

# Cegelec Oil & Gas

*Your Long -  
Standing Partner*

**Cegelec**

Solutions & Services



A worldwide Group  
close to its customers



### Main customers:

Adgas, Adnoc, Adco,  
Air Liquide, AKPC,  
ATMB, Bapco, Bechtel,  
BP, Chiyoda,  
Chevron-Texaco, CNES,  
DTDA,  
Dupont de Nemours,  
Enagas, Endesa, Enoc,  
Europol, Exxon Mobil,

Fina, Foster Wheeler,  
Fuel Pipeline  
Transportation, Gasco,  
Gazprom, ICI, Intergas,  
Interprocom,  
JGC, KBR, KNPC,  
Korean Gas Corporation,  
Lukoil, Lurgi, Marathon,  
Mercon Steel, MEW,

Mider, MOH, Naftec,  
NIGC, Pan African,  
PDVSA, Pemex  
Petrochimica, Petlin,  
Petrobras, Petrogal,  
Phillips Petroleum,  
PIC, QP,  
Rhône Poulenc,  
Samir, Shell, Sintel,

Sonatrach, Takreer,  
Tamoil, Technip,  
Tecnimont, Total,  
Transgaz,  
Wintershall AG, WPEC,  
Yukong, Zadco, ...  
and many others.

**Like these operators, engineering and contractor companies, team up with Cegelec to make us your long-standing partner for your next project, anywhere in the world.**

### The Cegelec Group:

**26,000 staff / more than 30 countries / 2,9 billion € sales**



# Editorial

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Over the last forty years, Cegelec Oil&Gas has accumulated more than 1,000 references throughout the world. The skills provided by our teams in our French and German headquarters as well as on the field, their command of industrial processes, their understanding of the specific problems encountered by the various businesses in the oil & gas sector, and their familiarity with local markets, have made Cegelec a partner of choice for all the major companies in the industry.

Our performance in the field of safety is a major reason for satisfaction. With 40 million hours of work done without accidents with our partners on Exxon Mobil's Chad-Cameroon site, for example, or the coveted Best Contractor of the Year award from Bapco in Bahrain, Cegelec ranks amongst the best in its field. These results are a very concrete indicator of our capacity to tackle the challenges of Environment, Health and Safety (EHS) that lie at the heart of our clients' concerns.

Cegelec Oil&Gas has gained a solid reputation in modernization operations, requiring an in-depth understanding of the functioning of a given plant, the ability to apply highly sophisticated ICS systems, and a particular expertise in hot transfer. We have developed our own tools, such as Viewstar ICS or CISCOM, a software that supports commissioning activities. Cegelec Oil&Gas is also a respected player in online process analyzer systems and in the control room design.

Our dedicated training center CATEX deploys ambitious training plans on location, such as in Angola and Indonesia, to provide its customers with an effective solution to the national content requirements for local teams, responding fully to the wishes of contracting companies which want to take on their corporate social responsibility in the countries in which they are present.

Last but not least, Cegelec's experience over the years has made it a major actor in production facilities maintenance, ensuring our clients with contractual performance guarantees.

Philippe Lecois,  
Vice-President Cegelec, Oil & Gas Division

# A World-Class Engineering and Contracting Company

With over 26,000 employees world wide, Cegelec ranks among the world leaders in technological services, engineering and contracting companies, and provides an extensive portfolio of expertise and services in all sectors of the Oil & Gas industry, from production and transport to refineries, LNG, petrochemical and chemical industries.



## A unique expertise and extensive resources

- Electrical systems
- Process control system and Instrumentation
- Telecommunication systems
- Multitechnical services



## A full range of activities and services

- Audit and site survey
- Feasibility study
- Project definition, FEED
- EPC implementation from design to hand-over
- Commissioning and Start-up
- Competence assessment and training
- Multidiscipline maintenance and assistance to operation

## A key partner for the Oil & Gas industry

- Thorough knowledge of the Oil & Gas industry environment
- Technical expertise supported by significant specialized resources
- Ability to run large international projects or to integrate a consortium of companies

Cegelec is a key partner to major corporations and engineering companies within the Oil & Gas industry.

## Meeting performance, economy and safety challenges

From the heart of a nuclear power plant to the critical modernization of a process plant, Cegelec has developed unique skills and a risk management methodology, resulting in excellent safety records in the Oil & Gas industry.



## A global reach and a local presence

Cegelec is a global player. With a strong local presence in over 30 countries, Cegelec offers an exceptional level of synergies between its poles of expertise in Europe, its know-how in handling large export projects, and a continued international and local presence.

# Modernization of Control Systems

In a complex oil process where products weigh millions of tons, even a modest gain in quality or efficiency is bound to generate million dollar gains. The modernization of control systems is the most efficient way to improve the means of production, with regard to investment and time of implementation.

The extremely rapid evolution of automation and information systems technology spawns many modernization opportunities which Cegelec's specialists design and implement.

Based on a specific project development methodology, a modernization operation requires multidisciplinary expertise, as well as an in-depth knowledge of processes and operating conditions. It also needs a significant number of specialized resources in order to properly cover all stages of the project and provide the flexibility and responsiveness necessary for such implementation on a plant in operation.



New utility control room for the Adnoc complex at Ruwais (UAE)

For over 40 years, throughout the world, Cegelec Oil & Gas has conducted more than 500 modernization studies and projects, and brought to completion over 50 large scale modernization operations.



Many factors are to be taken into account when designing a modernization project. They are bound to boost many tangible and intangible benefits within the operation.

## Commissioning & Transfer

To carry out safe commissioning and transfer operations, Cegelec developed its own software application tool called CISCOM. In addition, it can mobilize at any time a team of 200 specially-trained engineers part of its ITS Division to support these operations.

# Systems Integration

Cegelec has a unique expertise to meet the increasingly demanding requirements of the Oil & Gas industry for the integration of continuously more complex and various control and information technologies.

Teaming-up with the control technology supplier and the Information technology provider, or working as specialised subcontractor to the Main Contractor, Cegelec participates in the design, integration, installation and commissioning of multi-site / multi-system control, safety and information facilities

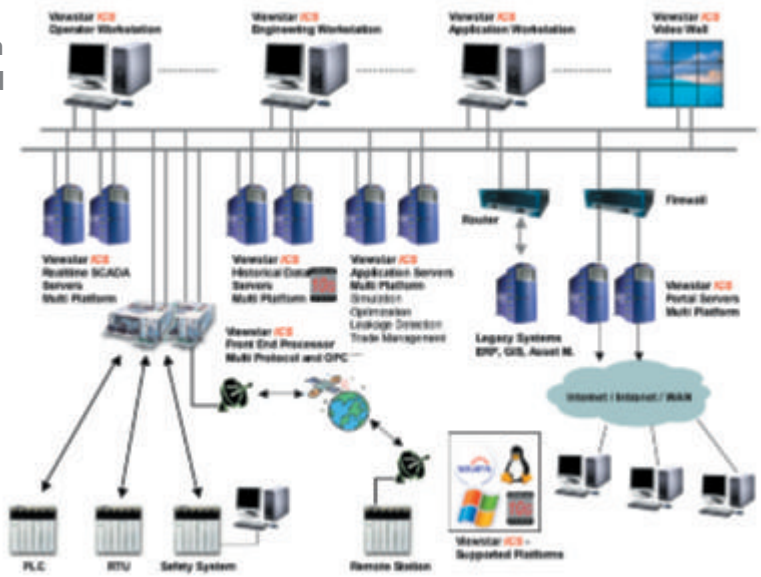


# SCADA Systems

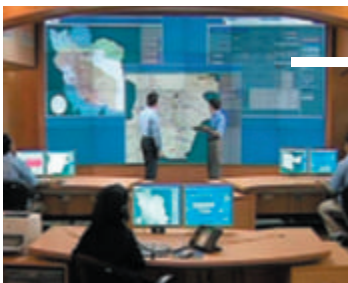
Cegelec has developed a unique automation system, **Viewstar™ ICS**, specifically designed to operate in four key areas:

- Pipeline and distribution networks for oil, gas and water
- Oil & Gas fields
- Truck, railcar and ship loading systems
- Aircraft refueling systems

**Viewstar™ ICS** provides a future-oriented SCADA platform using standard and state-of-the-art computer and communication technology. A client-server-based system running on UNIX, Windows and Linux operating systems, **Viewstar™ ICS** can be scaled from small-sized systems to nearly unlimited plant or network management systems with thousands of process data. Redundant server configurations and distributed servers provide highly reliable and secure operation.



**Viewstar™ ICS** supports a wide range of telemetry and process communication protocols (like OPC, IEC 870-5, DNP3, Modbus, etc.) via Ethernet, telephone or fixed line, radio or satellite. **Viewstar™ ICS** provides sophisticated software application for simulation, leak detection and location, batch tracking and scheduling, tank farm management, and trade management software. Using standard databases for storing historical process and operational data, **Viewstar™ ICS** gives access to these data for further business applications and users.



**Gas dispatching centre**  
—The pipeline network is supervised from the **Viewstar™ ICS** system W/S. A multimedia synoptic in the control room provides support to the operators.

# Telecommunication Systems

Today's Oil & Gas facilities require higher levels of performance and reliability to cope with the transfer of an increasing volume of information (safety, data, voice, operation, etc.).

Cegelec performs survey and basic study, designs and delivers complete integrated telecommunication systems:

- Backbone network (SDH, PDH, or Ethernet ...)
- Structure Cabling, telephone
- Public address system and alarm system
- CCTV
- Security System
- Data (Digital Network – WAN / LAN)
- Emergency Control Center
- Radio, Satellite link.



**Performance and reliability in critical environment**

—Cegelec designs and implement solutions for the communications links vital to the operation and safety of the Oil & Gas industry, but also specific applications such as Marine, Aeronautical and Meteorological systems for offshore facilities.

# Control Room Design And Construction

Designing a new control center, rehabilitating old structures to accommodate new generation of control systems, reorganizing control rooms to meet a new operating philosophy: the control room is the heart of the plant, and the focal point of the Operator's concern. With over 50 successful references, Cegelec is a recognized leader in this field.



Objective: safety and efficiency

—Defining environment aspect, i.e. space, access, color, sound level, quality of air, cultural habits (refinery control room for Total)

Cegelec's Architecture and Ergonomics Department takes care of all aspects, from design to construction and start-up, addressing such various aspects as:

- Control Building's location and architecture
- Building resistance to blast and thermic flux
- Architecture and civil engineering
- Questions pertaining to relations among operators, workload or management
- Software and man-machine interface design
- Equipment, furniture and industrial design



Blast-Proof control room under construction by Cegelec for Bapco

## Electrical Utilities

Cegelec offers a complete range of services and contracting capabilities, from feasibility studies to turnkey proposals and maintenance services:

- Power plant
- Electrical substation and transmission lines
- Energy Management System



Power to the field

—Power plant equipped with 3x25 MW gas turbine to supply the Sincor Oil field facilities in Venezuela (Total)

# Online Process Analyzer Systems

Online analyzers largely contribute to key functions in the control of the Oil & Gas process:

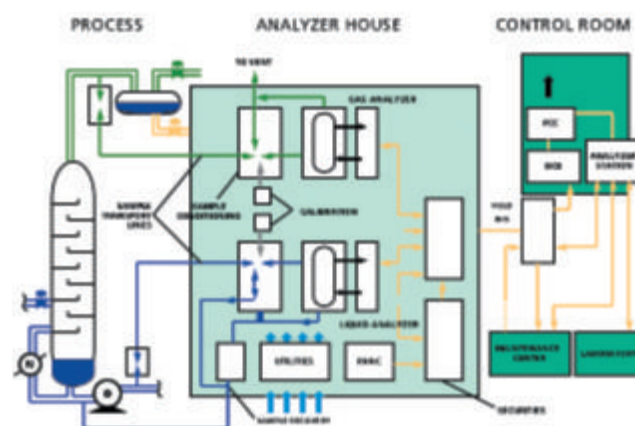
- Detection/Control
- Supervision/Optimization

The prefabricated analyzer systems approach is an efficient and economical solution.

The prefabricated analyzer shelter provides:

- a rational design owing to an integrated and multidisciplinary project team
- a totally prefabricated and factory-tested body
- a ready-to-be connected and implemented product, upon delivery
- a controlled environment which allows for easy maintenance, stability of analyzer measurements, centralized monitoring and control.

Over 1,000 such running analyzer shelters and systems are currently deployed in the Oil & Gas, chemical and petrochemical industries. Cegelec has developed an extremely competitive know-how using such technologies as chromatography, infrared, ultraviolet spectrometry or NIR. Today, shelter system integration can be carried out close to the site, thanks to the numerous Cegelec regional offices in Europe, in Abu Dhabi for the Middle East or Kuala Lumpur in Asia.



## The Analyzer system concept

—Analyzer system provides a well controlled environment to house the sample conditioning and analyzer measurement equipment.

## L.N.G. Sampling System

Based on a development by Gaz de France, Cegelec designs and manufactures a high accuracy on-line sampling equipment for LNG.

The sampling system reduces the Fractionation Distillation Effect and allows a highly accurate determination of characteristics values such as LNG density and Gross Calorific value.

Cegelec delivered so far over 50 systems for applications such as loading/unloading custom transfer, storage tank control, and LNG ships.



## Analyzer integrated shelter in the Middle East

—While the analyzer system is designed by its specialised department in Paris, Cegelec can rely on its regional competence centers to integrate, test, install and maintain the systems, such as in Abu Dhabi for the Habshan gas treatment facilities (Gasco via Technip)

# Technical Assistance, Commissioning Services

Cegelec designed a methodology specific to pre-commissioning, commissioning and start-up operations. A team of 200 Cegelec experts can be called on at any time and immediately sent to a site.

## Operational software tools

Cegelec uses its own tool CISCUM, but also other ones such as ICAPS, to plan and follow-up the commissioning and start-up of activities:

- Functional tests
- Pre-start-up activities (leak tests, chemical cleaning, etc.)
- Operational tests (major rotating equipment, safety & control systems)



## Expertise on site

—Cegelec site specialists are teaming up with the client to carry-out the commissioning and start-up of the refinery – Sincor in Venezuela

## Teaming-up with client operations

—Cegelec specialists are permanently trained on new technologies. They are therefore ready to be deployed world-wide, at any time, and bring their technical expertise to the site - Commissioning of the Amenam offshore field facilities in Nigeria



# Operation and Maintenance

Increase asset value and improve performance levels: the multi-technical operation & maintenance (O & M) services offered by Cegelec come with contractual performance guarantees covering the availability of production facilities and the management of operating costs.

## A methodological and pro-active approach of O & M

- Assistance and selection of equipment, CAPEX/OPEX analysis
- Operation maintenance engineering
- Audit and diagnostics
- Social engineering, human resources, expertise, nationalization plans
- HSE engineering and HSE performance measurement
- Trouble shooting, optimization of production services, permanent logistic support
- Performance measurement



### Providing reliability in offshore environment - Girassol FPSO

—Total has recently renewed the contract with Cegelec to provide the maintenance of the offshore productions facilities and commodities – The 300m long FPSO produces 200,000 bbl/day in Angola.



### Providing long-term support in Chad & Cameroon

—Cegelec participated to the design and construction of the Doba oil field and pipeline facilities for Exxon Mobil. It provided in addition start-up assistance and maintenance of mechanical, electrical and instrumentation systems, and ensured utility facilities operations.

### Mechanical maintenance in refinery

—Tamoil relies on Cegelec to provide the mechanical maintenance of its refinery at Collombey in Switzerland – The scope of works covers rotating machinery, compressors, turbines, generators and motors ad also metal works, valves and piping



# Competence Assessment and Training

CATEX is a dedicated training center primarily intended for the staff of Cegelec Oil & Gas' clients, but 10% of the students are also Cegelec personnel.

Its strongest point is on-site training: 85% of the training sessions are organized on the clients' industrial premises.

CATEX International technical services provide a wide range of training programs, from recruitment up to the transfer of know-how to ensure the product continuity (nationalization plan).

CATEX trains about 1,000 people each year. The CATEX training sessions cover a large spectrum of Oil & Gas activities: instrumentation, automation and process control, industrial analysis, operating of installations, ....



## Training school in Angola

—Cegelec established the school close to the job sites to train Operation and Maintenance personnel on instrumentation, electrical and mechanical disciplines.

In addition to these traditional training sessions, CATEX caters for larger client needs in the area of human resources management: job definitions, competence assessment, monitoring of and follow-up on trainee progress.

CATEX operates overseas; its many international credentials include Asia, the Middle East and Africa.



## CATEX trains about 1,000 people each year

—The CATEX training sessions cover a large spectrum of Oil & Gas activities : instrumentation, automation and process control, industrial analysis, operating of installation, ....

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Communication Department

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