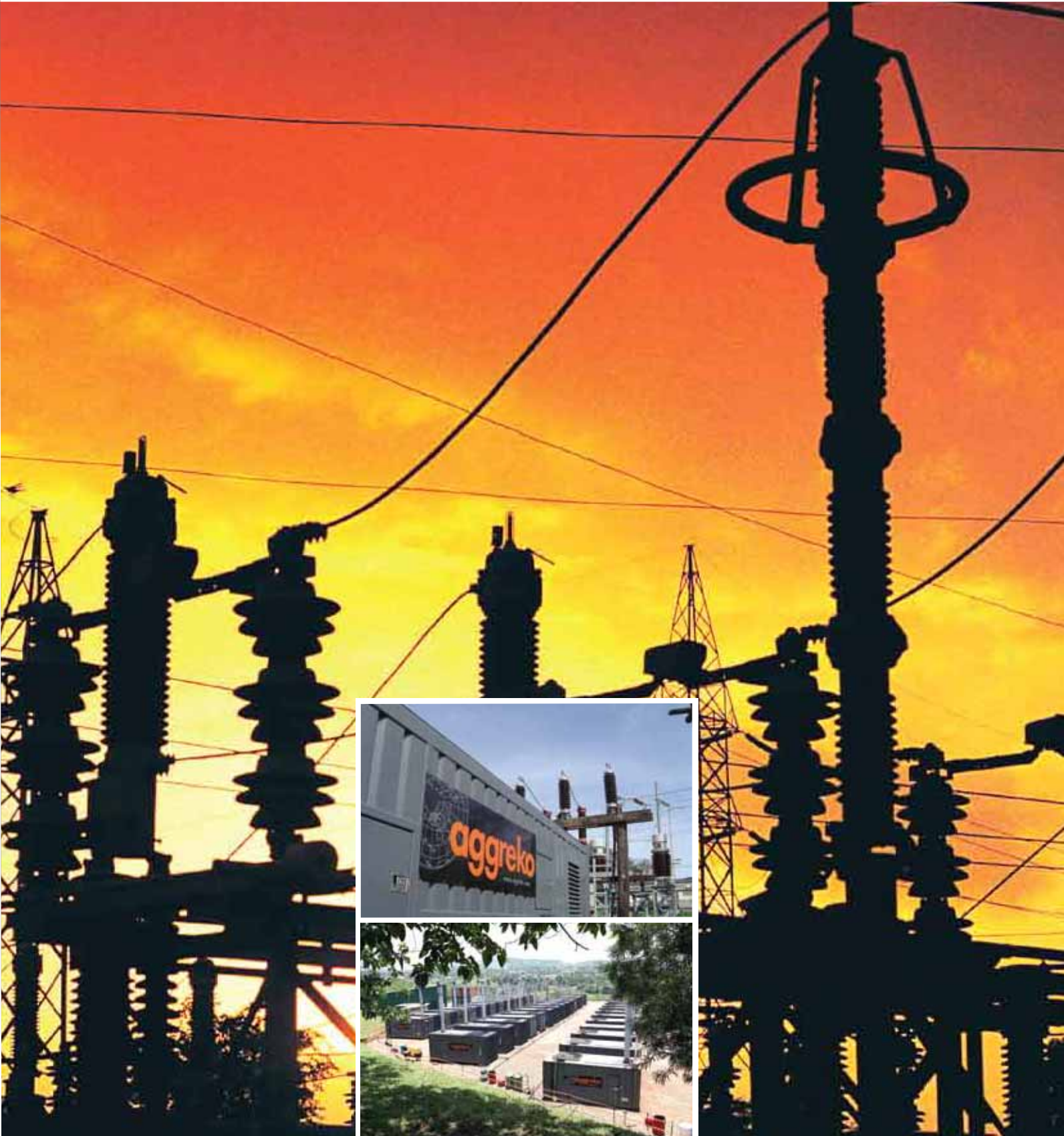


# aggreko



**TEMPORARY UTILITY POWER SOLUTIONS**

# AGGREKO

## YOUR PARTNER FOR POWER

Since its creation over 45 years ago, Aggreko has become a world leading supplier of temporary power generation services. Today, Aggreko provides power rental services for utility companies on every continent.

Whether your need is a few megawatts of construction power spread across a green-field site or few hundred megawatts of base load power to support the national grid, Aggreko delivers the power solution that is right for you, wherever and whenever you need it.

At Aggreko we understand the needs of the utility sector. Our equipment and services have been developed to meet your needs for reliable and flexible power in the most cost effective manner. Our equipment is designed in-house and purpose built for high reliable utility rental applications. By locating our equipment in strategic service centres, we can deliver, install and commission power plants in the shortest possible timescales.

Supported by approximately 4,000 highly skilled and experienced staff in more than 144 locations, Aggreko has the capability to design and deliver innovative and effective power for a wide range of utility applications across the globe.





*30 MW base load power to support the national grid, Ethiopia*

## APPLICATIONS OF AGGREKO TEMPORARY POWER GENERATION

### SUPPLEMENT THE GRID

- Baseload power to overcome generation capacity constraints such as hydro electricity shortage.
- Generation support to reduce the gap between increasing power demand and available supply.

### SEASONAL PEAK SHAVING

- Additional generating capacity to overcome energy shortfalls during periods of peak demand.
- A safe, reliable and cost-effective alternative to “brown-outs”.

### OVERCOMING TRANSMISSION AND DISTRIBUTION LIMITATIONS

- Generation support whilst upgrading transmission and distribution infrastructure.
- Power for remote areas not yet connected to the grid network.

### POWER DURING PLANNED MAINTENANCE OR UNPLANNED OUTAGES

- Back up power supply during the overhaul or repair of permanent plant generators.

### POWER FOR CONSTRUCTION AND COMMISSIONING

- Power for construction and commissioning activities at a new project site.
- Load banks for testing of generators and power systems.



*20 MW power to support industrial development - Isla Verde, Argentina*

# BENEFITS OF AGGREKO TEMPORARY POWER GENERATION



## TOTAL TURN-KEY RESPONSIBILITY

At Aggreko we don't just rent generators, we provide a complete power generation service - from start to finish.

### AGGREKO POWER GENERATION SERVICES INCLUDE:

- Assessment of the power need
- Site visit and evaluation
- Engineering studies and plant design
- Mobilisation and delivery of equipment
- Site preparation
- Equipment installation and commissioning
- Operation and maintenance
- Decommissioning and site clean up

We recognise that each power requirement is unique and we deliver a tailor-made solution to match your specific needs.

## FAST POWER

With full control over the world's largest containerised rental fleet, located in strategic service centers around the globe, Aggreko is able to mobilise temporary power plants in very short time scales.

The standardised design of our equipment around 20 foot ISO containers not only enables easy handling and fast delivery by land, sea or air but also facilitates quick installation and commissioning at site.

These features, combined with the knowledge and experience of our industry specialists allow us to deliver fully operational temporary power plants in just a few weeks, anywhere in the world.

## FLEXIBILITY

Aggreko has the flexibility to deliver power plants of any capacity - from a single generator installation to multi-megawatt power systems. The modular design of our equipment allows us to deliver power at any standard utility voltage and in capacities suitable for each connection point.

Furthermore, should your demand increase, or even decrease, during the course of a project, we have the flexibility to add or take away generating capacity as required.

Aggreko power plants can operate in parallel with the grid or in "island" mode, at all common utility voltages up to 132 kV, for 50 Hz or 60 Hz duty.

## GUARANTEED POWER

Aggreko generators are designed and assembled at the company's own ISO 9001:2000 accredited manufacturing facility in the UK. Our equipment is purpose built for global transportation and operation in the toughest conditions around the world, including high ambient temperatures and harsh environments. All equipment is thoroughly tested for performance before every deployment, to ensure the most productive and reliable equipment is delivered to you.

Our 24-hour on-site service and maintenance crews, supported by a global network of depots, professional service centres and factory trained Aggreko engineers, ensure that our equipment always operates at peak performance, delivering you a guaranteed power supply.

Furthermore, Aggreko 'no-break' systems allow us to connect and synchronise our equipment with the grid and disconnect afterwards without interruption of the supply to end users. This is a valuable feature when carrying out maintenance or upgrade work on overhead lines, transformers and distribution switchgear.

## NO CAPITAL OUTLAY

Buying energy via a temporary power plant releases you from the costs and administration associated with plant ownership and frees up your capital. You simply pay for the capacity and energy you need.

*10 MW turn-key power package, Netherland Antilles*



# TYPICAL AGGREKO TEMPORARY POWER PLANT



## SITE

- No special foundations or civil works required
- Equipment can be installed on a level, well drained surface

### FUEL SKID

- For unloading and transfer of fuel to bulk storage tanks.
- Includes high accuracy fuel flow metering



### FUEL TANKS

- Flexible fuel storage capacities to meet your requirement
- Environmentally safe tanks - Double wall construction
- Containerized or cylindrical design with drip tray

### HIGH VOLTAGE SWITCHGEAR (optional)

- Range of feeder, and bus bar ratings up to 2000 A and 24 kV
- Dedicated switchgear arrangements for larger power evacuation
- High level of safety with metal clad, multi compartment housing and comprehensive interlocking schemes
- Facility for energy metering



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### AGGREKO GENERATORS

- Diesel or natural gas powered
- Dual frequency capable - 50 Hz or 60 Hz
- Suitable for high or low ambient temperatures and harsh environments
- Sound attenuated enclosures
- Spark arrester silencers
- Save-ALL containment base - Prevents spillage of fluids or fuel and eliminates need for temporary bunds



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### CONTROL ROOM

- Monitoring and control of multiple generators from one central location
- Can be integrated with main utility control system



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### POWER TRANSFORMER

- Flexibility of integration at different points within a utility system
- Multi tap, multi voltage capability - Range of common utility voltages from 3.3 kV up to 132 kV
- Self contained modules with switchgear and built-in protection
- Save-ALL containment base

### SPARES CONTAINER

- A comprehensive stock of spare parts and consumables are always available at site



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# AGGREKO POWER GENERATION, STEP BY STEP



Our unique, custom-built equipment is certainly the best the industry has to offer, but the best equipment is only as good as the people and processes behind it.

The Aggreko difference is our people who have the skills and depth of experience to deliver the professional levels of service our customers demand.

Throughout the project we will work closely with your engineering team to ensure a successful and timely completion of the project.

## TECHNICAL PROPOSAL

Once a client has identified a need for our services, an Aggreko engineer will complete a field site evaluation and technical survey to determine the exact requirements of your application.

Aggreko has significant experience of successfully delivering temporary power generation projects in diverse markets around the world. This experience is made available to you through our engineering teams who will work alongside your own engineers to specify and deliver the most reliable and cost effective solution to your power needs.

Aggreko engineers will assess connection requirements and identify any abnormal loads or special conditions. Load flow analysis, fault level studies are also performed as required to ensure our proposed power plant design meets your particular needs.



## COMMERCIAL AGREEMENT

In addition to the pricing information, our commercial proposal will include a project design pack with electrical diagrams and terms and conditions which can form the basis of a commercial agreement.

As part of the services, Aggreko can tailor a contract to match the unique nature of each project.



## MOBILISATION & SHIPPING

Supported by our industry leading “Service and Repair” facility, the mobilisation team will prepare, test and dispatch all the equipment required for each project. Detailed logistics planning is required to ensure that all the material arrives on site as required to minimise the installation time.

## SITE PREPARATION

Whilst our equipment does not require special foundations or ground work, a level and well drained site is important for a safe and efficiently run site. The installation and commissioning team will work with you to ensure that any site preparations are made prior to the arrival of the equipment.

## INSTALLATION AND COMMISSIONING

Once on site we can install and commission even major power plants in just weeks.

Our commissioning team brings the knowledge and experience of delivering countless power projects in demanding situations around the world. In addition, our adherence to ISO 9001:2000 audited procedures and quality standards ensure we deliver a safe and reliable solution to your power needs.



## OPERATION AND MAINTENANCE

Once commissioned, our specialist project managers and technicians will operate and maintain the equipment at peak performance, 24 hours a day. Our engineers will interface with you on a daily basis to ensure we deliver safe, secure and seamless power. If required we can also manage and monitor the fuel supply and meter the power delivered to the grid.

Aggreko business processes are all ISO 9001:2000 compliant and we implement Environmental, Health and Safety (EH&S) systems at all sites. Our engineers and technicians are fully trained on EH&S systems and we conduct regular QHSE audits.

## DEMobilISATION

At the end of the project we will decommission the equipment, prepare it for shipment and return the site in a clean and safe condition.



Aggreko recruits and trains local people to help maintain the site and operate the equipment. Numerous technicians have subsequently moved on to full-time employment with Aggreko.



# CASE STUDIES



## SUPPLEMENTING THE GRID Overcoming power shortages in Tanzania

**SITUATION:** Additional power was required in Tanzania as emergency measures to avert the prolonged shortage of electricity resulting from an extended drought. Power was required to re-establish economic activities in Tanzania and Zanzibar.

**SOLUTION:** Aggreko supplied a 40 MW gas power solution in two phases. This allowed Tanzania Electric Supply Company (TANESCO) to benefit from the natural gas supply available from the Songo Songo gas field offshore Tanzania.

“ Aggreko has diligently worked with TANESCO to ensure that both Phase I and Phase II were operational ahead of the commitment made by His Excellency the President to the people of Tanzania. This demonstrates the company’s flexibility and ability to rapidly respond to the clients needs, said Mr. Idris Rashidi, Managing Director TANESCO. ”



## OVERCOMING GENERATION, TRANSMISSION AND DISTRIBUTION LIMITATIONS Distributed power generation in Yemen

**SITUATION:** Rapid infrastructure development and thriving rural economy required Yemen Public Electricity Corporation (PEC) to implement several power generation and distribution projects to meet the increased demand for power.

**SOLUTION:** Aggreko supplied 225 MW of power distributed at several locations in Yemen to support the government’s commitment to on-going economical reforms in the country.

## POWER TO REDUCE LOAD SHEDDING

### Supporting industrial development in Bangladesh

**SITUATION:** Increased industrial development over a short period of time had resulted in load shedding during the summer months. The shortage of energy was presenting a major constraint to the economic growth of the country.

**SOLUTION:** Aggreko provided a 40 MW turn-key power package which was designed to supplement the national grid. Power was delivered at 132 kV to synchronise with the utility grid.



## POWER FOR CONSTRUCTION & COMMISSIONING

### Commissioning a 2,100 MW coal fired station in Malaysia

**SITUATION:** Delivery of a main power transformer from the utility that was critical for commissioning of the project was delayed. Any delay in commissioning of the power plant would have resulted in huge financial losses.

**SOLUTION:** Aggreko delivered a total of 48 MW of power in two stages allowing commissioning of the plant to proceed as scheduled. The Aggreko solution included a 6 MW / 11 kV package which was supplied for the construction needs of the project.



## COVERING PLANNED MAINTENANCE OR UNPLANNED OUTAGES

### Emergency baseload power in Macapa, Brazil

**SITUATION:** A 125 MW power plant in the north of Brazil was forced to operate at reduced capacity when two of its four generators required major repairs. The solution was critical as the other generators in the plant were also overdue for scheduled maintenance.

**SOLUTION:** Aggreko delivered 20 MW of critical generation support whilst the power plant generators were being repaired and maintained.



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