



NESSCO

never beyond reach



Providing innovative engineering solutions around the globe

Turnkey Telecommunications Networks and Integrated Solutions

www.nesscogroup.com

COMPANY INTRODUCTION



NESSCO were established in Aberdeen, Scotland in 1979 to provide turnkey integrated telecommunication solutions to meet the needs of highly demanding projects in the North Sea oil and gas market sector. NESSCO has built on its experience and success over the last thirty years to expand its services to serve the oil and gas industry market sector worldwide.

During 1998 NESSCO acquired INVSAT to further the growth, capacity and experience of the company, and with this acquisition, NESSCO formed: NESSCOINVSAT Network Solutions to become the largest independent and most experienced turnkey network telecommunications solutions provider in the United Kingdom.

As a specialist telecommunications systems engineering and integration provider, NESSCO directly employ a team of dedicated, specialised telecommunications professionals with a wealth of knowledge and experience, to meet the most demanding and sophisticated nature of global telecommunication projects in the petro-chemical and energy sectors.

NESSCO provides turnkey telecommunication networks solutions for infrastructure projects in the Petro-Chemical and Energy industries, both onshore and offshore, this includes Offshore Platforms, Onshore Processing Facilities (Refineries, LNG Plants, Gas Plants and Petrochemical Plants). Our integrated system solutions are custom designed, engineered and built based on the customer's specifications and requirements, as well as international industry standards and best practices.

The turnkey services provided include consultancy services, design, engineering, project management, procurement, system integration, installation, commissioning and after-sales service. With a highly experienced engineering team our companies engineering goal is to provide innovative high integrity solutions using the latest proven technologies and our "Best of Breeds" system philosophy.

Our scope of supply covers a wide spectrum of the telecommunications systems and solutions that focuses on the unique needs of each individual client and project specification. With our extensive experience in completing a comprehensive number of diverse telecommunication projects world wide we have the knowledge and technical expertise to develop a technical specification to realise a fully operational integrated solution.

Working closely with a wide range of proven manufacturers products we then develop in house custom integrated solutions incorporating a wide range of different systems to meet the specific turnkey needs of projects in the most demanding operational environments.

The comprehensive scope of supply for both individual systems and a combination of systems to provide truly integrated solutions is outlined, not limited to the systems below:

- 🌐 Fibre Optic Backbone Networks
- 🌐 LAN/WAN & MAN Networks
- 🌐 VSAT Satellite Communication Networks
- 🌐 Microwave LOS Communication Networks
- 🌐 Radio Communication Networks
- 🌐 PABX Telephone Networks
- 🌐 Entertainment Systems
- 🌐 PAGA Systems & Emergency Intercom Systems
- 🌐 CCTV Surveillance Systems
- 🌐 Access Control Systems
- 🌐 Perimeter Fence Security Systems
- 🌐 Meteorological Monitoring Systems
- 🌐 Radar Systems
- 🌐 TVRO (Television Receive Only)



In order to achieve our objective of total customer satisfaction, we develop an interactive working relationship with our customers to ensure we focus on the needs of the project, and we take an innovative engineering approach with an emphasis on value engineering to ensure all relevant new proven technological developments and market trends are fully understood and exploited by our engineering team employing our "Best of Breeds" systems philosophy.

To meet our market sector criteria and specific industry demands and as a professional engineering design house, all projects are managed in accordance to the ISO9001-2008 standards. The following core activities are the basis of our project execution:

Front End Engineering Design (FEED) Conceptual engineering, consultancy and FEED work is one of our core expertise and activities where we provide our clients with the development and definition of the projects telecommunication requirements and establishing the criteria for achieving these requirements.

Detailed Engineering Design is the core function of our work and deliverables to the client. Our projects are engineered to provide every specific detail related to the project in terms of drawings, design reports and design calculations. Each project is assigned a highly skilled engineering design team comprising of experienced telecommunication professionals.

Project Management is a key activity in the achievement of a successful project. NESSCO has a dedicated department with highly experienced and motivated project management teams for this task. Each project is assigned to a project manager who handles both internal and external project scheduling, budgeting, and coordination using a wide range of software applications.

Procurement of equipment and hardware is sourced worldwide via our engineering department. The basis of the procurement is the compliance with the customer's operational specifications and final engineering design. Being an independent systems integrator, not affiliated to any specific manufacturers we take an objective procurement approach to ensure we acquire the optimum equipment for the project.

Systems Integration operates a dedicated custom integration centre, equipped with the necessary tools and facilities to assemble, interconnect and integrate the systems based on the engineering design drawings approved by our client. In addition, our integration centre is fully equipped to stage equipment factory acceptance tests (FAT's) and full System Integration Tests (SIT) witnessed by our clients prior to the packaging and shipment of the equipment to the project site.

Commissioning is a part of our turnkey responsibilities, NESSCO has a dedicated technical department, that handles the on-site installation and commissioning activities, including system training where required. Our technical team is highly skilled and motivated and well accustomed to the nature and the environment of the Oil & Gas Industry. We can deploy our team globally to provide the vital support necessary for our clients operations.

Quality Management is another vital consideration of our business, being ISO 9001:2008 certified we are committed to ensure the highest standards in design, engineering, project management, procurement, integration, installation, commissioning and after-sales services are maintained, providing complete turnkey telecommunication solutions to our customers satisfaction.



FACILITIES



NESSCO operates from its modern custom built, self contained twin story office and workshop facilities in Aberdeen – Scotland, a short drive from Aberdeen International airport. Our 3000M² facility comprises of the business centre, design and engineering centre offices, systems integration centre workshop, stores / warehouse area and a 1900M² secure yard for container storage.

Additionally the building is home to our satellite earth station operation that provides global satellite connectivity for client voice and data communications requirements with 24/7 support and service back-up for client operations.

Our design and engineering teams are located together on the ground floor of the building which enhances communication on all aspects of the project design, detailed engineering and project management and is conducive in promoting close working relationship on all project matters.

The systems integration centre is a customised facility located in a dedicated area of the building next to the design and engineering centre, and comprises of a number of designated areas for the various stages of the integration process of storage, build, system testing and the integration itself.

This facility has been specifically customised to facilitate the end to end process of systems mechanical fabrication, build and assembly through to final system integration testing (SAT) and Factory Acceptance Testing (FAT). The workshops are fully provisioned with all the tools, equipment and with the skilled engineers and technicians necessary to complete all operations in house, maintaining total control of both engineering, and quality all the processes involved in the completion of the project.

Equipment arriving from our suppliers is held in the secured goods inwards and stores holding area until it is issued for the commencement of the project build phase. The assigned equipment then enters the assembly workshop area where mechanical assembly and electrical interconnection takes place in accordance with the approved project specific, diagrams and drawings.

When the equipment is fully assembled both mechanically and electrically, it is transferred to the test area where it is inspected prior to the commencement of the system electrical testing, programming, configuration and functional tested.

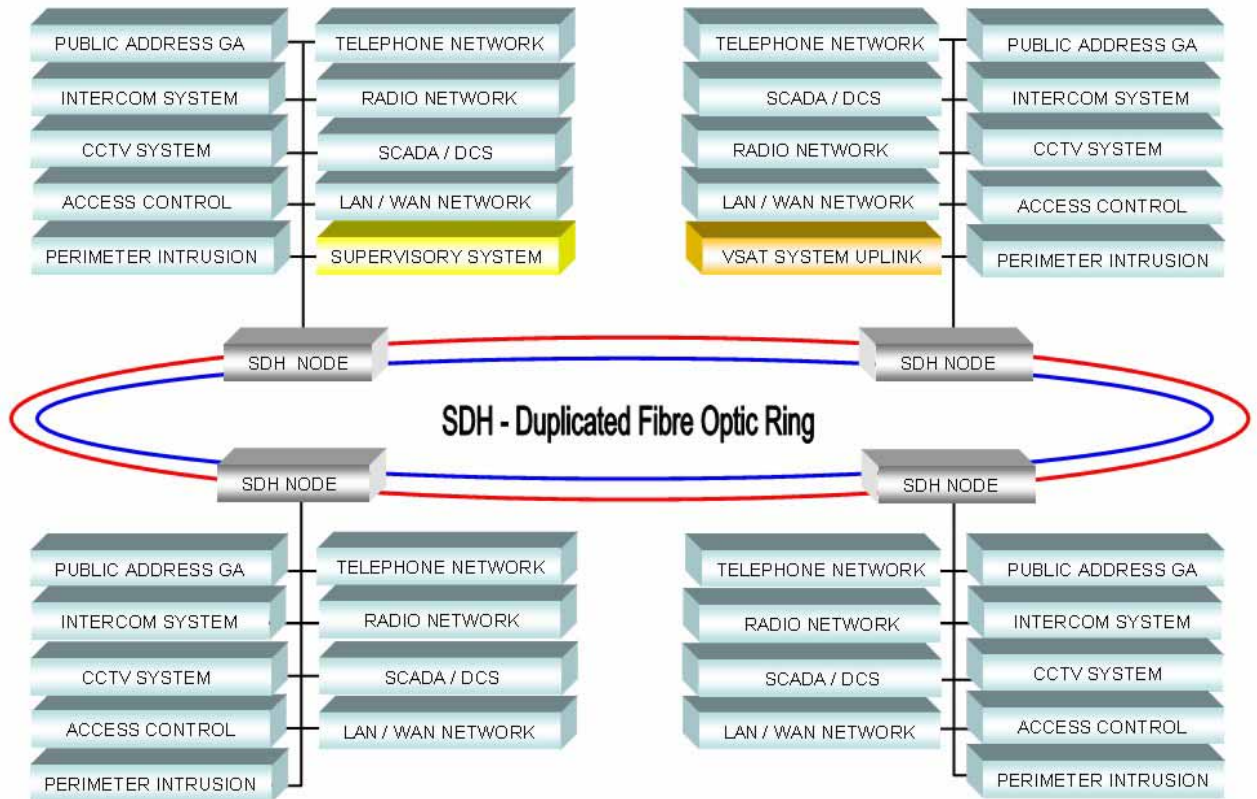
All systems will be fully electrically and functionally tested in accordance with the project technical specification, only then will any applicable system integration and testing be undertaken in accordance with the project technical specification.

Systems are finally tested in accordance with Factory Acceptance Test (FAT) and Systems Integration Test (SIT) that has been previously agreed with the customer. The equipment will be fully tested again with the customer or representatives.

Finally the equipment is securely packed, crated and then containerised ready for shipping accordingly.

NESSCO House
Aberdeen - Scotland.





NESSCO designs, engineers and deploys high integrity turnkey telecommunications integrated networks to provide total telecommunication solutions for platforms, process plants or pipeline installations alike. These networks consists of the individual systems combined with the telecommunications backbone network infrastructure using fiber optic, microwave and VSAT technology, or a combination of each to provide a transparent fiber optic backbone network between various locations and buildings via a series of SDH nodes. These networks may be configured to provide either redundant, duplicated loop or star network topologies depending on the critical nature of the network or segment concerned.

The fiber optic backbone network provides a transparent transport medium to facilitate the transmission of data, voice and video accordingly, allowing a range of various systems such as the DCS, SCADA, LAN/WAN computer networks, Radio, Telephone, CCTV System, Public Address & General Alarm Systems and others to operate over the fiber optic backbone network in a distributed configuration. This provides seamless integrated operation, monitoring, management and fault diagnostics of the various systems. In addition to the aforementioned systems a number of other systems may be deployed over the fiber optic backbone network with the necessary design and engineering considerations.

Critical aspects of the fiber optic backbone network design and engineering are the traffic assignments, bandwidth allocations in addition to any site surveys, frequency allocations and planning including the path profiles. NESSCO have many years experience in undertaking major projects in the petrochemical market sector such as oil and gas platforms, FPSO vessels and LNG gas plants on a turnkey basis using state of the art proven technology.



NESSCO provides state of the art turnkey telecommunications solutions for a wide range of applications in the energy market sector using the latest proven technology available in the world today. These solutions comprise of telecommunications backbone networks and dedicated systems for data, video, communications and security.

Telecommunications Backbone Networks may utilise a range of different technologies depending on the applications such as; Fiber Optic Backbone Networks, VSAT Transmission Networks, Microwave Transmission Networks and IP (Internet Protocol) based networks to form the telecommunications Transport Network. NESSCO also provides a wide range of custom engineered dedicated system solutions for Data; LAN, WAN and MAN networks, communications networks such as radio communications systems and telephone networks and safety/security systems; PAGA (Public Address & General Alarm), CCTV surveillance, Access Control and Intrusion Detection. These can be fully integrated with the telecommunications back bone network for a truly integrated network solution.

Fiber optic based backbone networks are the most reliable and efficient mode of providing a communications backbone with the support of both high speeds and bandwidth in demanding applications. The fiber optic networks encompass both SDH / SOHET networks. NESSCO has deployed these networks for both pipeline projects and process plant projects alike, providing detailed design and engineering including traffic assignments, bandwidth allocations, fiber optic link budget, fiber optic installation, fusion splicing and fiber testing.

VSAT based satellite systems can be used for voice, data, remote monitoring and video conferencing. This technology can facilitate both point to point and star topology and is normally applied where locations are geographically a great distant from each other, or the physical terrain precludes line of site or laying of cable.

Microwave based transmission networks solutions for point to point, or multi point are used extensively in the oil and gas industry as a main telecommunications backbone to provide a transport medium for control, monitoring, telephony and LAN/WAN traffic. NESSCO provides the complete system engineering, site surveys and frequency allocation and planning including the path profile and availability prediction.

Internet Protocol (IP) based networks are the dominant networks of the future. With the advancement in telecommunications and IT, IP based networks are increasingly supporting all varieties of traffic including voice, video, and becoming the basis for converging network design where all types of communications traffic can be accommodated on one unified network. NESSCO can provide network design, traffic analysis and network optimisation as part of its design deliverables to the client.

Local Area Network (LAN) is a computer network covering a small local area, like offices or a plant. Occasionally the term Campus Area Network is used for those which link several buildings. The defining characteristics of a LAN, in contrast to a Wide Area Network (WAN) are the much higher data rates of a small geographic range - at most a few kilometers. LANs are generally based on switched Ethernet or Wi-Fi technology running at 10, 100 or 1,000 Mbit/s (1,000 Mbit/s is also known as 1 Gbit/s).

Wide Area Network or WAN is a computer network covering a wide geographical area, involving a vast array of computers. This is different from local area networks (LANs) that are usually limited to a room, building or campus. The most well-known example of a WAN is the internet. WANs are used to connect local area networks (LANs) together, so that users and computers in one location can communicate with users and computers in other locations. Many WANs are built for one particular organisation and are private. Others, built by Internet service providers, provide connections from an organisation's LAN to the Internet. WANs are most often built using leased lines. At each end of the leased line, a router connects to the LAN on one side and a hub within the WAN.





Terrestrial Trunk Radio (TETRA) is a specialist Professional Mobile Radio and walkie-talkies standard, for high integrity system. The advantage over technologies such as GSM that have much lower frequencies, which permits very high levels of geographic coverage with a smaller number of transmitters, cutting infrastructure cost. The infrastructure can be separated from that of the public cell phone network, and made substantially more diverse and resilient by the fact that base stations can be some distance from the area served. Unlike most cellular technologies, TETRA networks typically provide a number of fall-back modes such as the ability for a base station to process local calls in the absence of the rest of the network, and for 'direct mode' where mobiles can continue to share channels directly if the infrastructure fails or is out-of-reach.

Private Telephone Networks (PTN) are an essential communications system requirement. Either legacy telephone TDM based networks or IP based telephone networks are available. These can include the interface to the PSTN and other global or private networks and services. We can provide the detailed design, engineering, and deployment of such systems and integrate these systems on a common communication backbone network.

Public Address & General Alarms Systems (PAGA) are high integrity plant safety systems interfaced with fire and gas systems that are needed to alert personnel within the plant in the event of emergency situations by means of either a speech or alarm broadcast with visual warning beacons in high ambient noise areas. This applies to both hazardous and non-hazardous areas of the plant accordingly. In addition to this as part of the design scope an acoustic analysis and sound coverage study may be undertaken to ensure that adequate sound level coverage and intelligibility is achieved within the plant facilities, where plant personnel operate.

Close Circuit Television Systems (CCTV) are used for both monitoring plant processes and plant personnel security surveillance using a network of strategically located fixed or remote control cameras with associated ancillaries such as mast towers or flood light where required or specified. Using the latest proven technological developments in cameras, monitors and control systems CCTV systems are designed and engineered for both industrial and hazardous area environmental applications and in full compliance to the applicable safety and international standards.

Access Control and Management Systems also make a vital contribution to physical plant security and anti intrusion, in controlling entry or access to specific areas of the plant. This may be main gate entrances for either vehicles or personnel via road barriers or turnstiles manually operated by security personnel or via means of various range of electronic technologies such as proximity fobs or magnetic cards that effectively act as an electronic key. Additionally internal areas of the plant may have access to sensitive areas, such as control rooms, restricted and controlled using electro-magnetic door locks that can be activated using the same electronic key. All access events are logged and are time/date stamped to provide an effective access management data base tool.

Perimeter Fence Intrusion Detection Systems provide the first layer of electronic security to monitor the first level of physical security of the plant. These systems use a number of different technologies to monitor fence intrusion from microwave perimeter detection or fence sensors. Sensors are strategically located to monitor perimeter fence integrity where the detection is annunciated and an alarm sounded on a video monitor. This system can also be interfaced with the CCTV system to display the image of the nearest camera for visual verification by security personnel. These systems are custom designed, engineered and configured to clients specific requirements and can be seamlessly integrated together and over networks with other systems.

NESSCO MetOcean meteorological system is a platform independent software application specifically designed to collect weather data and process it in real-time, to produce a set of client specified parameters which are essential for oil and gas industry installations. The data is used and displayed around the facility, so management and personnel can effectively monitor environmental conditions and determine whether it's safe to conduct operations such as crane lifts or heli-deck landings etc.



GLOBAL INSTALLATIONS

NESSCO
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Solving telecommunications challenges for organisations around the globe

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