

# aggreko



**TEMPORARY POWER SOLUTIONS  
FOR THE OIL & GAS INDUSTRY**





# AGGREKO APPLICATIONS

■ POWER DURING  
CONSTRUCTION  
PHASE OF THE PROJECT

■ POWER FOR EARLY  
PRODUCTION

■ POWER FOR HOOK UP  
AND COMMISSIONING  
(HUC)

■ LOAD TESTING SERVICES  
FOR MAIN POWER  
GENERATION

■ RAPID MOBILISATION  
FOLLOWING MAIN POWER  
GENERATION FAILURE

## BENEFITS OF AGGREKO TEMPORARY POWER SYSTEMS

- Increased production
- Additional revenue
- Reduced capital expenditure
- Reduced risk of lost production
- Reduced costs
- Operational flexibility

Aggreko delivers cost-effective and timely power solutions for the complete range of upstream and downstream operations. In today's environment of fierce competition and volatile oil prices, efficient and cost-effective operations are critical to ensure project profitability.

## AGGREKO POWER GENERATION SERVICES OFFER SIGNIFICANT BENEFITS FOR

- Exploration and production companies
- Engineering and design contractors
- Engineering and procurement contractors
- Oilfield service companies
- Shipyards and fabricators
- Maintenance contractors

Aggreko provides complete turn-key power solutions for the Oil & Gas industry. Our skills and experience in the design, installation, commissioning and operation of multi-megawatt power packages allow end users to focus on their own core operations.

“Loadbank testing of the power generation plant on board the Shell EA FPSO was very much on the critical path schedule during commissioning. I would like to commend Aggreko for the excellent performance of its equipment and the professionalism displayed by the Aggreko team.”

CLIVE BROWN  
Commissioning Manager  
Halliburton Far East Pte. Ltd.





# POWER DURING CONSTRUCTION PHASE

- REDUCE CAPITAL EXPENDITURE
- ENSURE RELIABILITY
- REDUCE COSTS

It is common to invest capital in power generation plants during the construction phase of a project. At the end the project, this equipment has little value, potentially creating back-end costs and complications when liquidating or disposing of these assets.

Aggreko provides the solution. We supply the temporary power required while the project is under construction. We offer turn-key solutions including personnel, spares and consumables. We manage the total power needs of the project - giving consistent and reliable power when and where you need it.



## PROVIDING CONSTRUCTION AND CAMP POWER FOR PIPELINE PROJECT - CHAD

In Chad, Aggreko supplied, operated and maintained two power plants totaling 8.5 MW, on behalf of Sub Saharan Services to power the main and temporary camps and workshop facilities during the construction phase of Esso's \$3.9 billion Chad/Cameroon Development Project. In addition to the main power plants, Aggreko also supplied 39 individual generators, ranging from 30 to 500 kVA, plus distribution equipment for general construction power for the 1070 km pipeline and oilfield development area.



## TEMPORARY POWER DURING CONSTRUCTION AND COMMISSIONING - SOUTH KOREA TO TEXAS



During the construction and commissioning phase of the Shell Na Kika Subsea Development Floating Host Facility in South Korea, a temporary power package was required to operate the ballast pumps that were used to raise the facility above water so the transportation barge could be positioned underneath. Commissioning power was also needed once the facility reached Corpus Christi, Texas.

Shell Exploration and Production Company (SEPCo) contracted Aggreko to supply an 800 kVA containerised generator set and all ancillaries on board the Na Kika facility for six months, until the facility was fully commissioned.

Since the power package was required in both South Korea during construction and then Texas during the commissioning stage, Aggreko offered Shell a global power solution, installing the equipment in South Korea and collecting the equipment in Texas. Aggreko supplied specialised engineers on board for the duration of the project.

## POWER FOR CONSTRUCTION OF FIELD PRODUCTION FACILITY - SUDAN

When Petrofac embarked on the construction of the 40,000 barrel-per-day Diffra Field Production Facility and Flowlines Project in a remote area of Sudan, East Africa, a temporary power supply was required.

Until a new permanent power plant could be installed, temporary power was required for the construction of field production facilities, overland piping, safety systems and communications systems, and to operate the Electrical Submersible Pumps (ESP), enabling oil production to commence as soon as possible.

Aggreko supplied a 6 MW / 6.6 kV baseload power package, providing continuous high and low voltage power supply.



“Aggreko supplied service engineers who demonstrated and performed to a high standard in very difficult conditions. Furthermore, Aggreko verified their commitment to the project when supplying extra equipment at short notice without hesitation.”

JEFFREY T LEECH  
Senior Engineer Technical Services,  
Kellogg Brown & Root, Chad





# POWER FOR EARLY PRODUCTION

- INCREASE PRODUCTION
- GENERATE ADDITIONAL REVENUE
- IMPROVE CASH FLOW

Today, there is enormous commercial pressure to produce oil as early as possible and improve cash flow for the project. To facilitate this, the conversion of existing vessels and refurbishment of production facilities is on the increase.

Temporary power systems provided by Aggreko are well suited to power these applications - both during the fabrication and refurbishment phase as well as to provide power for the facility when in operation. Aggreko power solutions can be installed and made operational in a matter of days. The Net Present Value (NPV) of the additional oil produced far exceeds the cost of installation and operation.



## DELIVERING COMMISSIONING POWER TO KELLOGG BROWN & ROOT - WESTERN DESERT EGYPT



A total of 15.5 MW of temporary power was required for the planned commissioning of the Obaiyed Gas Field Development.

Phase one of the Aggreko contract was to supply 1.5 MW of temporary power for commissioning of the plant control rooms along with maintaining a continuous reliable power supply. Phase two required Aggreko to supply a 14 MW / 11 kV temporary power station for the commissioning of the gas plant's electrical high voltage and low voltage power systems. Aggreko managed the entire turn-key power contract, which included all logistics, installation, commissioning, operation and maintenance for the project duration.

## SUPPLYING POWER FOR EARLY PRODUCTION - SAKHALIN

Aggreko supplied a 7 MW / 6.6 kV temporary power plant to power the Pultin-Astokhskoye B (PA-B) platform during the construction, commissioning phase, the tow period to its location offshore Sakhalin island and the crucial Hook-up phase. To cope with the arctic weather conditions the Aggreko plant was fitted with a complete winterisation package as well as an integral fire and gas detection and suppression system.

Aggreko was contracted by Samsung Heavy Industries in its Geoje yard, South Korea prior to sail away and then contracted by Sakhalin Energy Investment Company directly during the sail period. Aggreko had provided a 7 MW / 6.6 kV power package for the SEIC Lunskeye 'A' platform in an earlier contract. The PA-B platform is designed to produce approximately 70,000 barrels of oil per day and 100 MMscf/day of associated gas, stationed at the Piltun field offshore Sakhalin.



“Your equipment, personnel and organisational abilities have been proved consistently throughout the project. The power systems have always been available and reliable with skilled trained personnel integrating well with the site team.”

IAN BROWN  
Hook Up and Commissioning Manager  
Sakhalin Energy Investment Company Ltd.





# POWER FOR MAIN FACILITIES DURING HOOK UP AND COMMISSIONING (HUC)

- REDUCE CAPITAL EXPENDITURE
- IMPROVE CASH FLOW
- REDUCE COSTS
- INCREASE FLEXIBILITY

APART FROM THE ABOVE, AT THE BEGINNING OF ANY PROJECT, IT IS ALSO NECESSARY TO ADDRESS A NUMBER OF OTHER POWER SUPPLY ISSUES:

- Committing large capital expenditure to buy power generation equipment.
- Determining the size of the plant which at an early stage is speculative and dependant on the expected production of the field.
- Lead time for the power plant which often dictates the speed with which the project is brought on stream.

Planned temporary power can resolve these issues. Aggreko can install temporary power systems in very short timescales allowing you to “fast track” projects without making upfront capital expenditure commitments. Also, the modular design of Aggreko temporary power systems allows you to upsize or downsize your power plant as the project requires. You only pay for the power you need.



## COMMISSIONING POWER FOR REMOTE OIL PUMPING STATION - ALGERIAN DESERT

Aggreko was contracted by Groupement Sonatrach - AGIP for the provision of a 4 MW / 5.5 kV temporary power package to a remote oil pumping station in the Algerian Sahara desert. As the sole source of power until connection to the grid, the 4 MW power package was used to operate the solar and multi-phase pumps at the oil-producing station. Due the complexity, location and environmental conditions of the environment, Aggreko was a natural choice.

Aggreko mobilised, installed and commissioned the entire 4 MW power package at the remote location ahead of schedule. Included as part of the contract, Aggreko provided 24-hour on-site engineering support as well as training and recruiting local employees.



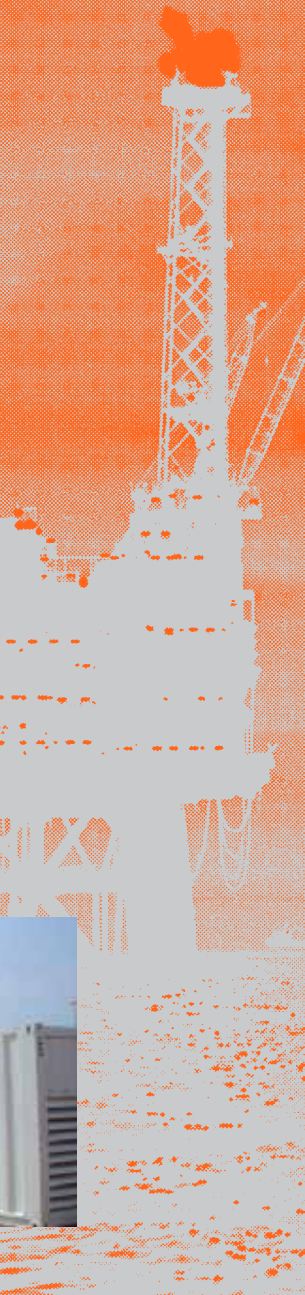
## POWER FOR COMMISSIONING AND FIRST OPERATION OF GAS PROCESSING PLANT – EGYPT



Aggreko supplied a 3 MW temporary power package at the Burullus gas processing plant located at Idku, Egypt.

The temporary power package assisted in the commissioning and initial operation of the plant which receives gas from the Scarab and Saffron gas fields, currently the largest gas fields in Egypt.

An additional 4 MW loadbank package supplied by Aggreko helped commission newly installed permanent turbines, enabling first gas production and delivery to the domestic market as planned.





# LOAD TESTING SERVICES FOR MAIN POWER GENERATION

- REDUCE RISK
- ENHANCE RELIABILITY

With a comprehensive fleet of resistive and reactive loadbanks, Aggreko has significant knowledge and experience of successfully delivering major loadbank projects, including a large number of shipbuilding related contracts.

The main power installations on board drilling and production systems need to be tested for reliability against manufacturers specifications and in conformance to relevant maintenance standards. Shipyards and fabricators entrusted with this responsibility turn to Aggreko to provide proof testing in an efficient and cost-effective manner.



## POWER AND LOAD TESTING SERVICES FOR THE FPSO DALIA - SOUTH KOREA



Aggreko was contracted by Technip France SA to provide a 2 MW power package and 6 MW loadbank package during the vital commissioning and testing phase of the FPSO Dalia at the Geoje Shipyard in South Korea. Owned by Total Fina Elf and designed and constructed by Paris-based engineering and construction group, Technip, the FPSO Dalia was the world's largest FPSO at the time of the project.

## POWER AND LOAD TESTING ONBOARD FPSO BARRACUDA & CARATINGA – BRASIL

Aggreko was contracted by Halliburtons' Kellogg Brown & Root Inc (KBR) to supply two 5 MW temporary power and two 4.8 MW loadbank packages during the construction, installation and start up of the FPSO Barracuda and FPSO Caratinga.

Aggreko provided the main source of power onboard both the FPSO's and the two 4.8 MW loadbank packages were used to test the main gas turbines as well as all electrical equipment onboard the FPSO's before the vessels departed for their offshore destination in the Campos Basin of Brazil.



## POWER AND LOAD TESTING FOR FPSO KIZOMBA - SOUTH KOREA TO ANGOLA

Aggreko was contracted by Hyundai Heavy Industries (HHI) to supply a 9.6 MW loadbank package and a 4 MW temporary power package during the commissioning and transportation of the Kizomba B Floating Production Storage and Offshore (FPSO) loading vessel. The 9.6 MW loadbank package provided by Aggreko was used to test the permanent power supply onboard the vessel during its fabrication at the HHI yard in Ulsan, South Korea. The 4 MW power package provided by Aggreko was used as main power onboard the FPSO Kizomba B during its three month journey from South Korea to Angola. Aggreko provided 24-hour operation and maintenance support throughout the fabrication of the vessel onshore as well as onboard the FPSO during its transportation to Angola.



“Having worked with Aggreko before on numerous occasions, we at Total Fina Elf were confident that their team of qualified and dedicated professionals would deliver on-time, uninterrupted power to the FPSO Dalia.”

DANIEL PICARD  
Senior Project Commissioning  
Manager from Total Fina Elf





# EMERGENCY POWER DUE TO POWER GENERATION FAILURE

- EMERGENCY POWER, RAPID MOBILISATION FOLLOWING POWER GENERATION FAILURE
- MAIN POWER TURBINE/DIESEL GENERATOR TESTING
- TESTING OF EMERGENCY BACK-UP POWER GENERATION
- AC/DC DISCHARGE TESTING OF CONTROL/COMMUNICATIONS UNINTERRUPTED POWER SYSTEMS

Aggreko is available at any time to supply your power requirements in the event of failure of the permanent power generation plant or during maintenance shutdowns. Aggreko's capability of supplying power quickly means that production loss due to main plant failure is kept to the bare minimum.

## EMERGENCY POWER TO RESTART REFINERY OPERATIONS, SAMIR REFINERY – MOROCCO

Torrential rain and flash flooding caused severe damage to power generation equipment and electrical infrastructure at Morocco's largest oil refinery, effectively halting production. To meet domestic market demand, output capacity of the refinery needed to be restored to 60 percent within 10 days.

Aggreko was on site within 24 hours, assessing the customer's requirements. Within 9 days of the flooding, a 12 MW power package was transported by Aggreko to the site through specially chartered aircraft to Morocco, restoring production to target levels.



## EMERGENCY POWER – OFFSHORE EQUATORIAL GUINEA

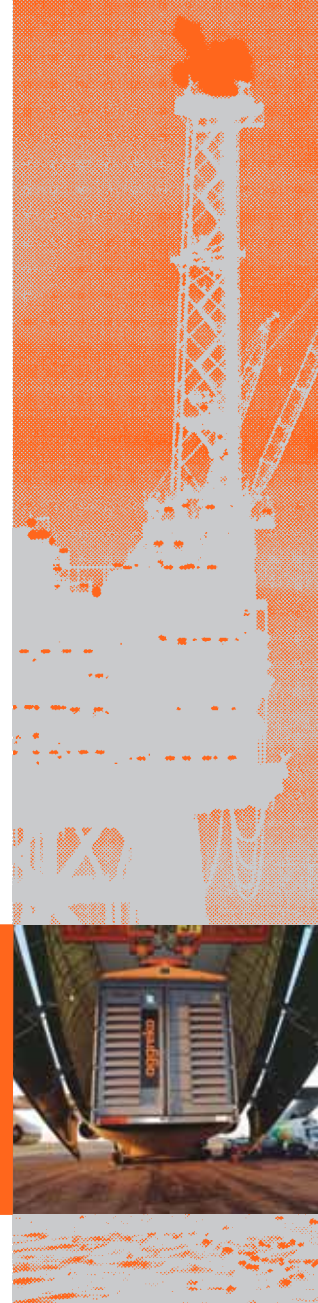


When the main power plant onboard the FPSO Sendje Ceiba, operating in the Ceiba Field offshore Equatorial Guinea, broke down, an emergency power supply was needed. Although the back-up power supply onboard the vessel was still operating, if this was to break down, there would be no power to operate the undersea pumps and oil production would be halted. Amerada

Hess needed a back-up power solution as soon as possible. In a matter of weeks, Aggreko mobilised and installed a 4 MW power package, fully commissioned and operational onboard the FPSO.

“Aggreko have proven to be professional in every respect; ensuring that the temporary power package installed performs flawlessly, in sometimes difficult circumstances. Throughout our experience with Aggreko at SAMIR, we have received tailored services, close attention and unparalleled collaboration as well as an unusual combination of both professional and personal qualities from the people we deal with.”

JAMAL M. BA-AMER  
Deputy General Manager, Development  
SAMIR Oil Refinery, Morocco





# AGGREKO PEOPLE

Aggreko is different from other companies that merely rent or sell you equipment. Not only do we provide our customers with an extensive fleet of specialised rental equipment, we also help engineer and design integrated solutions to meet the unique needs of our customers. Aggreko engineering teams will work alongside your own engineers to specify the most reliable and cost-effective solution to your power requirements.

Supported by our industry leading “Service and Repair” facility, the Aggreko team will prepare, test and dispatch all the equipment required, to be mobilised and installed on location in the shortest time possible. Throughout the project, our field project managers and engineers will operate and maintain the equipment to function at optimum efficiency, 24 hours a day. Our engineers will interface with your team on a daily basis to ensure we deliver safe, secure and seamless power.



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For further information please contact:

### Aggreko International Head Office

P.O. Box 17576, Jebel Ali, Dubai  
United Arab Emirates  
Tel: +971 4 808 6200 Fax: +971 4 883 5404

### Regional Offices:

| MIDDLE EAST               |                        |                        |
|---------------------------|------------------------|------------------------|
| Dubai, U.A.E.             | Tel: +9714 808 6100    | Fax: +9714 808 1825    |
| AFRICA                    |                        |                        |
| Dubai, U.A.E.             | Tel: +9714 808 6200    | Fax: +9714 883 4145    |
| Paris, France             | Tel: +33 1 69 73 23 34 | Fax: +33 1 69 73 23 44 |
| Lagos, Nigeria            | Tel: +234 14 61 29 88  | Fax: +234 14 61 29 89  |
| Midrand, South Africa     | Tel: +27 11 357 8900   | Fax: +27 86 604 5055   |
| Nairobi, Kenya            | Tel: +254 70 7000 888  | Fax: +254 20 2011 685  |
| ASIA                      |                        |                        |
| Singapore                 | Tel: +65 6862 1501     | Fax: +65 6862 0182     |
| Shanghai, China           | Tel: +86 21 5774 9906  | Fax: +86 21 5774 9907  |
| Pune, India               | Tel: +91 20 6623 7200  | Fax: +91 20 2663 0155  |
| Bangkok, Thailand         | Tel: +66 2 207 8629    | Fax: +66 2 207 2525    |
| Ho Chin Minh, Vietnam     | Tel: +84 8 5404 6594   | Fax: +84 8 5404 6969   |
| Seoul, South Korea        | Tel: +82 6336 6761     | Fax: +82 6336 6710     |
| Makati City, Philippines  | Tel: +63 2 8582100     | Fax: +63 2 8943109     |
| Jakarta, Indonesia        | Tel: +62 21 7803 331   | Fax: +62 21 7803 345   |
| Tokyo, Japan              | Tel: +81 03 5213 4463  | Fax: +81 03 6272 4729  |
| AUSTRALIA PACIFIC         |                        |                        |
| Melbourne, Australia      | Tel: +61 3 9586 5000   | Fax: +61 3 9586 5001   |
| Auckland, New Zealand     | Tel: +64 9 259 7000    | Fax: +64 9 259 7001    |
| Pacific, Papua New Guinea | Tel: +61 7 3385 0779   | Fax: +61 7 3385 0779   |
| CENTRAL AMERICA           |                        |                        |
| Mexico City, Mexico       | Tel: +52 55 1542 6150  | Fax: +52 55 1542 6147  |
| Panama City, Panama       | Tel: +507 264 1369     | Fax: +507 264 2939     |
| NORTH AMERICA             |                        |                        |
| Houston, U.S.A.           | Tel: +1 281 848 1400   | Fax: +1 281 848 1399   |
| Toronto, Canada           | Tel: +1 905 459 3321   | Fax: +1 905 459 3392   |
| SOUTH AMERICA             |                        |                        |
| Rio de Janeiro, Brazil    | Tel: +55 21 3043 9500  | Fax: +55 21 3734 1928  |
| Caracas, Venezuela        | Tel: +58 212 952 8915  | Fax: +58 212 953 5377  |
| Santiago, Chile           | Tel: +56 2 472 3900    | Fax: +56 2 472 3900    |
| Buenos Aires, Argentina   | Tel: +54 11 4727 0022  | Fax: +54 11 4727 4404  |
| Bogotá, Colombia          | Tel: +57 1 587 2000    | Fax: +57 1 616 1330    |

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