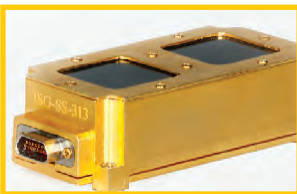
Digital sun sensor

Magnetic torque: applicable to different classes of satellites
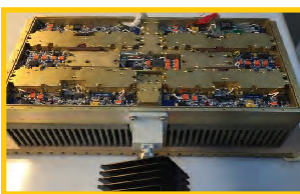
High-power amplifier for SAR payload

Star tracker

Type 2- sun sensor (Pioneer I)

SAR antenna

Solid-fuel propulsion system

GPS receiver
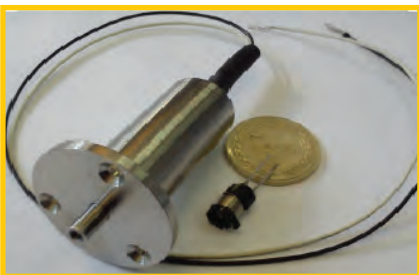
Pin puller

Cold-gas propulsion system

Onboard satellite antennas

Integrated Underwater Communication System UCS-S 01

Description

The Integrated Underwater Communication System UCS-S01 transmits and receives acoustic signals through the water for analog and/or digital information exchange via hydro-acoustic transducers. It offers additional features like "pinger mode" in a variable frequency range beside the obligatory telephony, telegraphy and data modes. The adjustable output power allows the system to work under any sea-state conditions. Besides, it can provide long to short-range communication with the shortest possible intercept range, which is essential especially for submarines. To cover all frequency ranges, it is necessary to operate the system with sets of transducers, which have low to high resonance frequencies. The low frequencies are used for long-range communication and high frequencies for short ranges or communication with divers. The data rate of the acoustic link is 5000 bps in a typical environment and the payload data rate is 2000 bps. Payload data refers to the user's input data. It can be adjusted to a lower payload data rate of 360 bps in a very noisy or shallow horizontal environment automatically.

Application:

1. Operation from a mobile or stationary platform
2. Analog or digital communication
3. Telephony and telegraphy operation
4. Data communication
5. Distance measuring capability
6. Pinger mode

Specification	
1-Voice	
Operating frequency	6.2 kHz, 10.2 kHz, 23Khz, 27 kHz (selectable)
Modulation	U-SSB, L-SSB at 8.2 kHz & 25khz carrier frequency
Signal frequency call	6.7 KHz, 23.5Khz L-SSB 9.7 KHz , 26.5 KHz U-SSB
Audio frequency bandwidth	300~2800 Hz for L-SSB 300~3800 Hz for U-SSB
Transmitter power	100 W RMS
Supply voltage	24 VDC/220 VAC 50 Hz
Operating range	14 km in the deep and calm sea (sea state:1) 7 km in shallow zones and calm sea (sea state:1)
Receiver gain control	manual and automatic (AGC) more than 100dB
Audio output power	3W for 8-ohm loudspeaker
Transmission modes	Audio and Morse

Specification	
2-Data	
Communication type	Half Duplex
Payload data rate	Max. 2000b/s
Bit error rate	less than 10-7
Transmitter power	3~12 W RMS
Consumption power (receiving state)	0.8 W
Consumption power (sleeping state)	8 mW
Operating range	3000 meters or 4500 meters (high power option)
Max. depth	Up to 200 meters
Beamwidth of transducer	Up to 200 meters
Operating frequency	7.5-12.5 kHz
Voltage	18-24 VDC

▶ Underwater Pinger UWP27-1

Description

Pingers are guiding devices used to provide an acoustic energy source that can be heard with a hydrophone. Used as an acoustic beacon, pingers commonly produce and send out the regular pulses at a specific rate in water by a transducer. UWP27-1 as an underwater pinger is a small, rugged, and reliable acoustic signaling device used for marking equipment and underwater sites. UWP27-1 offers flexible features that allow you to tailor it to your requirement.

Factory selectable acoustic power outputs, frequencies, and time delays give the ability to order UWP27-1 in many configurations. Using an off-the-shelf 12-volt battery adds the advantage of cost-effective maintenance. UWP27-1 continuously sends out an acoustic signal for up to 10 days.

Application:
1. Rescue Operations.
2. Reconnaissance Sunken Vessels And Objects.
3. Environmental Conservation Activities.

Specification	
Frequency	27KHz
Output Power	10 Watts
Pulse Length	5msec
Pulse Period	1 Pulse per 3Sec
Operating Voltage	12V DC
Battery Type	Lithium
Battery Life	Up to 10 days
Operating Depth	Up to 1830 meters

▶ Pinger application in deep search
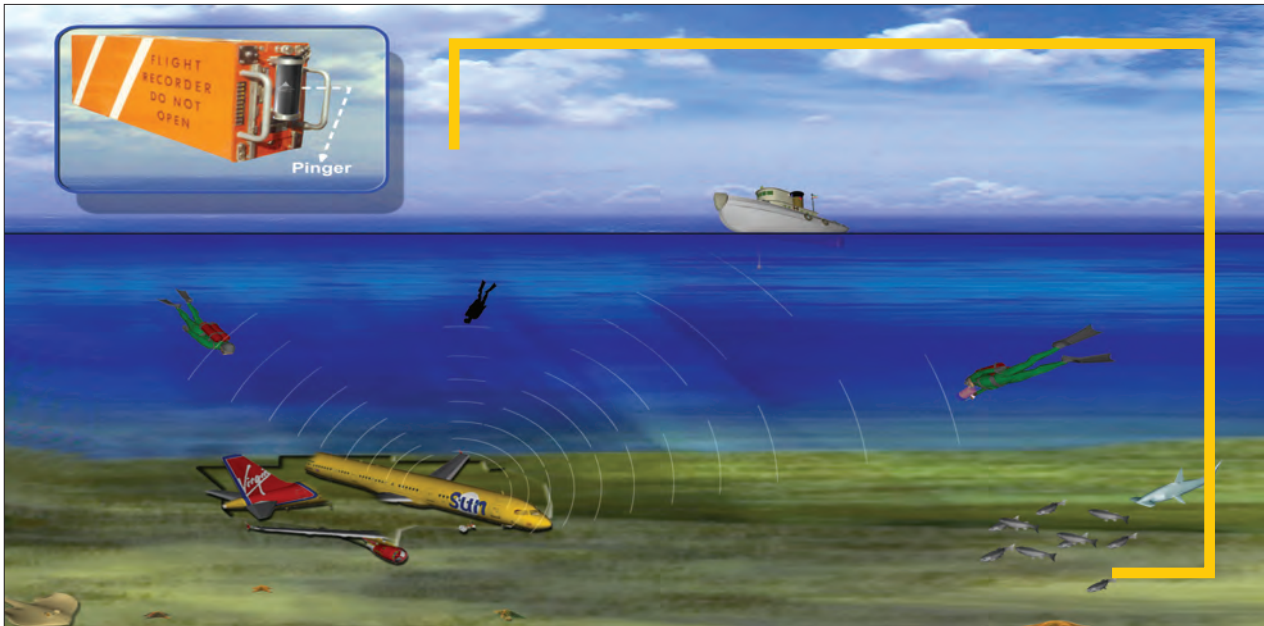
▶ Pinger application in wreckage tracking

Underwater Acoustic Modem UWM10-1

Description

An Underwater Wireless (Acoustic) Modem is the core of any underwater data transmission. The UWM10-1 is a two-way, half-duplex underwater modem that operates in both fresh and saltwater up to a range of 3000 meters with a maximum depth of 700 meters. The data rate of the acoustic link is 5Kb/s in a typical environment and the payload data rate is 2Kb/s. Payload data refers to the user's input data. The modem automatically adjusts to a lower payload data rate of 360 b/s in a very noisy or shallow horizontal environment.

The modem pair forms a completely wireless RS-232 connection between two end equipment (applications) as if they are directly connected through an RS-232 cable. Any RS-232 application can use this modem.
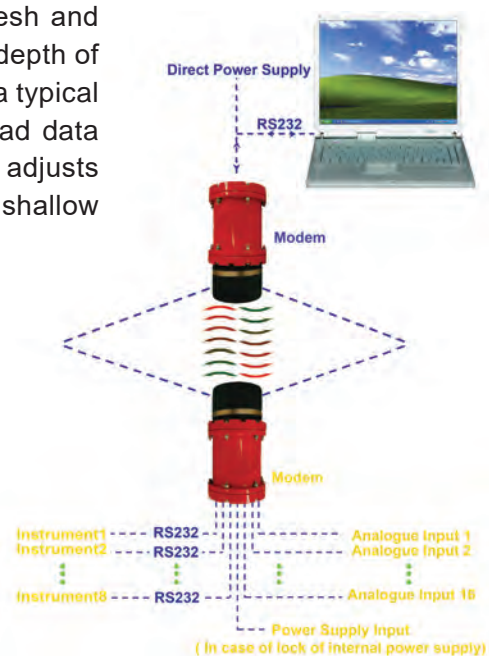
Applications

1. Offshore Oil Field Applications.
2. Real-time Monitoring and Control of Underwater Sensors.
3. AUV/UUV Data Upload, Command, and Control.
4. Acoustic Data Uploading From Moored Underwater Instruments.
5. Manned Submersibles.

Specification	
Data Rate:	RS232 Baud rate: 2500 bits/second
	Payload data rate: 2000 bits/second
	Acoustic link: 5000 bits/second
Rate Adaptation:	Automatically adjusts to operating at a reduced payload data rate of 360 bits/second to combat a very harsh environment
Bit Error Rate:	Less than 10^{-7}
Power Consumption:	Receive Mode: 0.8 Watt
	Transmit mode: 3 or 12 +/- 2 Watts 6 or 24 Watt (with high power option)
	Sleep mode: 8 mW
Maximum Depth:	2000 meters
Working Range:	3000 meters
RS-232 Configuration:	9600 baud, 1 start bit, 1 stop bit, no parity bit, and no flow control
RS-232 Input Data Buffer:	900 Kbytes
Input Voltage:	18 to 28 volts
Peak Current:	1.5 amps at 18 V
	1.5 amps at 24 V with high power option
Beam Width:	210 degrees
Dimensions:	126 mm in diameter, 236 mm in length
Weight out of Water	4.1 kg
Weight in Water:	1.9 kg
Operating Frequency:	7.5 to 12.5 kHz
Center Frequency:	10 kHz
Operating Temperature:	-2 to 45 degrees Celsius
Storage Temperature:	-15 to 75 degrees Celsius
Modem Movement along the Beam Axis:	up to 8 knots
Maximum Impulsive Acceleration:	20g
Wake-up frequency:	Configurable between 0 seconds to 120 seconds, in multiples of 5 seconds

▶ SGC- II Fiber Optical Strap-down Compass

General Description

SGC-II is both a fiber-optic survey-grade IMO-certified gyrocompass and a motion reference unit for marine applications. SGC-II provides true-heading, Roll, Pitch, Yaw even in highly volatile environments. SGC-II is certified to meet the requirements of the International Maritime Organization (IMO) for gyrocompass. The core of SGC-II is a compact strapdown Inertial Measurement Unit(IMU), which contains three accelerometers, three fiber optic gyrocompasses, and a real-time computer. The system is also capable of receiving LOG and GPS information and using them in calculations.

Main Features

• Provides true heading
• Capable of transmitting Accelerometers' information and azimuth angular speeds system from output ports
• The adjustments can be done using a computer with RS232/ RS422 standard ports
• Motion reference for marine applications

Applications

• Fire control system
• Navigation

Operational Specifications

• Accurate calculation of Heading, Roll & Pitch
• Feasibility of shock enduring & intensive vibrations in various marine conditions without any disturbance in accuracy & validity of information
• Long-lasting life in marine environmental conditions
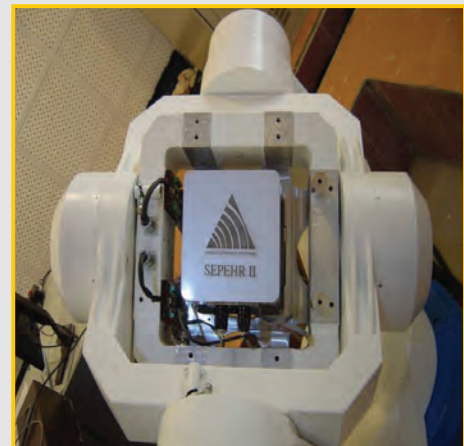
Other Specification	
MTBF	30000 Hours
Dimensional (L * W * H)	265*265*280
Weight in air	Less than 18 kg
Waterproof	IP 66
Material	Aluminum
Power supply	20-30 VDC / 90 W
Power consumption: stable/ instant	17W/50W
Installation Error	Roll, Pitch & Heading offset

Interface	
Inputs & Output	4 port (RS232,RS422,RS485)
Output protocols	NMEA 0183
Baud rates	4800 bauds to 115 kbauds
Output frequency	Up to 200 Hz

Technical Specifications	
Heading accuracy (Dynamic,1 σ, whatever sea – state)	0.1RMS or <0.2 deg×sec (Latitude)
Resolution	0.01 deg
Roll / pitch accuracy	0.02 deg
Resolution	0.001 deg
Range	No limitation
Settling time (all condition)	25 minute
Follow – up to speed	Up to 90 deg / s

Environment	
Vibrations	1mm (2 to 13.2 Hz)0.7g (13.2 to100 Hz)
Shocks operating / survival	30g 6ms /40g 6ms
Operating in Temperature	-10° C to + 50° C
Storage Temperature	40° C to +70° C

▶ Air Data Computer ADC696

General Description:

Air Data Computer (ADC696) measures and computes various navigation parameters in aircraft and helicopters. The ADC processes static and pitot pressure (Ps and Pt), total temperature (Tt) angle of attack (AoA), barometric correction, altitude selection, and flight control input data received in analog, discrete, and digital serial data and pneumatic signal formats. The ADC measures and computes various navigation parameters. These parameters are used in-flight display, autopilot, weapon, fire control, and cabin pressure control system. An extensive built-in test (BIT) provides high-reliability fault detection and isolation capability. The unit packaging is extremely robust and provides standard pitot and static tubing interface. The measured parameters of ADC are as following:

- The angle of Attack
- Mach Number
- True Airspeed (0-1500 Knot)
- The angle of Sideslip
- Baro Corrected Altitude

- Calibrated Airspeed (50-1000 Knot)
- Pressure Altitude
- Static pressure
- Air Temperature
- Air Density

The measured parameters of ADC are as follows:

Features:
- Power Consumption: 10W Max
- Weight : 3 Kg
- Built-in Test
- 1553 Interface
- RS232 interface
- Arinc 429 Interface
- Altitude Encoder
- MTB F≥ 3000 hr

Technical Specifications	
-1,500 to +60,000 feet	Pressure Altitude
-60,000 to 60,000 ft/min.	Vertical Speed
0 to 1000 knots	Indicated Airspeed IAS
0 to 1500 knots	True Airspeed TAS
0.100 to 3 MACH	MACH Number
-70 to +200°C	Total Air Temperature TAT Measurement
-75 to +60°C	Static Air Temperature SAT Measurement
PBIT, CBIT, IBIT	BIT
21 to 29 VDC	Power Requirement
Temperature	Operating -40 °C to +71°C Storage -55°C to +85°C
Shock, Vibration	MIL-STD-810F
EMI/EMC	MIL-STD-461E

▶ DME Ground Transponder

DME795

The DME Ground Station is a wideband navigation aid system that provides range information. It is compatible with all existing Airborne DME interrogators. The system is designed and manufactured to meet the requirements laid down in EUROCAE ED-57, RTCA DO-189, and ICAO Annex 10. Besides, all devices, material, and tests are following the above standards.

The DME Ground Station comprises two sections: Transponder and Antenna.

The DME Ground Station is fully solid-state with state-of-the-art technology using a reliable FPGA based digital control loop for transmitter pulse shaping. To achieve high reliability, the redundancy is considered in system architecture. The modularity of the system is an important criterion that decreases diagnostic time.

This system has 252 channels from 962 to 1213 MHz frequency range. This system operates in two modes, "X" and "Y" with 200 nautical miles coverage and capability to handle 200 aircraft simultaneously.

Features

- Built-in-Test
- Extremely high system reliability, thanks to full redundancy and low repair time
- Simple maintenance and low life cycle costs
- Fully solid-state microprocessor controlled dual beacon equipment
- Modular Tuneless Solid State Power Amplifier
- Proven, time-tested antenna technology; EUROCAE and ICAO flight certified.
- A high capacity system managing over 200 aircraft interrogators simultaneously
- With both full local and remote, for PC control and status indication
- Easy collocation with all types of VOR (DVOR) equipment.
- A user-friendly interface allows easy full control of the DME Ground Station system.
- Support SNMP, UDP, and TCP/IP

Technical Specification	
Transmitter:	
Transmitter Frequency Range	962 MHz to 1213 MHz
X - Channel Pulse Pair Spacing	12 μs
Y - Channel Pulse Pair Spacing	30 μs
Pulse Shape and Spectrum	According to ICAO Annex 10
Rise time	Less than 3 μs (10% to 90%)
Fall time	2.5 μs (90% to 10%)
Pulse Spacing	According to ICAO Annex 10
Peak Output Power	Max. up to 1.5KW

Reply Delay	50 μs nominal in X mode , 56 μs nominal in Y mode Programmable from 40 μs to 75 μs
Reply Delay Stabilization	±0.1 μs
Inter Pulse Pair Spurious	at least 50 dB below weaker pulse peak power
Channels	252 (1X - 126X, 1Y - 126Y), 1 MHz Channel Spacing.
Modulation type	AM
Pulse width	3.5 ± 0.5us Gaussian pulse according to ICAO Annex 10
Duty Cycle	5% max
Frequency Deviation max	10ppm

Accuracy: ±50 m

Technical Specification	
Receiver	
Transponder Reply Efficiency	> 70 %
Receiver Frequency Range	1025 MHz to 1150 MHz
Receiver Dynamic Range	80 dB
Receiver Sensitivity	- 92dBm for 70% Reply Efficiency
Receiver Frequency Stability	±12 kHz
Receiver Bandwidth	350 ± 50kHz
Receiver Recovery Time	1µs

Technical Specification	
Antenna	
Antenna Gain	8.0 dBi main beam
Gain, horizon	6 dBi
Circularity	± 1 dB max on the horizon
Antenna Azimuth Coverage	Omnidirectional
Antenna Polarization	Vertical
VSWR	Less than 2 concerning 50 ohm input
Power Rating	10kW input power with 4% duty cycle

▶ Flight Data Recorder FDR100

Product Applications

In the beginning, this system was developed for aviation accidents and incidents analysis. But nowadays with scientific progress in airplanes and avionic equipment, could be used for other applications like after-flight operations analysis and pilot training. This application makes FDR as a strategic part of the avionic industry. In total, FDR has an undeniable role in aviation industry safety.

Main Specifications
• Designed and assembled in I.R.Iran
• Designed completely digital with solid-state memory
• IEI innovative and exclusive design
• Compatible with most airplanes

Technical Details
• Recording FDR Parameters for 20 hours
• Recording 3-channels of CVR for 20 hours (each channel)
• The capability of preserving the recorder information in below conditions:
• High-Temperature Fire (1100°C for 60 minutes)
• Low-Temperature Fire (260°C for 10 hours)
• Impact Shock (3400 g in 6.5 milliseconds)
• Fluid Immersion (immersion in fluids that may encounter)
• Deep-Sea Pressure (60 MPa for 30 days)
• Static Crush (22.25 kN for 5 minutes in at least 4 points) Penetration Resistance (227 kg weight dropped from a height of 3m)

▶ Description

• Design, positioning, supply equipment, installation and commissioning mobile phone network sites on a turnkey basis

• Installation and commissioning mobile network emergency sites

• Manufacturing and supply of mobile non-exclusive equipment including mast, battery, rectifier, telecom special cabins, etc.

• Maintenance, improvement, and optimization of mobile networks and telecommunication infrastructure Design, supply, installation of equipment and implementation of all communication, telecom, and computer networks

• Partnership with local and foreign companies in relevant contracting, manufacturing, and commercial affairs

▶ Some Projects

• Purchase of project equipment and services for reinforcing and replacing masts in the west part of the country

• Design, positioning, equipment supply, installation, and commissioning more than 3000 BTS sites nationwide

• Performing Swap to increase the capacity of and enhance network for more than 2000 sites nationwide

• Development and complementing national fiber-optic (Noor II)

• Maintenance, logistics, improvement, and executive operation of parent network for communication and telecom infrastructure of Kerman, Khoozestan, West Azerbayejan, Markazi and Ardebil provinces Design of APF automatic frequency and design of ACP automatic cell for communication network of Alborz, Booshehr, Hormozgan and Khoozestan provinces

• Maintenance and technical support for facilities of infrastructure centers in West Azerbaijan Province

• Supply, installation, and commission of power equipment in centers affiliated to telecommunication Infrastructure Company

• Maintenance, optimization, development, and upgrade of mobile communication networks quality for Alborz and Booshehr provinces

• Design, positioning, supplying equipment, installation, and commission of GSM Repeater sites
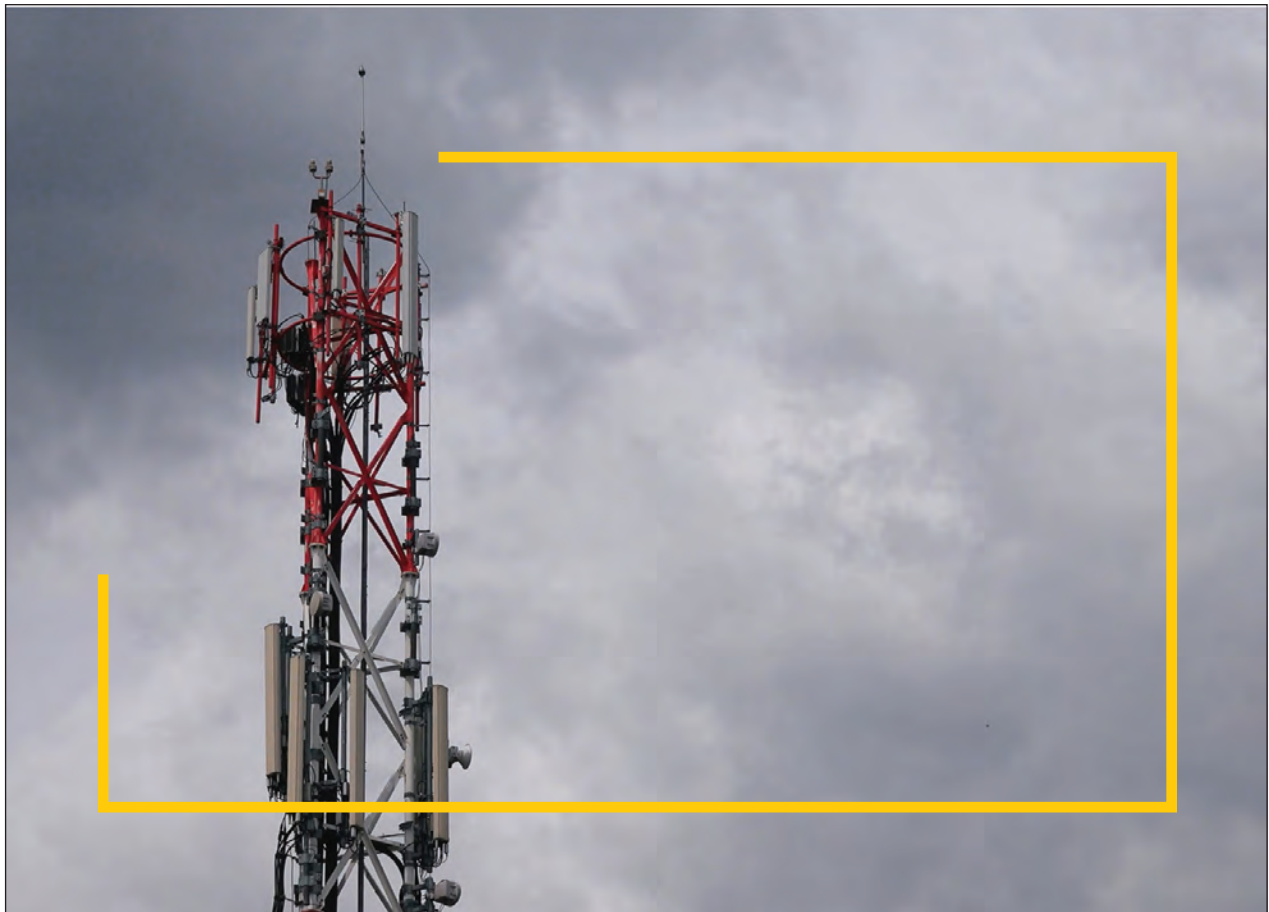
▶ Telecom & ICT

Engineering, Design, and Implementation of Communication, Telecom, and ICT Projects

• 1st rank communication contractor awarded by Plan & Budget Org.
• Member of Iran Telecommunication Syndicate
• Top telecom contractor for the turn-key method in mobile telecommunication and infrastructure
• First domestic contractor in managing mobile telecom network service

Telecom & ICT Department has been active since 2004 in management and providing engineering services in communication, telecom, and ICT projects and can provide technical and engineering services including design, consultation, purchase, engineering, goods supply, installation, commissioning, supervision, and technical logistics.

Information Technology Solutions

Data Center Solution

Today's Data Center is a dynamic environment with evolving systems, technologies, logical architectures, and new business models, such as Cloud computing. The perfect data center environment requires the ability to handle a large number of data cables, the ability to efficiently handle high heat loads that are variable and diverse, and the ability to adapt for future technological and cooling advancements. data center's system addresses all of these needs in a highly adaptable space that provides the ability to respond quickly and easily to the client, organizational and technological changes – all while being cost-effective in both construction and operation. With data center's access flooring solutions, you'll be able to address all of the demands of a data center while meeting the everyday needs of its users in a secure and reliable environment.
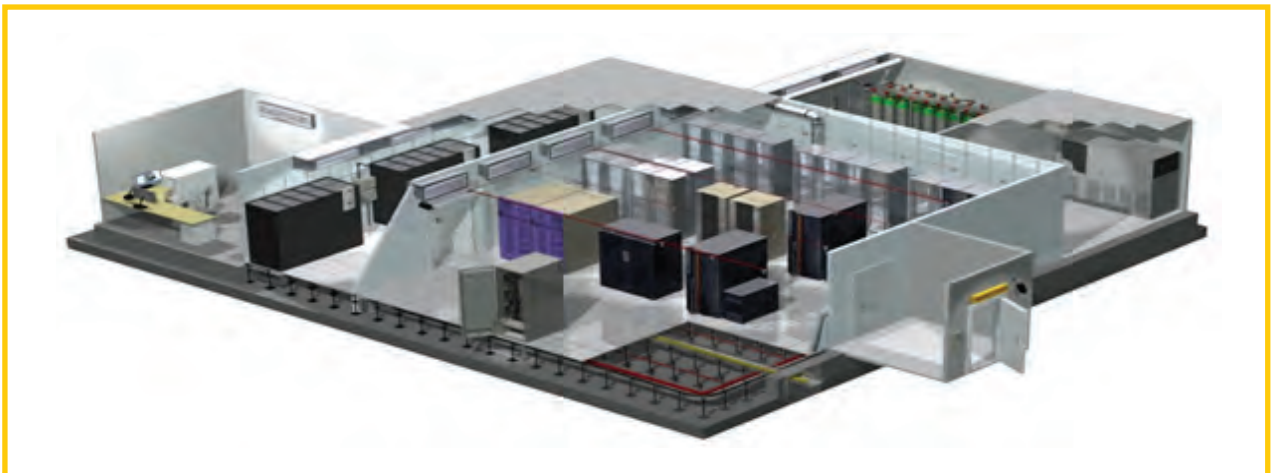
This Data Center offers the consultative assistance needed and the products required to create a properly balanced, optimized, and efficient Data Center. will:
• Review the Data Center in terms of performance and efficient operation and
• Create a balance between power, cooling, and density needs for optimum energy efficiencies and application/systems performance.
• Help make the most of your cabling infrastructure and thereby maximize the output of the IT investment. Good design is the core of all high performing data centers. In addition to designing standards-compliant products specifically for data center environments, we work with you to help you get the data center design right from the start. Our experience working directly with customers around the globe gives us first-hand knowledge of data center challenges. This real-world experience means we know that some of the greatest efficiencies can be gained through data center maintenance and operation.

Building:
• Use of the building (dedicated to DC or not)
• Multiple-use or multiple tenants
• Security against earthquake
• Risk Evaluation based on PML
• Evaluation based on Building Standard Act
• Comprehensive earthquake-proof planning standards of the government facilities and its prevention.
• The estimated seismic intensity of 10% probability occurrence in the next 50 years

Security:
• Security Management Level, Campus, Building, Server Room, Rack

Electric equipment:
• Redundancy of power reception line
• Redundancy of power supply path (Power receive equipment to UPS input)
• Redundancy of power supply path (UPS to server room PDU)
• Redundancy of in-house power generator
• Redundancy of UPS equipment

Air conditioning equipment:
• Redundancy of heat source/air conditioning equipment
• Redundancy of power supply path to heat source/air conditioning equipment

Communication equipment:
• Redundancy of drop wire path/carrier
• Redundancy of in-building network

Equipment management:
• Operating management system and operation (including training of operators)
• Manned management system

▶Geographical Information System

One of the most issues in applying the geographical information systems in a large scale enterprise in a secure and restricted environment is sharing and exchanging data between users concerning the authority and authentication consideration. In this software, we solve the problem of sharing and exchanging geographically based data between users concerning all aspects of consideration. The result is increasing in quality of service.

System Definition

The C2GIS is software which services in a web-based environment and allows users access to the right data and Geo-based data based on their authority and access level at any client. Any user can access the owned or shared workspaces in the system. Also, any user based on his or her authority and access level can work with menu bar, desktop, toolbars, specific information, and interact with other authorized users. GIS system uses the OGC standard to integrate with other software or services via the web. The Open Geospatial Consortium (OGC) is an international voluntary consensus standards organization. In the OGC, more than 400 commercial, governmental, nonprofit and research organizations worldwide collaborate in a consensus process encouraging development and implementation of open standards for geospatial content and services, GIS data processing and data sharing. Ideally, when OGC standards are implemented in products or online services by two different software engineers working independently, the resulting components plug and play, that is they work together without further debugging. OGC Web Services (OWS) are OGC standards created to be used in web application integration.

ISIGIS Goals

Establishing a secure and restricted area for sharing and utilizing the Geo- Based information Reducing the access time to Geo- Based information
Managing of supply and demand Geo-Based content in a secure and restricted area
Creating a reliable and consistent Geo-Based information sphere

▶ Office Automation System

Office automation refers to the varied computer machinery and software used to digitally create, collect, store, manipulate, and relay office information needed for accomplishing basic tasks and goals. The backbone of office automation is a LAN, which allows users to transmit data, mail, and even voice across the network. Raw data storage, electronic transfer, and the management of electronic business information comprise the basic activities of an office automation system. In its basic form, information exists as letters, memos, graphs, records, messages, and so on. When that information is electronically transferred, raw data is exchanged between two or more office employees, either at the same or different locations.

The reasons why you should automate your office workflow

• Technologies that are integrated across software and hardware devices can simplify workflow and develop smarter workplaces through activities such as process automation.
• An automated workflow can optimize productivity and increase profitability in any organization.

• Manual document processes can leave an organization vulnerable to inefficient customer services.

• Electronic document processes have the power to greatly reduce these risks and improve reliability.

• Incorporating automatic data capture and channeling information to be used intelligently across the organization can enhance the quality of service and raise the standard of company performance and output.

• Efficient document processes can mean the difference between keeping and losing customers.

• By automating workflow a company can significantly reduce excess use of paper and power consumption and play a large role in meeting substantial sustainability goals.

▶ Computerized Maintenance Management SYSTEM

CMMS is a software package that maintains a computer database of information about maintenance operations. The CMMS is used by engineers to collect, store, and analyze data on the inventory, Industrial Centers, corrective and preventive maintenance in addition to other activities related to any devices and equipment. This software is useful for Industrial, factories, Military, Workroom, health center, productive organization, Civil, and any other center that has the equipment and should maintain them. Now more than ever, the ability to manage maintenance is vital to your organization's success. No matter what industry your organization is in, assets must be maintained to ensure they operate properly. To achieve this, you must have an effective method for tracking and analyzing maintenance information. CMMS is the solution that will work for your organization. Everything you need to manage your maintenance information is at your fingertips, including asset tracking/history, work order tracking, preventive maintenance, procedures, purchasing, inventory control, labor, and scheduling.

Document Management System

Paper-based and electronic information in the workplace grows daily at an uncontrollable speed. Keeping that information secure and in regulatory compliance is very challenging. Locating this information can also take a lot of time and effort. document management software can convert intellectual property into a secure organized electronic library. The paperless office or organization is secure, compliant ready, reduces cost, and builds process efficiencies. Locate information in seconds with a powerful search engine that saves time and ultimately reduces operations costs.
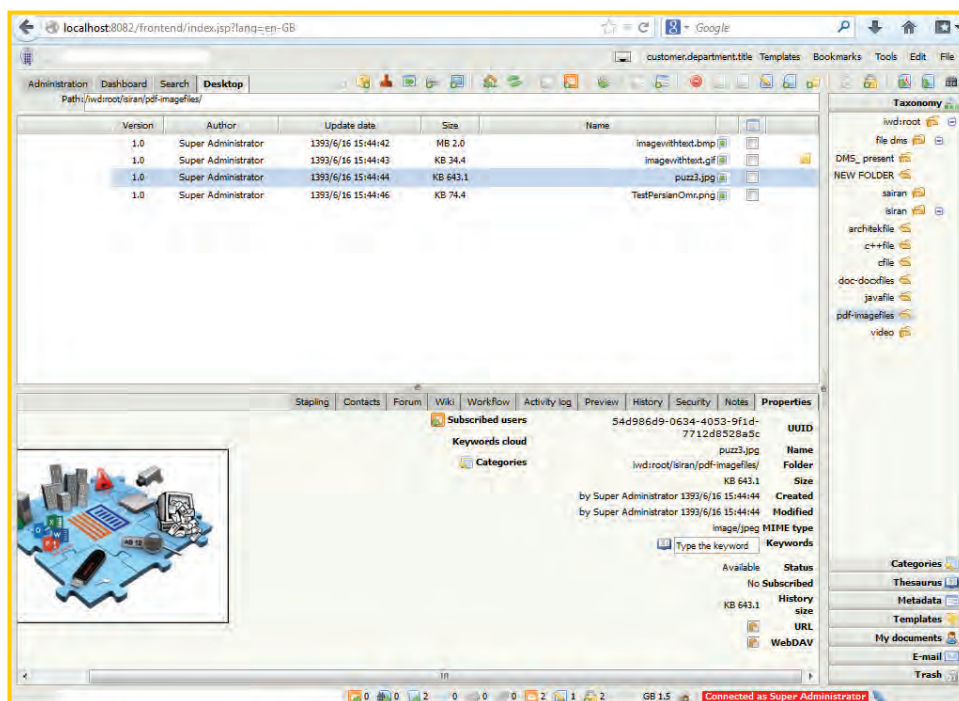
Electronic Document Workflow

DMS can be made even more productive by the addition of an electronic document workflow system to eliminate the paper processes. Workers save time and money by electronically moving documents around the workplace for review and approval. Organizations typically have several internal processes for tasks such as order processing, purchase requests, travel expenses, and so on. The electronic document workflow module brings order to these independent processes in a transparent, dynamic, and robust fashion making it a key part of the document lifecycle.

Enterprise Resource Planning

Businesses today are more complex than ever, placing constant demand on technology to help them be agile and to perform at maximum efficiency. ERP has the flexibility to meet these constantly changing economic and unpredictable business requirements by providing stability, innovation, and right-time technology solutions.

Core Solutions

ERP solutions collectively deliver the insight, agility, and controls essential to running a profitable business. Prioritizing gradual evolution over continual 'revolution,' we set a high bar for the usability and relevance of every feature, ensuring that new features built into the product are stable and designed for the long term.

▶ Learning management System

The learning process needs a mechanism to represent the knowledge (using different resources), allowing the interactions with it and sharing with other persons. In this sense, E-Learning is becoming an important tool to support the learning system to achieve these goals. ISILMS is the main software of the E-Learning solutions; we can give it this definition. ISILMS "is the software that automates the administration of training events. All LMS systems manage the login of registered users, manage course catalogs, manage online virtual classes, track learner activities and results, and provide reports to management. It is aimed at academic institutions as opposed to corporate training.

▶ E-Payment Solution

The E-Payment Solution is a platform to support payment across vertical markets in both the virtual and physical worlds. With E-payment, you and other partners can offer your customers the next generation of online and wireless payment products. Consumers can make payments for their purchases from any internet-enabled device by selecting the payment method. For example, consumers can make their payments by direct debit, credit cards, or prepaid cards. By authorizing companies to take advantage of E-payment solutions, customers can now build their payment networks, interconnect with industry leaders and merchants across the country, or simply make their existing e-commerce and m-commerce initiatives more productive. E-payment Solution offers front-office applications on a wide range of delivery channels such as ATM, Kiosk, EFT-POS, Mobile, internet, and Pin pad. E-payment solution supports a broad spectrum of payment media like chip cards (smart cards, java cards, memory cards, and hybrid cards), magnetic stripe, and contactless cards.

▶ Border Surveillance Smart System

Considering border as the beginning point of country safety, and also geographical and climatic situations of the border, would clarify the importance of using technology for border control. Severe climatic situations such as the impossibility of crossing some border gates in winter, summer, and something like that, and also the extent of the border, will cause much more time and resource usage. In this document, we will propose the border surveillance smart system and we will give a proper solution for architecture, design, and development of the total border C4I system. We also introduce a view of the required system by understanding and interpretation of operational and systematic requirements.

We don't want to introduce the details of this system. Some topics like information architecture, information flow, management, and cooperation of information systems like radars, cameras, other sensors, and also other information technology systems, will be concerned. This document will give a clear view of operational situations to all levels of commanders.

▶Profiling Software

The main purpose of the profiling system in the first phase is to provide connectivity to relational databases, to perform analysis operations in graphs. End-users can interactively search databases and graphs. Furthermore, the ability to observe "Object Relations" is facilitated.

Features

• Connecting to relational databases such as MS SQL Server, My SQL, and PostgreSQL.
• Data Modeling:
• Defining information objects in the form of 'Event' and 'Entity'.
• Defining the properties of events and entities.
• Defining the relations between events and entities.
• Defining 'Actions' related to objects.
• Defining visual features of objects based on the values of their properties.
• Data source and model mapping
• mapping events, entities, and their properties to the corresponding properties to data sources.
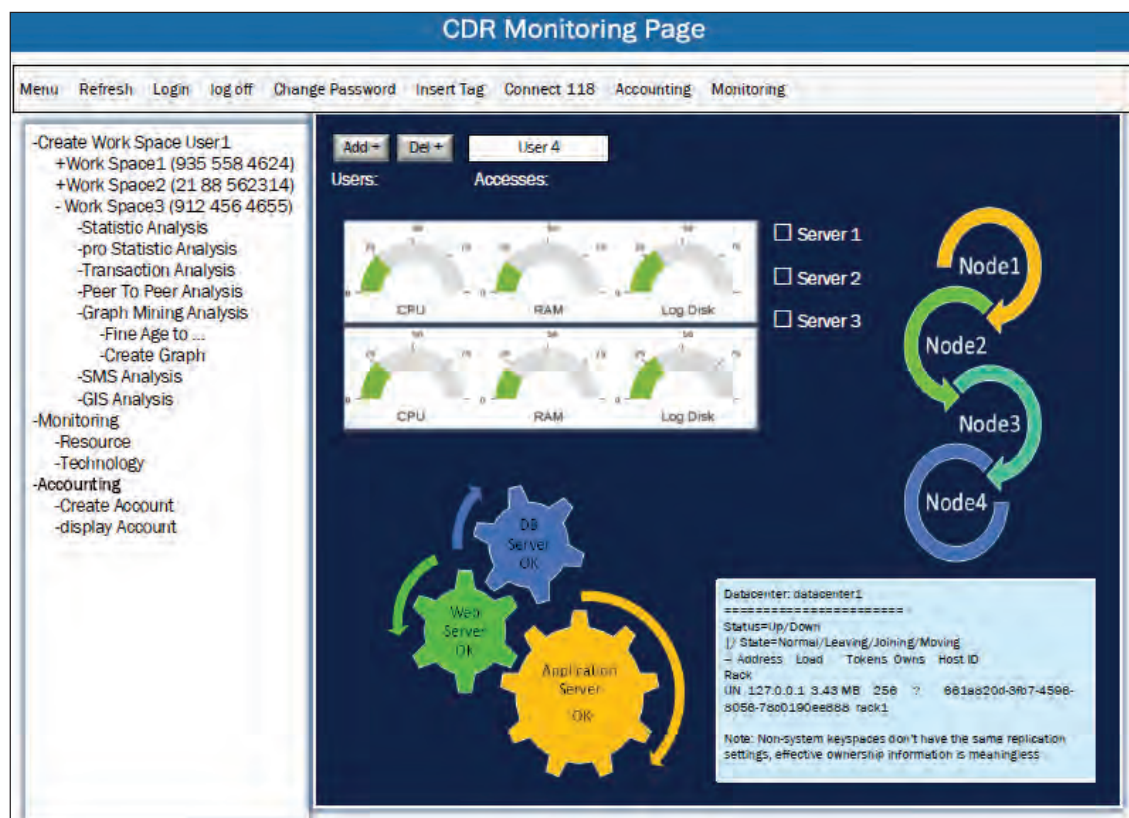
▶ SCADA Software

This system is used for SCADA and monitoring all industrial activities and events. Based on special features and dynamic design, it can be used in important ad critical parts and enterprises. Using this software we can guarantee high level and safety and confidence in industrial and critical places.

This system can work with standard PLCs and industrial control systems using standard and international protocol.

Features

• Support industrial protocols such as Modbus, S7, and SNMP
• OPC_UA Support
• Dedicated internal protocol for client and server communications
• Client-Server architecture
• Based on open-source operating systems
• The graphical user interface in WEB and desktop level
• Ability to connect PgSQL
• Redundancy capability
• Graphical design environment for dynamic GUI generation using scripting

▶ BMS Software

BMS (Building Management System) or building automation system is a computer-based control system that controls and monitors mechanical and electrical equipment of buildings such as ventilation, lighting, power system, fire, and security systems. This system contains software and hardware used to control all building activities.

Features

• Illumination control
• Electrical power control
• Fire alarm systems
• Lifts, elevators control
• Plumbing
• Closed-circuit television control
• Access control
• Alarm monitoring
• Security automation
• Energy saving
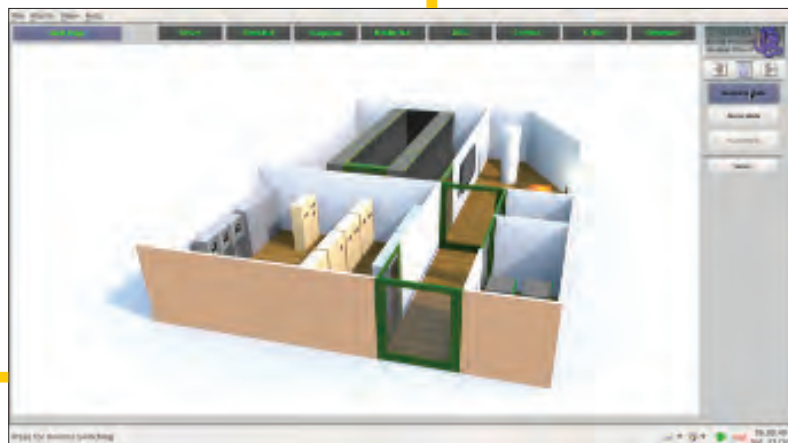
▶ MASAF Refile Simulator

MASAF simulator has been developed to determine and improve the level of light weapon shooting skills. This system simulates the sound and the kick of the weapon without the need for military ammunition. This allows shooting in various simulated environments under different scenarios and conditions. Applying the MASAF system, in addition to a significant reduction in the financial and health costs of shooting training, deepens the process of training. It also provides the opportunity for users that rarely experience it in real life.

Features

• Reduces the cost of ammunition, transportation, and manpower
• Getting zero the losses and injuries caused by human error while the use of devices
• Create a variety of atmospheric conditions and shooting in the field
• Create conditions wherein the real-world is rarely possible

▶ RASAD (Automated Ballistic Identification System)

The RASAD automated ballistic imaging database contains evidence tool marks recovered from crime scenes (Evidence Objects) and tool marks acquired from a laboratory or other controlled environments (Test Objects). Electronic databases created in RASAD ABIS and modern communication networks make it possible to access other ABIS databases for sharing and comparison of information. RASAD system is specifically customized for ballistic tool mark identification. For the rest of this catalog, the features of the RASAD system in the field of ballistic toolmark identification are expressed in detail. The core of RASAD system consists of two main frameworks: a state of the art ballistic image acquisition system and an advanced automatic correlation system.

Features

• A wide range of tools and information dedicated to experts to save time and gain more effectiveness in examination of ballistic tool marks.
• Handling any size of the database.
• High-quality forensic-approved imaging of ballistic surfaces
• Using ballistic scanners
• Generation of forensic-quality data arrays: bullets, cartridge cases, fragmented specimens, smoothbore ammunition components
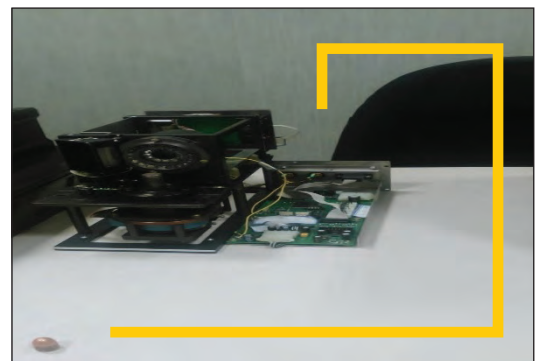
▶ Smart & Non-Smart Cards Department

Hundreds of million pieces of smart cards are produced in a variety of types. Utilizing the professional capacity, modern types of machinery, and implementation of quality management systems, The most important and well-known products include public phone cards, SIM cards, fuel smart cards, credit cards, subway smart and magnetic tickets and a variety of scratch cards (charge cards, IN network cards, etc.). The compliance of products with customer's requirements and on-time delivery are the strategies of this company and what discerns Electronic Components Industries Company. From the other competitors, in addition to experience in the production of semiconductor components, advanced management, and production control systems, codified manufacturing processes, and micro module product line is the experience to carry out macro and national projects.

▶ Smart & Non-Smart Cards

Cell Phone SIM Cards
• Java and Native Operating systems 16 to 256 Kb memories 2G / 3G / 4G and LTE
• Supporting different networks (GSM, CDMA, WLL)
• Supporting the requirements of different operators
• Supporting 3GPP, ISO, Java standards
• Software development and test tools

Public Phone Cards
• Chip with specific country area code and standard code
• Bit structure with verification and anti-hack mechanism

• +2G and Euro-Chip
• New algorithms

Charge Cards
• Pasteboard body material,
• Black layer and plastic cardboard
• Label Scratch or Hot-Stamp cover
• Suitable security of the product
• Laser or Inkjet personalization

Other Cards according to customer needs
• In addition to specific smart cards in the field of telecommunications, ECI provides software development
• tools, related software, added-value services, and various card readers as well. ID CARDS
• PVC & PAPER BODY
• DIGITAL PRINTING FOR VARIABLE DATA MULTILAYERS

Smart Cards for the Transportation Sector

Today, transportation is one of the most important topics in urban management. Perhaps arguably one of the most significant expectations of every citizen from civic authorities is to provide appropriate transportation and facilitated services. Bus, subway, and other urban transportation systems are being used for years in our country but what have evolved these systems during recent years and have positive impacts on citizens' satisfaction is the application of smart and magnetic cards as electronic tickets.

We currently are one of the most important suppliers of smart cards in the field of urban transportation and offers the following products according to customer requirements and demands:

Contactless Cards
• Mifare and DESFire-Mifare Standard
• ISO14443 Standards
• ISO7810 Standards
• ISO10373 Standards
• 1 to 4 Kb memory capacities
• PVC, PET ... Body
• Offset, thermal, laser body printing
• Feature for adding signature panels, magnetic stripe, and ...

Magnetic Cards
• Pasteboard magnetic ticket cards
• Plastic magnetic ticket cards
• Offset or Digital printing
• Special cardboard
• Hi-Co and Lo-Co magnetic strips
• Laminated body with PVC material

▶ Smart Cards for Financial and Payment Sector

One of the fields in which card using (as magnetic strip cards) has decades of background is banking systems. Today, anyone possesses at least one magnetic stripe or smart card that is connected to his/her bank account by which he/she performs payment operations. Using smart and magnetic bank cards or a combination of both, besides, to getting rid of carrying money operations brings security and facilitating payment. This issue has imposed the use of smart cards in payment and banking fields as the second broad area of smart card applications in the world.

In this sector in addition to global standards, the national guidelines and requirements should also be noted and therefore that is why the product diversity in this area is very widespread and according to customer needs, the appropriate cards can be presented. Among the most important products in this area followings can be cited:

Hybrid Cards

Hi-Co and Lo-Co magnetic strips in the form of laminated body with PVC material Microprocessor chips having the relevant security mechanisms EMV standard Memory size up to 256 KB

ECI, in addition to specific smart cards in the field of payments, provides software development tools, related software, and various card readers as well.

Smart Cards for Payment and Financial Sector (special cases)

In addition to smart cards in the banking sector as payment cards, there are currently other cards in the public which somehow carry out payment and financial services. Perhaps the best-known cards in this field are Fuel Smart Cards which have circulated in the past few years within the country.

to meet customer requirements in this area has tried to collect and provide the products with different features and different security levels. The most important products in this area are as follows:

• Fuel Smart Cards   • Hekmat Smart cards

• The products in this area have a combination of the following features: Microprocessor chips/ memory with the security mechanism
• Native or Java operating systems memory sizes from 32 to 256 KB
• Compound laminated body
• Key mechanism with the help of HSM or SAM
• ECI, in addition to offering different products in this field, provides services such as software development tools, customer-specific software design, various card readers, applet design, consulting, etc. as well.

Smart Cards for Identification Sector

Today, manipulation and forgery of documents are increasing particularly in the form of documents issued by governments in different countries such as National Identity Card, driving licenses, passports, etc. With the development of innovative technologies and the possibility to increase the security factors, the governments are seeking to replace these documents with the most secure ones. It is just for few years that smart cards along with secure bodies are being applied by several countries to implement various projects including national ID smart cards, driver's license smart cards, health smart cards, etc. utilizing the world's modern technologies and in cooperation with several domestic and foreign partner companies have established necessary preparation for the implementation of identification cards project with high circulation and appropriate safety factors. Among the products in this area the followings can be cited:

• National Identification smart cards
• Healthcare smart cards
• The main features of identification cards are the followings: Java and Native operating systems
• Contact and non-contact chips
• Guilloche printing, iridescent and micro-text printing OVI, UV, IR
• MLI, image laser printing, CLI
• Anti-copying, hologram, micro text features, etc.
• All the above features are classified into three different security levels and can be implemented according to customer needs.

▶ Scratch Cards

Scratch cards are typically in the size of credit cards and contain confidential information which is covered by a special material that can be scratched. This information contains the charging of prepaid SIM cards, password to enter a system such as an internet network, IN, etc.

The body of these types of cards is made of two cardboard substances (ordinary cardboard and black layer cardboard) and plastic (PVC, PC, etc.). In the process of producing these types of cards, confidential information shall be printed on the cards by injector laser printers and then will be coated with special materials. Two typical methods in the operation of covering confidential information include label and Hot-Stamp methods which are utilized depending on customer order and type of application. in addition to providing a variety scratch cards for domestic cell phone operators (MCI and Irancell and Right) as charging cards as well as exporting scratch cards to countries of the region, can provide various scratch cards with following features:

• Ordinary and Black layer
• Scratch with label and Hot-Stamp
• Inserting information in 1 line

▶ Smart Measuring and Distribution

• Electromagnetic Flowmeter
• No mechanical moving parts, long durability and accuracy
• Scratch with label and Hot-Stamp
• No need for periodic calibration, no maintenance required Data logger with flash and memory
• Designed, manufactured and calibrated to ISO 9001-2000
• European CE certified
• Optional Bluetooth, GSM, SMS systems Built-in earth (grounding) electrode
• Card Reader
• Broad application range
• All types of fluids and conductive liquids Slurries
• Chemical Industries
• Petrochemical Industries
• Water & sewage Installations

Smart Electromagnetic Water Meter ELC-Z
Easy Mag 800 ELC-Z

• Applicable to agricultural and industrial water wells and diesel pumps
• No periodic calibration required
• Without mechanical parts in the waterway
• Can be installed in horizontal or vertical modes
• Internal battery with five-year guarantee
• Accuracy rate of 0.2%, 0.5% and 1% according to order
• Possibility to apply quota and tariff
• Ability to detect well ventilation
• Ability to measure return water

TRANSMITTER	
Power Supply	| 220 V AC - 24 V DC (Battery-Based)
Output	Pulse output, Alarm output, Modbus RTU output isolated 2000v, M-bus, Optical port IEC65021, Mifare Card Reader with SAM Card Detect, Alarm Dry Input
Screen	4.8 inches graphical screen
Languages	Persian, English, Turkish
IP	IP68
A/D Converter	24-bit resolution
Sensor	Mechanical shock sensor, Magnetic field detection, Cover open sensor
Liquid Minimum Conductivity	5 μs/cm

FLOW (FULL BORE)	
Q4	15 m/s
R	100, 160, 200, 270

SENSOR	
Avalible Sizes	DN25 to DN2000
Materials of Liner	Polyurethane, Fiber Glass, Epoxy Resine, EPDM, PTFE
Standards of Flanges	DIN – ANSI - ASA
Electrodes	AISI316L, Tantalium, Titanium, Hastelloy
Body Material	AIS1304 Stainless Steel, ST37
Color	Polyurethane
Materials of Liner	Polyurethane, Fiber Glass, Epoxy Resine, EPDM, PTFE
Temperature of Liquid	0 to +80 °C
Installation Method of Transmitter	Compact and Separate
Operating Pressure	PN6, PN10, PN16, PN25, PN40 and more

DATA LOGGER	
Data Logger	GPRS, SD Card (up to 8 GB)

▶ Easy Mag 800 INS (Battery-based Diaphragm valve)

• Applicable to agricultural and industrial water wells and diesel pumps
• No periodic calibration required
• Without mechanical parts in the waterway
• Can be installed in horizontal or vertical modes
• Internal battery with five-year guarantee
• R200, Accuracy rate of 0.2%
• Possibility to apply quota and tariff
• Ability to detect well ventilation
• Ability to measure return water
• No need to consider a distance between meter and other connections (0D-0D)

TRANSMITTER	
Power Supply	220 V AC – 24 V DC (Battery-Based)
Output	Pulse output, Alarm output, Modbus RTU output isolated 2000v, M-bus, Optical port IEC65021, Mifare Card Reader with SAM Card Detect, Alarm Dry Input
Screen	4.8 inches graphical screen
Languages	Persian, English, Turkish
IP	IP68
A/D Converter	24-bit resolution
Sensor	Mechanical shock sensor, Magnetic field detection, Cover open sensor
Liquid Minimum Conductivity	5 µs/cm

FLOW (FULL BORE)	
Q4	15 m/s
R	200

SENSOR	
Avalible Sizes	DN50 to DN150
Materials of Liner	PE100
Standards of Flanges	DIN – ANSI - ASA
Electrodes	AISI316L, Tantalium, Titanium, Hastelloy
Body Material	Cast Iron
Color	Polyurethane
Operating Pressure	PN16
Temperature of Liquid	0 to 80 °C
Installation Method of Transmitter	Compact

DATA LOGGER	
Data Logger	GPRS, SD Card (up to 8 GB)

▶ Easy Mag 800 INS
(Battery-based Diaphragm valve)
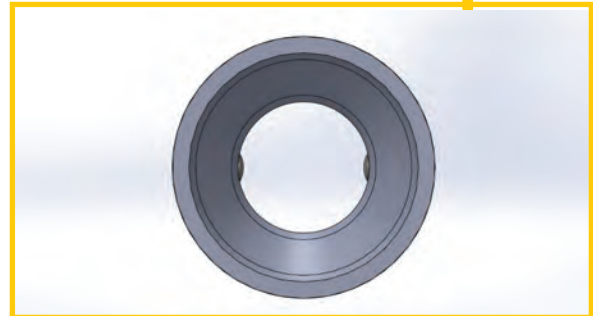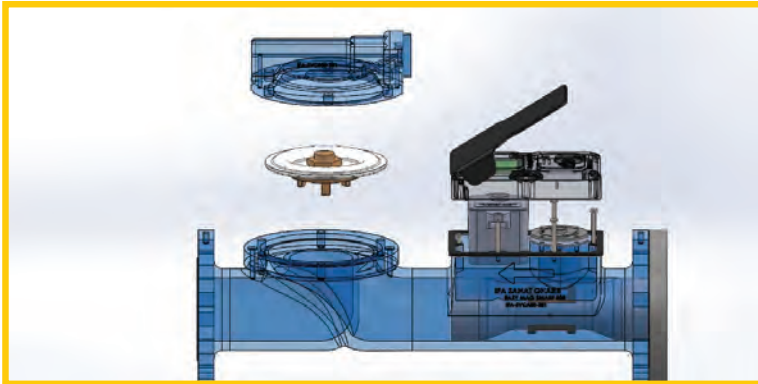
▶ Flanged Electromagnetic Flow Meter (Metal Body) Easy Mag 400

• Accuracy of %0.2 and %0.5
• No obstacles and no pressure drop in the flow path
• Possibility to present the product in the form of Reduced-Bore (No need to consider a distance between flow meter and other connections accordance with order)

REDUCED BORE | cloud services | IP68 | MODbus | GPRS

TRANSMITTER	
Power Supply	220 V AC – 24 V DC
Output	4-20 mA, Pulse output, Alarm output, Modbus RTU output
Screen	1.2 inches graphical screen
Languages	Persian, English, Turkish
IP	IP68
Liquid Minimum Conductivity	5 µs/cm
FLOW (FULL BORE)	
Q4	15 m/s
R	100, 160, 200, 270

SENSOR	
Avalible Sizes	DN25 to DN2000
Operating Pressure	PN6, PN10, PN16, PN25, PN40
Standards of Flanges	DIN – ANSI - ASA
Electrodes	AISI316L, Tantalium, Titanium, Hastelloy
Body Material	AIS1304 Stainless Steel
Color	Polyurethane
Materials of Liner	Polyurethane, Fiber Glass Epoxy Resine, EPDM, PTFE
Temperature of Liquid	0 to +80 °C
Installation Method of Transmitter	Compact and Separate

▶Ultrasonic Transit Time Flow Meter

• Suitable for use in clamp-on or wet (no need for pipe cut)

• Applicable for drinking water, river water, industrial wastewater, acid, alcohol and low viscosity oils

ITEM	DESCRIPTION
Operating Principal	Ultrasonic Based on Transit Time
Measurment Time	500 ms
Accuracy	+1%
Repeatablity	0.2%
Screen	LCD screen to display information including Flow, Total Volume, Time
Output	Adjustable Analog 4-20 mA, Adjustable Signal 0-9999 Hz , Relay Output
Advantages	Data Collector and Recorder in Different periods of Time , Noise Prevention Technology, Voltage Regulator
Fluid	Portable Water, River Water, Industrial Waste Water, Acid, Alcohol
Pipe Material	Steel, Stainless Steel, Iron, Cast Iron, Cupper, Aluminum, PVC, Polyethylene
Pipe Size	DN25-DN5000
Power Supply	220 V AC, 12-24 V DC
Transmitter IP	IP67
Transmitter IP	IP68
Communication Ways	GPRS, RS 485, SD Card (up to 4 GB)
Fluid Temperature	0 ~ 80 ℃
Working Temperature	-20 ~ 80 ℃

▶ Household Ultrasonic Water Meter (with Valve Control) UFO

- Can be installed in both horizontal and vertical modes
- Remote control valve equipped
- Valve lifespan is up to 10,000 times opening and closing
- No air measurement
- No effect of sand and fine particles in water on measurement
- Bidirectional flow measurement

MODEL	UFO15	UFO20	UF025
Size	15	20	25
Q3 (m/h)	2.5	4.0	6.3
Q1 (l/h)	15.6/10	25/16	39.4/25.2
R	250 ,160	250 ,160	250 ,160
Max. Working Pressure (Bar)	16	16	16
Max. Water Temperature (°C)	50	50	50
Weight (kg)	0.85	1.10	1.25
Communication Ways	LoRa, LoRa WAN, IOT, NB-IoT, W m-bus, GPRS, Sigfox		

Household Ultrasonic Water Meter UMA

• Can be installed in both horizontal and vertical modes
• No air measurement
• No effect of sand and fine particles in water on measurement
• Bidirectional flow measurement

MODEL	UFO15	UFO20	UF025
Size	15	20	25
Q3 (m/h)	2.5	4.0	6.3
R	400 ,315 ,250 ,200 ,160	400 ,315 ,250 ,200 ,160	400 ,315 ,250 ,200 ,160
Max. Working Pressure (Bar)	16	16	16
Max. Water Temperature (°C)	70	70	70
Weight (kg)	0.85	1.10	1.25
Communication Ways	LoRa, LoRa WAN, IOT, NB-IoT, W m-bus, GPRS, Sigfox		

Ultrasonic Gas Meter

• Intelligent
• Possibility to apply quota and tariff
• Remote control valve equipped
• High accuracy
• Accuracy of 0.5% for high flow rates and 1% for low flow rates
• R375 for household meters and R1000 for industrial meters
• 10-year lifespan for Type-D of Lithium batteries and 3-year for type-C of Lithium batteries

Item	Unit	G1.6	G2.5	G4	G6	G10	G16	G25
Nominal Flow Rate	m³/h	1.6	2.5	4	6	10	16	25
Max. Flow Rate	m³/h	2.5	4	6	10	16	25	40
Min. Flow Rate	m³/h	0.016	0.025	0.04	0.016	0.04	0.04	0.04
Startup Flow Rate	m³/h	0.004	0.004	0.004	0.015	0.025	0.025	0.025
Working Pressure Range	kPa	0 ~ 20	0 ~ 20	0 ~ 20	0 ~ 20	0 ~ 20	0 ~ 20	0 ~ 20
Working Temperature Range	°C	-10 ~ +40	-10 ~ +40	-10 ~ +40	-25 ~ +55	-25 ~ +55	-25 ~ +55	-25 ~ +55
Max. Cunulative reading	m³	99999.999	99999.999	99999.999	9999999.999	9999999.999	9999999.999	9999999.999
Weight	kg	1.6	1.6	1.6	2.48	6.5	6.5	6.5
Meter Life	Year				10			
Medium	-				Natural Gas, Air			

▶ Semi Smart Woltman Water Meter

• Measuring the flow of fresh, muddy and wells' water used in industries and agriculture
Accurate measurement of Dubai water including heavy particles such as agricultural water, sludge and wastewater treatment plants
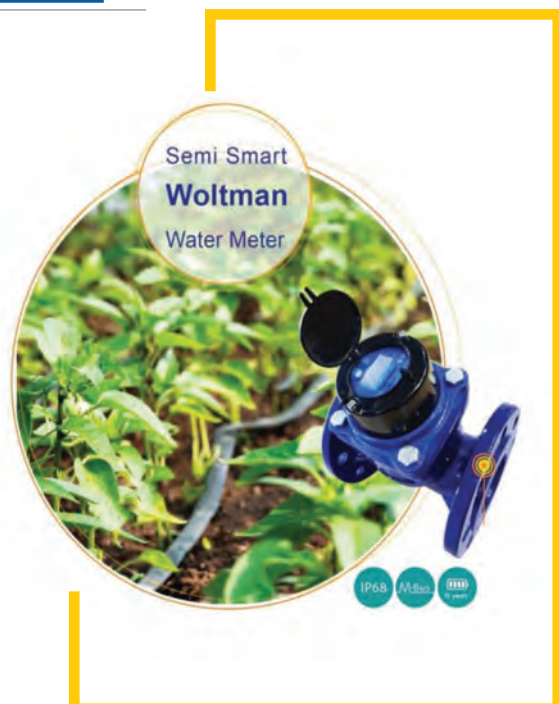• Measure the flow rate of water containing a maximum of 30% solid particles
Measuring high accuracy of Dubai water wells at lower speeds
Used to control the flow of fresh and clean water with low flow fluctuations
Measuring with high accuracy of water flow for wells at lower speeds
Measuring fluid flow with mechanical or digital counters as well as magnets

▶ Smart Woltman Water Meter

- Applicable to agricultural and industrial water wells and diesel pumps
- Possibility to apply quota and tariff
- Accuracy of 2% in R25
- Ability to measure return water
- 5-year lifespan for batteries

IP68 M-Bus GPRS 5 years

TRANSMITTER	
Power Supply	|220 V AC – 24 V DC (Battery-Based)
Output	Pulse output, Alarm output, Modbus RTU output isolated 2000v, M-bus, Optical port IEC65021, Mifare Card Reader with SAM Card Detect, Alarm Dry Input
Screen	4.8 inches graphical screen
Languages	Persian, English, Turkish
IP	IP68
Reading Mechanism	3 Hall effect sensor (Bidirectional)
Sensor	Mechanical shock sensor, Magnetic field detection, Cover open sensor
FLOW	
Q4	3.5 m/s
R	25

SENSOR	
Avalible Sizes	DN50 to DN200
Operating Pressure	PN10, PN16
Standards of Flanges	DIN – ANSI - ASA
Body Material	Cast Iron, GG25
Color	Polyurethane
Temperature of Liquid	0 to +80 °C
DATA LOGGER	
Data Logger	GPRS, SD Card (up to 8 GB)

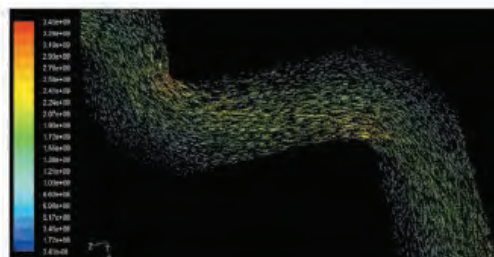# ▶ Electromagnetic Flow Meter (Open Channel)

- Acid and base resistant
- Without any obstacles and pressure drop within the flow stream
- Sending information via SMS and GPRS
- Capability of being installed under the ground
- IP68 certification from Iran electricity lab
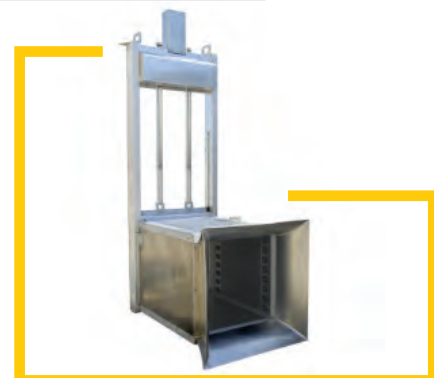
Electromagnetic Flow Meter (No Inlet No Outlet) Easy Mag 700

• No need to consider a distance between the meter and pump or any other connections
• Internal flow conditioner for places with turbulence and not completely full
• Capable of being Installed in any conditions
• Without dynamic pieces
• Accuracy: ± 0.15 to 0.5
• No need for periodical calibration
• Sending information via SMS and GPRS
• Capability of recording information and online displaying on the website

▲The figure is the analysis of flow direction by "Fluent" software in a normal flowmeter in which there is turbulence through the flow direction
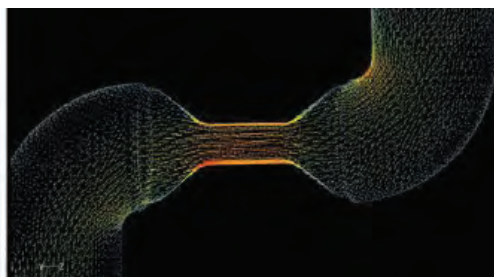
▲The figure is the analysis of flow direction in Easy Mag 700 flowmeter in which the turbulence had faded away and fluid is flowing steadily.

Wafer Electromagnetic Flow Meter (Polyethylene)

• Acid and base resistant
• Without any obstacles and pressure drop within the flow stream
• Sending information via SMS and GPRS
• Capability of being installed under the ground
• IP68 certification from Iran electricity lab

Wafer Sensor Easy Mag 1100	
available sizes	DN25-DN600
tolerable pressure	PN 6- PN10-PN 16
standard	DIN 16963
electrode	AISI 316L
body	PE HD 100, PE HD 80
liquid temperature	-40°C to 28°C
protection level	IP 68

▶ Full Steel Electromagnetic Flow Meter

- Applicable to food, pharmaceutical, and chemical industries
- Acid and base resistant
- Without any obstacles and pressure drop within the flow stream
- Sending information via SMS and GPRS
- Capability of being installed under the ground

Full Steel Sensor Easy Mag 1600 available sizes	
available sizes	DN25-DN600
tolerable pressure	PN 6- PN10- PN 16
electrode	AISI 316L
body	steel HD 100, steel HD 80
liner	PTFE
liquid temperature	-40°C to 28°C
protection level	IP 68

▶ Flanged Electromagnetic Flow Meter (Polyethylene) Easy mag 1200

- Acid and base resistant
- Without any obstacles and pressure drop within the flow stream
- Sending information via SMS and GPRS

Flanged Sensor Easy Mag 1200 (Polyethylene Body)	
available sizes	DN50-DN300
tolerable pressure	PN 6- PN10-PN 16
standard	DIN 16963- DIN 2501
electrode	AISI 316L
body	PE HD 100, PE HD 80
liquid temperature	-40°C to 28°C
protection level	IP 68

▶ automatic weather station (AWS)

An automatic weather station (AWS) is an automated version of the traditional weather station, either to save human labor or to enable measurements from remote areas. An AWS will typically consist of a weather-proof enclosure containing the data logger, rechargeable battery and the meteorological sensors

Parameters:
- Wind Speed
- Wind Direction
- Air Temperature
- Air Humidity
- Air Pressure

Generate standard message:
- SYNOP
- METAR
- SPECI
- CLIMAT
- MINMAX

▶ Agriculture meteorological system

Parameters:
- Wind Speed
- Wind Direction
- Air Temperature
- Air Humidity
- Air Pressure
- Radiation
- Rain Gauge
- Evaporation
- Soil Temperature
- Soil Humidity

Software:
Main page features :
- **Real time (list):** list view of the last instantaneous data
- **Real time (gauge):** Graphical view of the last instantaneous data
- **Monitoring:** Table displaying instantaneous data for the last 3 days
- **Graphs:** Graphs for each main parameters showing evolution of data for the last 24 hours

▶ Power House meteorological system

Parameters:
- Wind Speed
- Wind Direction
- Air Temperature
- Air Temperature
- Air Temperature
- Air Humidity
- Radiation
- Air Pressure

Software:
Main page features :
- **Real time (list):** list view of the last instantaneous data
- **Real time (gauge):** Graphical view of the last instantaneous data
- **Monitoring:** Table displaying instantaneous data for the last 3 days
- **Graphs:** Graphs for each main parameters showing evolution of data for the last 24 hours

▶ Rain Fall System

Parameters:
- Air Temperature
- Air Humidity
- Rain Gauge

Software:
Main page features :
- **Real time (list):** list view of the last instantaneous data of stations
- Monitoring all stations on map
- Full screen mode
- Show station by types (synoptic ,climatology ,…)

▶ Date time Report

- Report all station's sensors value by selected date and time period
- This report incorporates Quality Control
- Calculate important parameters on the right hand in selected date and time period

Graph:

Report as graph by selecting these options

• Date and time period

• Selecting 4 different sensor

• Selecting chart type

Message type (1min, 10 min ,…)
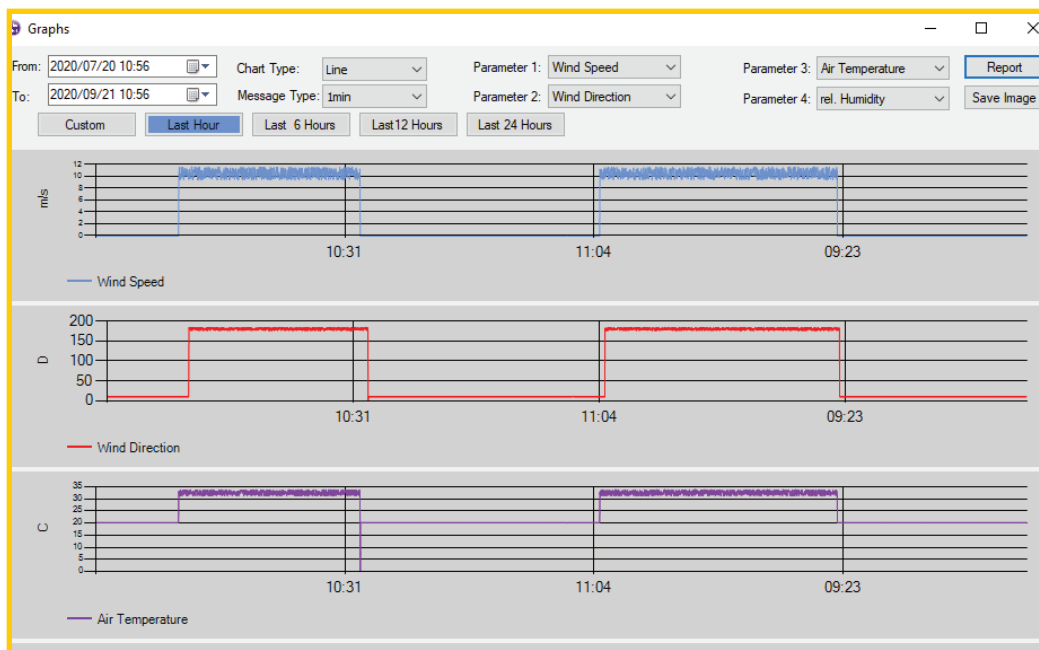
Datetime report:

• Report all station's sensors (Air Temperature ,Air Humidity, Rain Gauge) value by selected date and time period

• This report incorporates Quality Control

• Calculate important parameters on the right hand in selected date and time period
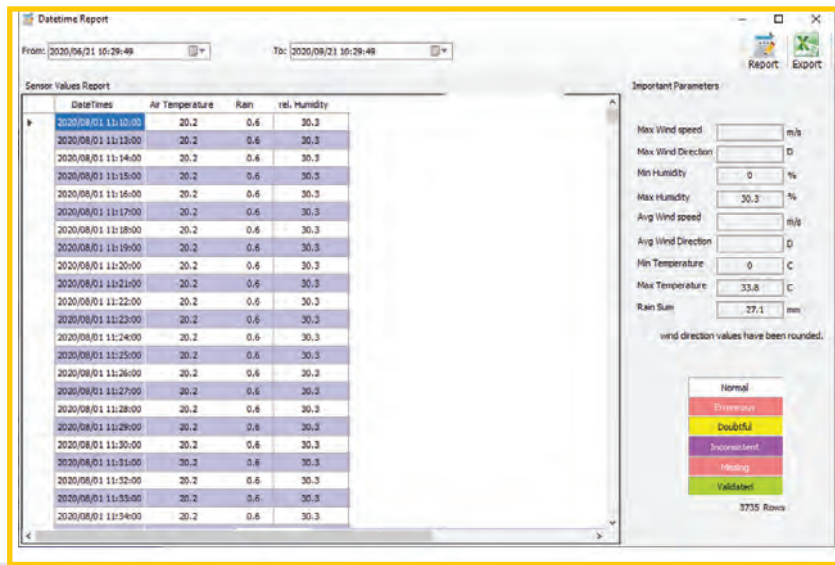
Wind rose chart:

Drawing a WindRose is another feature of this system that by selecting this option and the desired station in the desired time period is provided.

This report is useful for wind speed and wind direction values.
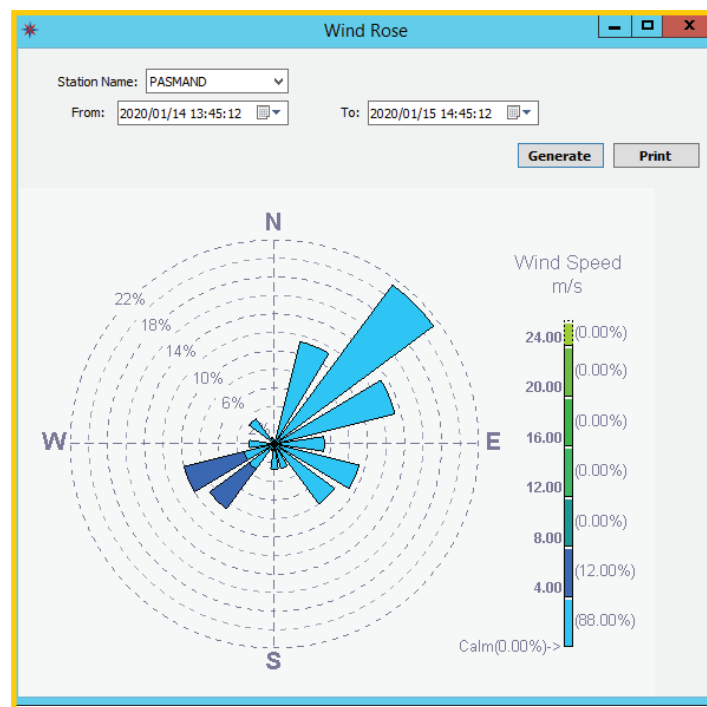
▶ Wind Speed Sensor

- Low friction ball bearings
- Rotation threshold
- Long operating life
- High accuracy, clarity and reliability

▶ Wind Direction Sensor

- Low friction ball bearings
- Rotation threshold
- Long operating life
- High accuracy, clarity and reliability

▶ Rain Gauge

- aluminum body
- Tipping Bucket technic
- Infrared counting mechanism

▶ Air Pressure sensor

- read the amount of pressure through PC
- Long-term stability
- Small dimensions
- Proper accuracy

Air Temperature & Humidity

• Calculate humidity with appropriate accuracy
• detection of temperature changes
• communicate via RS485 interface with data logger or computer

Radiation Sensor

• Radiate The length of the sunshine
• Quickly detect changes in energy received from the sun
• communicate via RS485 interface with data logger or computer

Display-Wind Speed

• the ability to connect the sensor to the RS485 output
• Ability to set alert levels
• alarms tailored to alert levels
• configuration software

Display-Wind Speed & Direction

• the ability to connect the sensor to the RS485 output
• configuration software

Display-station

• display five separate sensors via the RS485
• Ability to add a module to record the read values of sensors

Housing

• IP 65
• IP 66
• duct and terminal
• Battery
• Serge Arrester

Soil Temperature

• detection of temperature changes
• silicone cable

Soil Humidity

• detection of moisture changes
• silicone cable

Evaporation

• Small dimensions
• Proper accuracy
• Long-term stability

▶Data Logger

• Ability to name channels and set the nature and unit of measurement of Each channel in terms of software and hardware
• RS232 port for communication with computer, RTU or modem
• RS485 port for communication with remote equipment
• built-in date and time holder with Back up battery
• Ability to add custom Ethernet connectivity to the logger

▶ **16channel-Supplimentry**

▶ **4channel-Rain**

▶Solar Farms

• Together with our Partners, we have been involved in erection of more than 300 MW solar farms
• Our services include:
• Preliminary studies
• Conceptual, Basic and Detailed Designs
• Procurement
• Construction, Installation and Commissioning
• Operation

▶ Water Desalination Plants

• We offer different water solutions specially for water desalination
• Our plug & play containerized water desalination plant offers long durability and low operation costs
• Energy consumption < 2 kW/m3
• Capacity range of 100 – 1,500 m3 per day

▶ Solar Irrigation Systems

• We are ready to offer high quality services and products for Solar Irrigation Systems
• Total system design and implementation can be provided by our professional teams
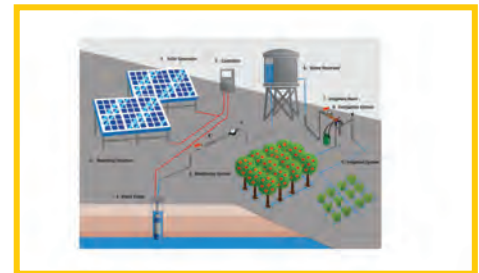
▶ Solar + Micro-Grid Solution

• In cooperation with Monenco Iran, largest engineering firm of Iran in fields of power generation and grids, we are ready to provide all required services for development of mini grids needed for consumption of generated power.
• Services to be offered are:
• Preliminary studies
• Finding suitable pattern and locations to develop mini-grids
• All required engineering designs
• Erection of projects by provision of EPC Services
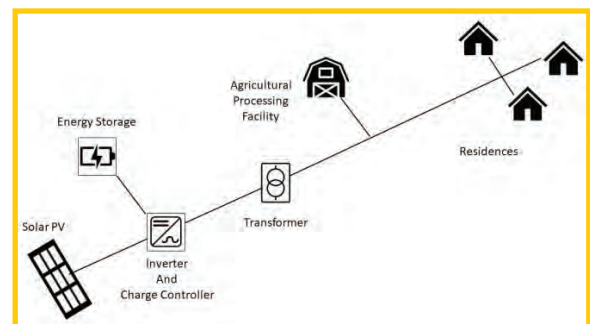
Features

• The power supply in two versions:85-265 v AC plus internal batteries or internal batteries for
• use in the case where electricity is not available
• Modular construction in two separate and compact versions
• High electromagnetic compatibility
• High operating integrity
• Data protection with EEPROM (without batteries) on power failure Bidirectional flow measurement
• Empty pipe detection
• Equipped with data logger
• The signal converter in a shock-resistant aluminum housing,
• Resistant to acids and caustics
• Password protected, set via 3 keys
• A sensor housing, carbon steel IP68 fit and forget, no calibration needed

▶ Hybrid Technology Department

Identification systems are the systems that can help reading and recognizing individuals, goods & equipment information. These systems are made of series of hardwires and software and without the need for the presence of a person can identify the entity and react toward it. One of the latest technologies used in the identification system is RFID i.e. Radio Frequency Identification. These systems can exchange data wirelessly between a tag and a reader and do not require physical contact between these two components. In this system, the tag is installed on an entity (product, object, etc.) or used to identify human delivered as a card.

ECI producing the country and designing the first non-contact local chip and having experienced in the field of RFID systems provides the following items:

• Active and Inactive cards, Labels, and Tags on different Frequencies Various types of related data readers
• Providing software development tools
• Providing applicable software

Application

• Identification of items and equipment in the shortest time
• Tracking parts and series for producer and consumer to finalize product or system
• Tracking the vehicles at the desired locations

Sample products

• Guarantee identification
• Electronic Seal
• Identification card
• Product Identification (watch, jewel), NFC
• Equipment ID (special for purchased equipment by companies)

▶Navigation Systems Department

in manufacturing, commissioning, and maintaining of various telecommunication systems in the petroleum and aviation industries.

We have done many projects in both offshore and onshore sites, all of which have been completely   successful.

The experiences in commissioning and maintenance of various types of telecommunication systems, the trend to find advantages and disadvantages of the systems. This worthy experience has helped us manufacture our products with higher quality and more reliability. So we have widely exported our products to overseas markets. NDB system and VHF radio are the most important ones in our products.

▶ Non-Directional Beacon (NDB)

This system is one of the standard navigation systems used in aircraft and helicopter routing.

EXPERIENCES

• Complete installing of the NDB system and Helideck antenna in the SALMAN Platform.

• Antenna design and production, maintenance, and reinstalling of the NDB system in the BAHREGANSAR Platform. Reinstalling and commissioning of the NDB system in FOROOZAN Platform. Reinstalling of VHF telecommunication radios in FOROOZAN Platform.

• Antenna design, manufacturing, reinstalling, and commissioning of the NDB system in the ILAM Platform.

• Installing and commissioning of own made NDB and antenna in the AMIRKABIR Platform (Caspian Sea).

• Installing and commissioning of own made NDB and antenna in CASPIAN vessel (Caspian Sea).

• Installing and commissioning of NDB and antenna in MOBARAK Platform.

• Installing and commissioning of NDB on SPD15 offshore in South Pars Gas Field. Maintenance and Commissioning of the NDB system in the ABOOZAR Platform.

▶ MD100 NDB System

- Output Power: 0-100 Watts (tunable)
- Working Frequency: 190-530 kHz (Upto1250KHz optional)
- According to ICAO, annex 10
- Redundant structure
- Monitoring of 9 working parameters on 5.7" TFT ICD
- Equipped with advanced digital remote/monitoring system
- Ability to connect to LAN network for monitoring
- User-friendly and easy maintenance

▶ MA100 ATU System

• Meets IP66 Specifications (outdoor use)
• Working Power: 0-200W (average)
• Frequency Range: 190-530 KHz
• Matching Antenna Resistance: 2-60 Ohm
• Design and Installation of Long Wire Helideck Antenna

▶ MV100 Wireless Monitoring System

• Frequency Range: 190 to 530 kHz Sensitivity: 25µV EMF
• Display: Working Frequency, Received Signal Strength
• Switch mode Power Supplies
• Lighting Products
• Electronic Ballast
• Induction Products

▶ WIRES & CABLES DEPARTMENT

▶ Wire & Cable

Field Wire

The tactical rush wire is used to transfer voice in field conditions and tactical operations. The wire structure is designed in such a way that is completely flexible and extremely light so that the weight of a 400-meter dispenser is only 1.8 kg. The wire in addition to bear hard climatic conditions, concerning its low weight is quite appropriate for offensive operations.

Infantry Field Wire

Tactical duple field wire is applied to transfer voice in field conditions without the need to be buried. The cable structure is in such a way that in addition to flexibility and lightness has high mechanical strength and resistance in hard climate conditions, and can easily be carried by individual and can be installed and rounded up without any need for special equipment.

Features
• High Mechanical Strength. Excellent Weather-Resistance.
• Using a cable for military wire communication.
• Temporary usage as cable in a mountainous and dangerous area. The capability of using in bad condition of severe cold or intense heat
• Easy temporary setup by solely manpower or equipment.
• Possible to be used in combined operations or other cooperative operations. 400 and 1600 meter packaging or any other user-selected quantity

Optical and Copper Telecommunication Cables
This type of cables is used in telecommunication networks of subscribers, between telecommunication centers and in local and rural networks. This group of cables includes subgroups such as terrain (directly buried), channel (installed in the channel), ground anchor (installed on holding masts), and air care (only for copper cables-installed in the channel) and according to Iran telecommunication standards.

Tactical Fiber Optic Cable
Two head connector tactical optical cables are cables to transfer voice, image or data in operational and field areas that can be easily extended and rounded up after operations. Within cable structure the tight buffer and Aramid strengthener are used and designed in such a way that is strong, flexible and light and can easily be carried by an individual and installed and rounded up without the need for special equipment.

Armored Tactical Fiber Optic Cable
The armored tactical optical cable is the cable utilized to transfer voice, image, or data in operational and field areas that can be easily extended and rounded up after operations. Due to placing of fiber in the loose tube with stainless steel substance and stainless steel armors around it, the cable has a very strong structure and is designed in such a way that is light and can easily be carried by an individual installed and rounded up without the need for special equipment.

Features
• A TFOC for transferring Voice, Image, and Data
• Suitable for Operational and Field areas
• Can be easily extended and rounded up after operations.
• Very strong structure and lightweight
• Rounded up without the need for special equipment.
• Special and well-designed Reel & Structure

Cable Construction Details	
Loose Tube	Stainless Steel Loose Tube filled with jelly: Dia.1.4±0.1 mm
Strength Member	12 Stainless Steel Wire (Dia. 0.4 ±0.05 mm & Tensile Strength: 70 Kg/mm2)
Outer Sheath	Black Color
Sheath Thickness	0.9±0.1mm
Cable Outer Diameter	4.0±0.1mm
Nominal Cable Weight	~ 28Kg/Km
Cable Length per Drum	(up to 1 Km) ±10%
Water Penetration	IEC 60794

Cable Mechanical Characteristics	
Min. bending radius without tensile	10*D
Min. bending radius with tensile	15*D
Breaking Load	>2000N
Crush Resistance	1000N/100mm

Temperature Range	
Operation	-33 to + 65
Installation	-10to + 50

Reel and Structure for Armored TFOC
Armored TFOC is in:
500,1000-meter standard packaging or any other user order

Tactical Fiber Optic Connector
Armored TFOC cable is equipped with tactical fiber optic connector in any side

Features
• Easy to use
• High Mechanical Strength. Excellent Water-Resistance. Equipped with Fender
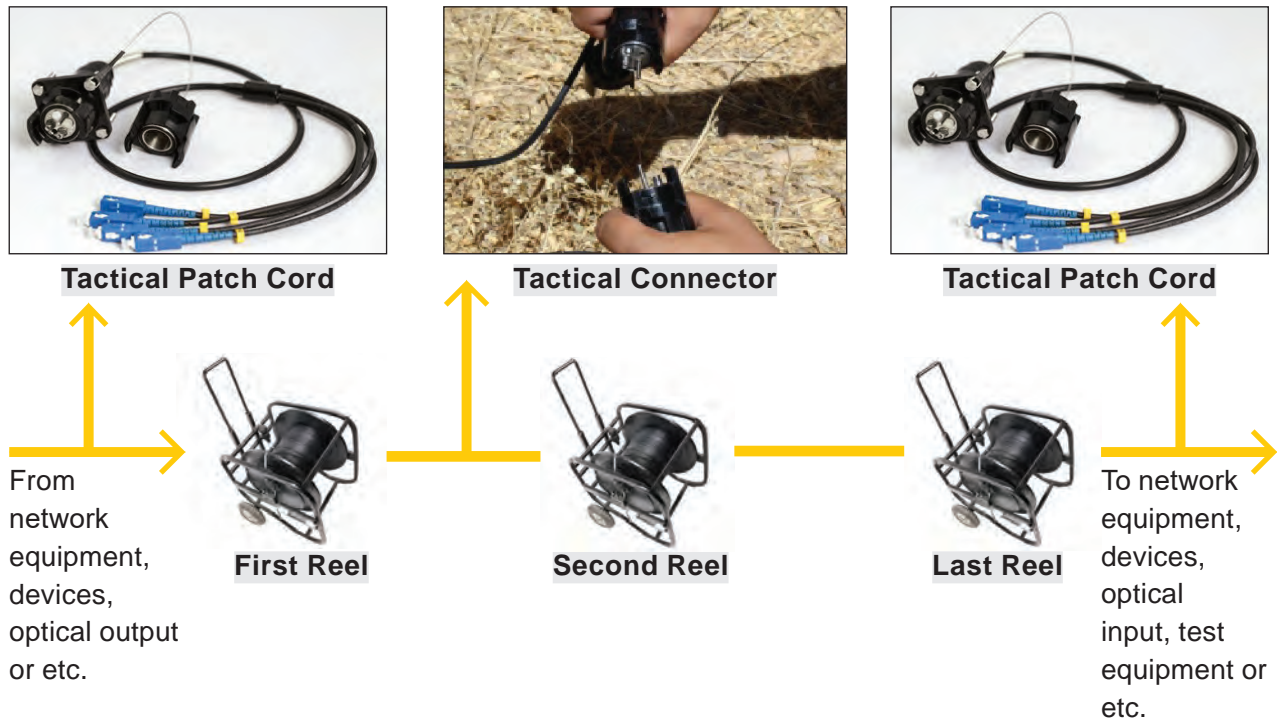
Tactical Fiber Optic Patch Cord
Connector structure in this type of patch cords is similar to tactical connectors, with the characteristic that the head of the patch cord is equipped with clamps for connecting to the shelter wall and the other side has FC, SC or LC connectors.

Specification	
Immersion Water	MIL-STD-810 E
Operation Temperature	-33 oC TO +65 oC
Storage Temperature	-40 oC TO +75 oC
Insertion Loss(max.)	1.5 dB @ 1310 nm
Return Loss	More than 34 dB
Separation Force	>1000 N Cable

Solution in Tactical Communication

Tactical Patch Cord

Tactical Connector

Tactical Patch Cord

From network equipment, devices, optical output or etc.

First Reel

Second Reel

Last Reel

To network equipment, devices, optical input, test equipment or etc.

Test Table of Infantry Field Wire				
TEST	ITEM	UNIT	SPECIFIED VALUE	TEST CONDITION
ELECTRICAL	D.C Conductor Resistance	Ohm/km	Max. 141	At 20°C
	Dielectric Strength	V(R.M.S)	1000	For 1 min
	Insulation Resistance	Mohm.km	Min 3000	At 15.6°C
PHYSICAL & MECHANICAL	JACKETED CONDUCTOR Cold Bend Test	-	No. Crack	-40°C/24 hr.
	JACKETED CONDUCTOR Tubing Test	-	No. Crack	95°C/1 hr.
	JACKETED CONDUCTOR Deformation Test	%	Max. 15	95°C/1 hr.
	JACKETED CONDUCTOR Cutting Test	Kgf	Min. 20	-
	JACKETED CONDUCTOR Breaking Load Test for Each pair	Kgf	Min. 38	At 20°C
	Tensile Copper wire	Kgf/mm2	25– 29	
	Tensile Steel wire	Kgf/ mm2	212-230	
	Elongation Copper wire	%	19 – 25	
	Elongation	%	2	
	Flatness Test		Flat & Straight	

SUBMARINE CABLE SERVICES

# ▶ Submarine Cable Services Department

Maintenance Cable Projects
• Kish Island to Sirri Island for IOOC
• SPD-6 Platform to Refinery phase 6, 7, and 8 for POGC
• Farur Island to Sirri Island
• Rout of IOOC Forouzan Island to Khark Island
• Rout of IOOC Kuwait to Genaveh(Iran)
• Rout of TIC
• Submarine Fiber Optic Network (Phases 1 to 10)
Maintenance and Repair of POGC

Cable Laying Projects
• 60 Km In-Field Cable Laying Project in South Pars Gas Field Phases 15, 16, 17 & 18 for POGC including Platform Landing, Laying and Trenching 60 Km Cable Laying Project between Island and the MCI Co. including Shore Pulling, Laying and Protecting
• 42 Km 132 KV HVAC Power Cable Installation and Trenching between Kish Island and the mainland for Kish Free Zone Organization (KFZO)
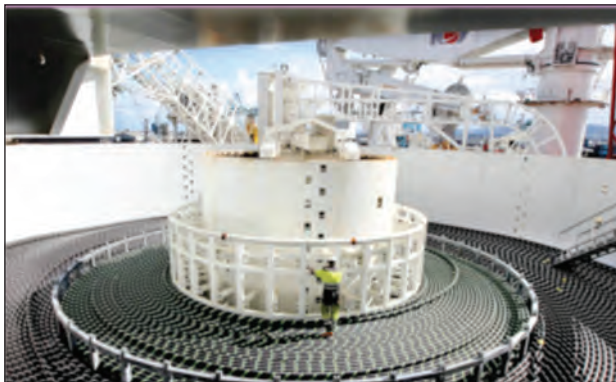
▶ CABLE LAYING VESSEL
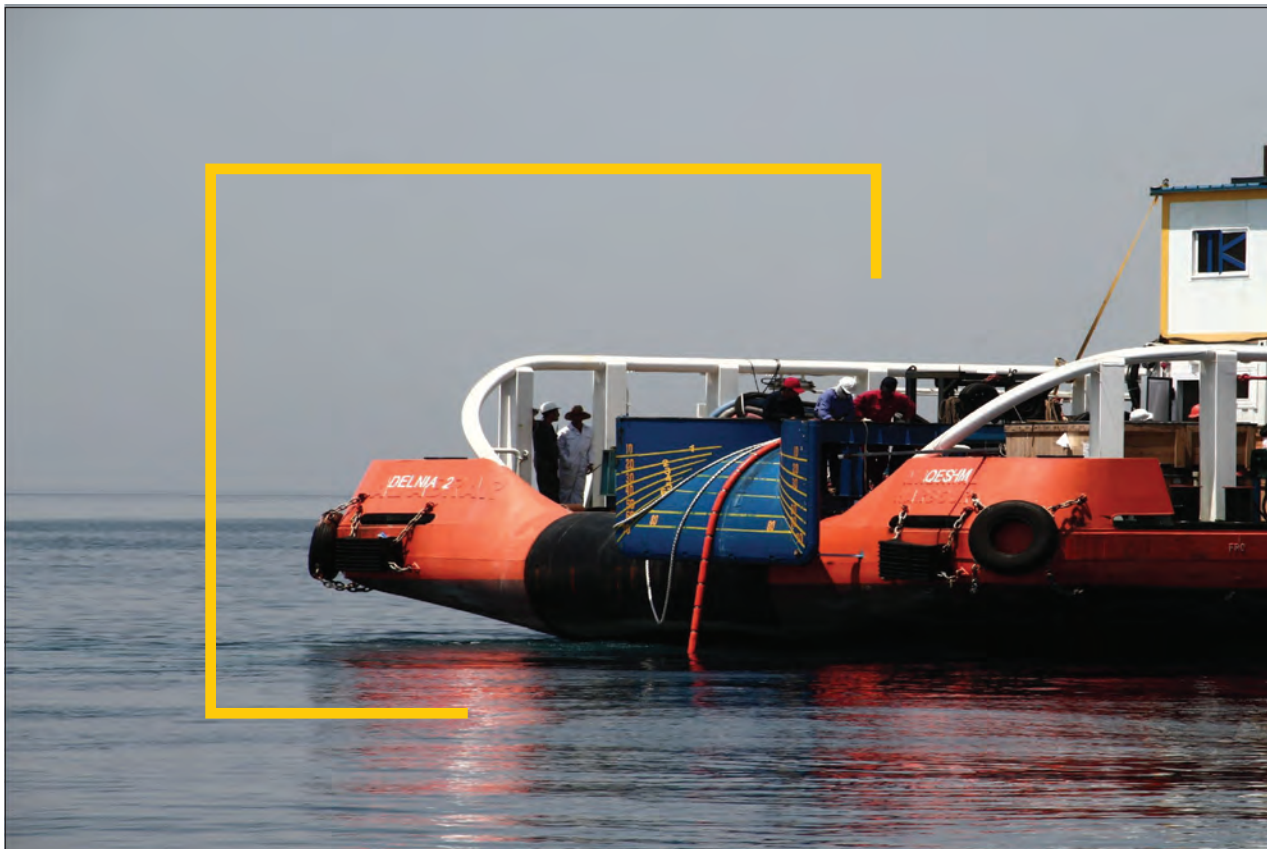
▶ Cable Laying Equipment

Cable Storage Tank	
Design Elements	Description
Storage Capacity	230 Km of 23 mm subsea double armored fiber optic cable
Overall Sizes	Outer Diameter = 8090 mm Inner Diameter = 1700mm Tank height = 2450mm
Total Designated Load	480 Ton – Limited to deck load condition
Weight	26 Ton

Transferring and Guide Tower	
Design Elements	Description
Tower dimension Top	1040mm x 1040mm x 9100mm 1100mm x
Side Tower	450mm x 4600mm
Total designed load	1.8 Ton on topside 4.5 Ton on Tower 350kg on Rollers
Weight	3.5 Ton
Tunnel Size	320 mm x 320mm cross area
Roller type / size	54x Sealed 2RS bearing with AL roller tube 80mm diameter x 420mm length
Oration	38 degree around vertical axes

| Hydraulic A-Frame	
Design Elements	Description
Safe Working Load	35 Ton. Maximum Seaside loading 42 Ton. Maximum Deck loading 45 Ton.
Function	20 degree on the deck 49 degrees at the seaside
Travel area	3800mm from stern roller end toward the deck and 4400mm vice versa
Width of inner and outer	Effective inside frame width 6700mm and overall outer width 7950mm
The effective high from the deck	Main top roller 7750mm and AUX equipment 7300mm
Power Pack	3-phase 380/440V 50/60Hz – 600Lt HL-68 oil
Weight	22 Ton

Cable Tensioner	
Design Elements	**Description**
Cable Handling Capacity	16 to 300mm diameter (fully automatic handling)
Performance	3.6 Ton @ up to 4650 m per hour 3.1 Ton @ up to 7000 m per hour
Wheel Orientation	4 wheel pairs of vertically opposed wheels The wheels open symmetrically about the cable center line and
Wheel Actuation	Provide a continuous compressive load to the cable (and joints/ repeaters) during operations
Brake System	Spring applied Electrically released failsafe brake rated to 5 Ton. Cable tension is derived via two integrally mounted load cells and locally
Tension Measurement	mounted pitch compensator.
Speed and Distance	The speed and distance assembly comprises a wheel assembly fitted with an embedded encoder.
Instruments	-System Start/Stop/Emergency Stop -Directional Selector -Speed Control -Tension Control -Cable Distance -System Alarms

▶ Cable Installation

J-TUBE SEAL

A J-tube seal is designed to act as a seal and as a corrosion inhibitor between the cable and the J-tube or I-tube on offshore platforms.
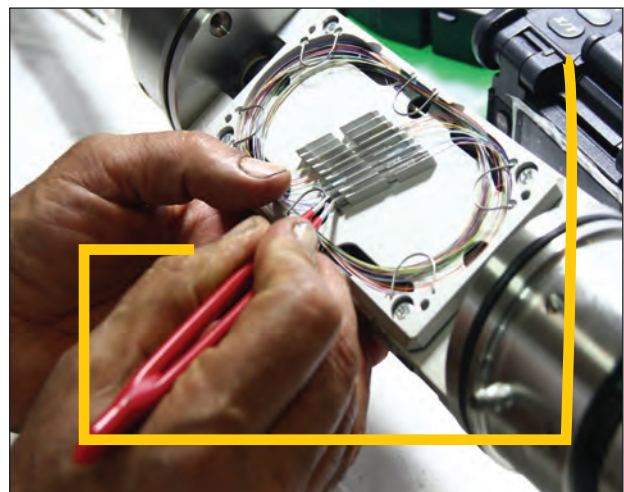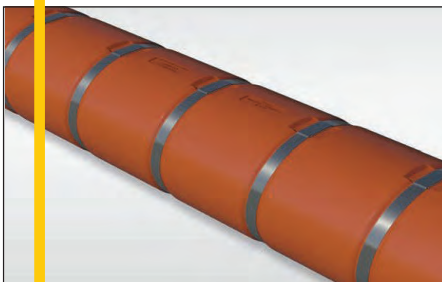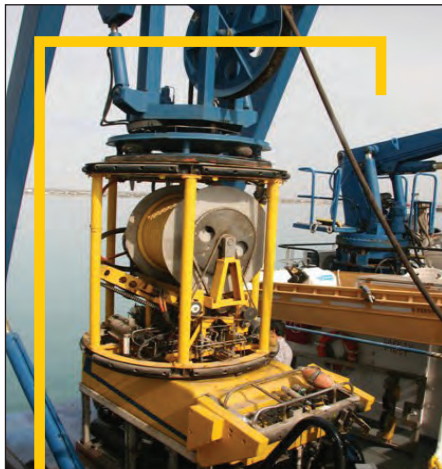
▶ Cable Protection Operation

Methods
- Burial Method:
- Water Jet method
- ROV Water Jet
- Cable Trencher

Methods
- None Burial Method
- Articulated Pipes
- Sand Bag / Grouting Bag
- Uraduct Protection Method

▶ Burial Method

Water Jet method

This method depends on water depth and seabed sediment and normally will be done in the nearshore area.

ROV Water Jet

In a deeper area, Scorpion 23-Perry work class ROV will be equipped via water jet to do water jet operation