POWER ON

FG WILSON CUSTOMER MAGAZINE

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Power For Our Generation

There are many ways to store or produce energy but when it comes to guaranteeing standby or emergency electrical power, in terms of cost, flexibility and responsiveness, there's no better option than a generator set from FG Wilson.

Our products range from ready-to-run generator sets to complete bespoke turnkey power systems with remote monitoring, all with lifetime product support from our dealers.

Based in the UK for the last 50 years, we've worked together with a multitude of customers in all environments globally and since 1990 have installed more than 640,000 generator sets around the world, with as much combined power generation capacity as the entire UK power grid.

To find out more,
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FROM CRISIS CONTROL TO FUTURE PROOF

Backup power solutions in an energy crisis
Menno Parsons, CEO of Master Power Technologies

Africa continues to face ongoing power delivery challenges and there is no denying that without secure sources of backup power, load shedding has a significant negative impact on economic growth. From loss in turnover to the less tangible, but no less serious, impact of dwindling business and investor confidence.

According to Menno Parsons, CEO of Master Power Technologies and an expert in backup power solutions, there are opportunities during this energy crisis. As a leading backup power specialist, Master Power Technologies, in partnership with FG Wilson with a track record of over 50 years, provides quality generators customised for individual business needs.

"We believe business owners should use the current electricity shortage to take a critical look at their own energy situation and take steps to not only deal with further outages, but to better manage consumption and costs into the future," he says.

It's a mindset which is even more important for small to mid-sized businesses, which often have fewer resources to get through tough times. Says Menno, "John F Kennedy famously said that 'the time to repair the roof is when the sun is shining'. The time to rethink electricity consumption and infrastructure is when the lights are on."

Drawing on his many years' experience in high-quality backup power solutions for industries where uptime is critical, such as manufacturing, mining, telecommunications and data centres, Menno recommends starting with a current-state review. "This should include identifying your critical systems, benchmarking current consumption, and understanding which of your equipment or systems use the most electricity."

With this picture in hand, the next step is to look at more energy efficient options. Appliances and equipment that use less electricity are cheaper to run on backup systems such as generators or inverters and will benefit the bottom line even when the lights remain on. Changing to LED lighting, and insulating geysers and ceilings are further easy-to-implement examples.

Low-energy consumption options might not be available for all your equipment, but with a little effort, it may be possible to reduce consumption in other ways. Machinery that is well maintained is often more energy efficient, and a change in a specific manufacturing process could result in less energy being consumed. "The point is to look at your business with new energy eyes," says Menno.

Once you understand your operation's energy landscape, it's time to decide what backup systems are needed to ensure business continuity, and to research options thoroughly. "This is the great benefit of taking action while the lights are on," says Menno. "You don't have to make a decision under pressure, and you won't be competing with thousands of other desperate people when it comes to purchasing the solutions you choose."

Backup systems vary greatly, from simple rechargeable lights to generators with the capacity to run an entire factory. When power outages are longer and more unpredictable, generator sets remain a popular option as they bring flexibility and will provide power for as long as you fuel them. Only when you know exactly what your business needs to remain operational, can you choose the appropriate solutions.

"Small to mid-sized businesses need uninterruptable power supply (UPS) systems with decent battery and inverter backup," says Menno. "If at all feasible, it is worth investing in a solar power system over time to feed the batteries and complement a generator

set as part of a balanced approach to standby power," he adds.

Regardless of the backup power solution a business owner selects, a handful of important principles apply:

- Only ever buy from companies that are reliable, have a credible track record and proven after-sales service. Never entrust your business continuity to a fly-by-night organisation, even if the price appears to be highly attractive.
- Based on your energy review, invest in the right technology for your needs and with the right partner. It is advisable to invest in a turnkey provider so you know the system components are all compatible and you don't have to manage a variety of service providers.
- Regularly test and maintain your backup power system, and ensure you have consumables such as fuel and batteries available.

"Energy efficient and backup power systems are expensive when viewed in isolation," says Menno. "However, when they are seen as a vehicle for business sustainability, both in times of power interruptions and when reducing energy consumption to save costs, they become a tangible investment in the future of your business."

For more information about Master Power Technologies visit **kva.co.za** or FG Wilson at **www.fgwilson.com**

POWERFUL GROWTH IN EAST AFRICA

Generator set manufacturer FG Wilson have been part of the economic landscape of East Africa for over forty years and witnessed many changes during that time. Graham Scandrett, FG Wilson Area Manager for Africa and Middle East picks up the thread.

"In our industry, we see many markets where demand is still lagging behind where it was in the last worldwide boom year of 2008, but we believe the East African market is about 40% larger than it was in 2008."

So what has driven this? FG Wilson see many of the same kind of customers today but the scope of their needs has increased. Graham says, "Ten years ago, if electric power was down, many businesses could still function, at least for a short time. Now in our online world, it's almost impossible. Many businesses can't take the risk of even short interruptions of electric power. Much of that industry growth has come from this digitalisation effect."

Another factor in play has been the sourcing of those generator sets. Graham says, "We closely monitor market and trade statistics and the last ten years have seen a major switch in where generator sets for East Africa are made. In 2008, around 80% came from Europe, 20% from China. Today only 30% come from Europe, 60% from China and most of the rest imported via the Middle East or other African countries."

Some of that change has been driven by generator sets arriving on the back of Chinese investment in the region and some has come from European manufacturers, like FG Wilson, locating more of their production in their own facilities in China. Graham sees this as a logical step. "Components, particularly engines, make up a big element in a generator set package. As soon as established Western engine brands began locating more of their production in China, the case for assembling there became very compelling. It makes no sense to ship major components halfway round the world and then ship them halfway round the world back to customers as finished products. Now our most modern, state of the art facility in the world is located in Tianjin, China, and it's capable of manufacturing almost our entire range. With FG Wilson, our China-made products are made to the same design, with the same components using the same processes and supported with the same global parts infrastructure as all our European-made products. And, of course many other industries work the same way: look at the phone in your pocket or the computer on your desk. Most likely these were made in China."

The third big change which Graham has seen has been growing expectations of support from customers, especially as the cost of loss of power has grown for businesses. Graham says, "In the last ten years, between us and our dealers, we've invested hugely in this area. We reckon we have around $30 million of parts inventory at our dealers around the world, backed up by our UK-based parts warehouse stocking 11,500 individual parts and shipping 3 million parts a year. It means automotive industry levels of support."

FG Wilson's dealer in Tanzania, Merrywater, who have represented FG Wilson for 25 years, embodies this approach. Based in Dar-es-Salaam, Merrywater offers the entire FG Wilson range of generator sets. All service employees are formally trained by FG Wilson's UK-based team and the dealer offers a full range of aftermarket services including 24 hour call-out. Henrik Nielsen, who manages the Merrywater Power Division sees this as a critical element of Merrywater's business. He says, "We're seeing more of our customers taking great interest in service contracts. If you don't want the risk of downtime and want to manage and plan costs, this makes a lot of sense with labour and transport costs covered, lower spare part prices, reduced rates for temporary replacement units and fixed workshop repair prices."

And the next ten years? Graham sees generator sets as playing a similar role, co-existing alongside other power generation technologies. "Interest in solar power generation has grown and solar panels are getting more efficient. But you need a very large surface area to install a solar plant compared to the space occupied by a generator set. We see a lot of people who ask about solar power generation but what they really need is a generator set. We can see generator sets living alongside renewables and battery storage as part of a balanced package. Maybe we can pick up the discussion again in 2029!"

Power For Our Generation

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POWER FOR POLYNESIA

French Polynesia makes up a very wide group of 118 islands, almost in the middle of the South Pacific Ocean, stretching across a 1,200 mile area. It is an Overseas Collectivity of France, which means it is like an overseas country within the French Republic.

Remoteness and the way the islands are widely dispersed means that for mains electrical power, generator sets are essential and there are an estimated five hundred FG Wilson units on the islands, many of the larger ones operated by utility provider Electricité Du Tahiti (EDT), installed and maintained by Poly Diesel **www.poly-diesel.pf** and operating as main power stations for the islands. This means the generator sets are running for prime power and running for 45,000 hours or more.

In July, Peter Havenaar from our sales team visited customers on the islands with our French dealer Geniwatt **www.geniwatt.fr/** who work closely with Poly Diesel. He said "It was great to see our FG Wilson machines providing essential power for the islands and it was good to see machines with 30 – 40,000 operating hours on the clock. I even spotted one with just under 44,000 running hours!"

POWER GENERATION IN THE MIDDLE EAST

INTERVIEWEES

Medhat Al Shafey: Engineering Products Division Manager, TAMGO, FG Wilson dealer in the Kingdom of Saudi Arabia.

Naveen D'Souza: General Manager / Vice President, FG Wilson (Engineering) FZE, FG Wilson dealer in UAE and the Gulf region.

As oil prices rise to US$56 recently, what are the upcoming changes do you predict for the generator set market? If you could provide with the market and import values in the UAE and Saudi Arabia for 2018, it would be great.

Medhat Al Shafey: "Yes, the recent oil price increase will have a positive impact on the market in Saudi Arabia, and this is going to reflect on the growth and recovery for the generator set market. But product costs are always going to be important and generator set brands will need to look towards lower cost manufacturing countries to stay competitive. Generator sets made in China now account for about a third of the Middle East market and below 375 kVA that rises to more than half of the market. Some of this is Chinese brands but much of it is accounted for by established global brands like FG Wilson, manufacturing in China. We know that for some customers who may have previously bought generator sets made in Europe or the USA, there can be an image challenge with made-in-China products, maybe to do with quality or how a product will be supported. With FG Wilson, our China-made products are built in modern, world-class factories, at the same standard, to the same design, with the same components and supported with the same global parts infrastructure as any of our other European or USA-made products. We make a big effort to show this to our customers. And, of course many other industries work the same way: look at the phone in your pocket or the computer on your desk. Most likely these were made in China."

Naveen D'Souza: "Yes, we're seeing positive signs in the Gulf region. As oil prices have increased, we've noticed brisk activity in the oil & gas and construction sectors. Investor confidence always increases when oil prices rise, and this has a positive effect on the market for generator sets."

Factors leading to the rise in power rental market in the Middle East? How has the growth been in the GCC, especially in UAE and Saudi Arabia

Naveen D'Souza: "In the UAE, the rental sector is certainly seeing growth, as customers opt for equipment rental instead of a capital purchase. It makes a lot of sense when customers have budget constraints or are thinking about liquidity. Renting or leasing a machine means it becomes an operating expense, not a capital asset. This helps customers keep tighter control over their finances. Other benefits of renting are that customers don't need to employ people to maintain the generator set: it's all looked after by the rental operator. And if a unit fails, the rental operator is contractually obliged to repair or replace it immediately. With a dedicated rental product range, backed up by effective aftermarket support and ready spare parts, FG Wilson is a preferred brand with several Middle Eastern rental operators.

Medhat Al Shafey: "I agree with Naveen. Another reason why renting machines is becoming more popular is because construction projects are more often broken up into smaller, shorter phases which encourages customers to focus on shorter time horizons and not think about investing in machinery for an entire long-term project. For these shorter project timescales, renting can be a very good solution."

Which is the biggest generator set market in the region? Recent reports suggest Saudi Arabia, the UAE and Qatar are leading the way. What are the countries, you think, follow the list?

Naveen D'Souza: "The last few years have been challenging for many in the industry but there is now renewed vigour and investment across the region. We would see the top 3 markets as Turkey, UAE and Saudi Arabia. Together they account for well over half of the entire generator set market in the Middle East."

Between gas and diesel generator sets, which has a better growth prospect and why? With solar generation being tapped in a big way today especially in Saudi Arabia, the UAE and Egypt, do you think it may affect the generator set industry?

Naveen D'Souza: "I think diesel generator sets have better growth prospects in the immediate future. Although gas generator sets have been in use for many years, lack of proper distribution and local storage constraints are hindering growth. But there is now much emphasis on clean energy in the region which could drive growth for gas generator sets. There are efforts to provide local storage solutions, with uninterrupted supply of gas and this will help to grow the gas market.

"Interest in solar power generation has increased tremendously in the region but for the foreseeable future, this will co-exist alongside generator sets. Even though the size of solar panels is reducing, you still need a very large surface area to install a solar plant compared to the space occupied by a generator set. We see a lot of people who ask about solar power generation but what they really need to meet their needs is a generator set."

Medhat Al Shafey: "Yes solar power generation will definitely play a growing role in Saudi Arabia and across the Middle East, but for now and the foreseeable future, we're going to see power generation solutions combining diesel and solar, especially in the telecoms sector."

What is the role of hybrid generators in the present context?

Medhat Al Shafey: "All telecom companies in Saudi Arabia are interested in hybrid generator sets. They prefer a complete solution from one source, so it's one call for service and support for the entire system. At TAMGO, we're working closely with our customers to provide them a complete solution."

Naveen D'Souza: "Yes, we see this strongly too. There are a few variants of hybrid generator sets in the market. However, the only successful hybrid options are for solar with back-up from a diesel generator set and battery. These are mostly used by telecoms operators to provide power to the GSM towers. As the batteries get more efficient and smaller, hybrid generator sets with battery back-up might play a bigger role in the coming years."

What are the preferred ranges that are most popular in the region and the industries that are catered to?

Naveen D'Souza: "FG Wilson manufactures generator sets from 6.8-2,500 kVA. These are used across the various industry segments. Most of our 6.8 – 30 kVA range are installed by telecoms operators and our 30-700 kVA range is used widely to provide prime power at construction sites, offices, small industries and events. Our larger range of 750-2500 kVA generator sets are used in power plants (as a main source of power), large industries and emergency standby in buildings and other installations, where continuity of power is important, for example, hospitals, banks, data centres and high-rise buildings."

Upcoming trends in the generator set market for the Middle East region. How is North Africa region looking in terms of generator set market?

Naveen D'Souza: "Customers are certainly becoming more price conscious. We think in terms of lifetime value: so while we focus heavily on cutting down the costs, we do not compromise on quality, reliability and support. It's always possible to find something which is cheaper up-front, but always important to think of ownership experience and costs over a product's lifetime.

"North Africa is experiencing strong growth mainly driven by infrastructure development, oil & gas and structural reforms and these will drive demand for generator sets."

Medhat Al Shafey: "Yes we're seeing promising developments in Egypt with new infrastructure projects and the new capital city which is now under construction."

INTEGRATING STANDBY GENERATOR SETS INTO DATA CENTRES

There are many causes of data centre outages but loss of power doesn't need to be one of them and a well-chosen generator set can take this concern away.

If you're thinking of installing a standby generator into a data centre's power system, there are several key decisions.

Generator Set Selection

The first and most important decision is choosing the right generator set rating to meet demands from the critical UPS / IT and cooling / chiller loads (also called the N demand). If the data centre is likely to expand, this may change over time.

The decision on whether the generator set will supply power at high or low voltage depends on the size and overall scale of the data centre, on the tier distribution topology and on the actual space available to accommodate the generator sets. Typically when the N load requirements are above 4 -5 MW, high voltage is the best option.

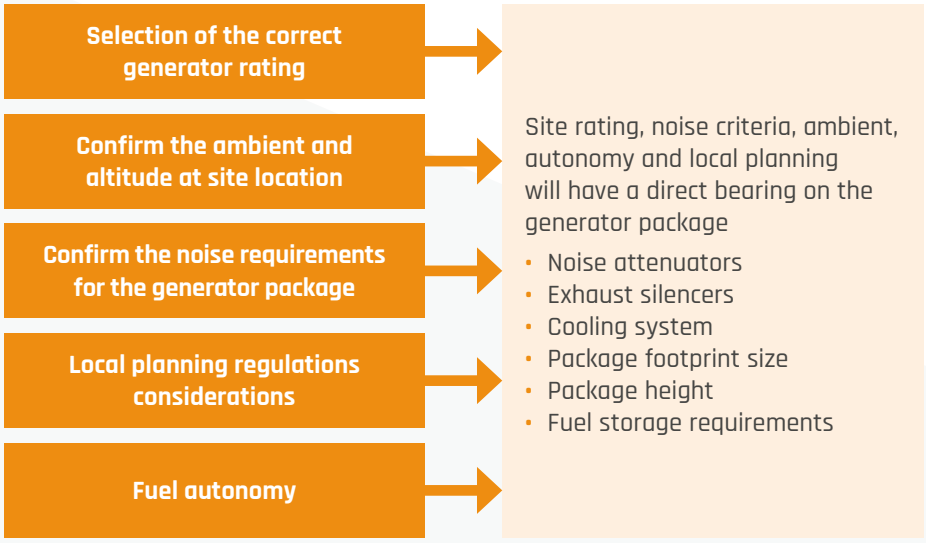
Critical UPS / IT load can influence generator selection in several ways:

- UPS battery recharge which can be 10-20% of UPS rating. This power may need to be covered by the generator. In some cases, an operator may opt not to recharge when running the generator set. This will affect the design autonomy when transferred back to the mains and presents a risk which the data centre operator must consider.
- Modern UPSs present quite low levels of harmonic current distortion (THDi) to the generator set although in situations where the UPSs are in bypass mode, the higher harmonic distorting IT / Server load needs to be supplied by the generator set which may require an oversized alternator to ensure the quality of voltage waveform is not affected.
- Most modern IT loads present a leading power factor by nature. This does not create an issue for UPSs in normal mode, but again if the UPS is in bypass mode, the leading power factor load must be supplied by the generator set directly and this may cause voltage instability issues which may require an oversized alternator.

The effect of UPSs in bypass mode will depend on the UPS kVA rating in proportion to the generator / generators rating. A supplier will be able to provide detailed support on this and other aspects of generator set selection.

Data Centre Continuous Ratings

The running duty of the generator set in data centre applications is very important, especially when looking at requirements defined by the Uptime Institute. FG Wilson in conjunction with our sister company Perkins have developed a Data Centre Continuous Rating which delivers unlimited hours of annual operation with no restriction on the average load factor up to 100% constant load. This rating complies fully with Uptime Institute Tier III and IV continuous operation requirements and is currently available from the P400-1 through to our P2500-1 models.

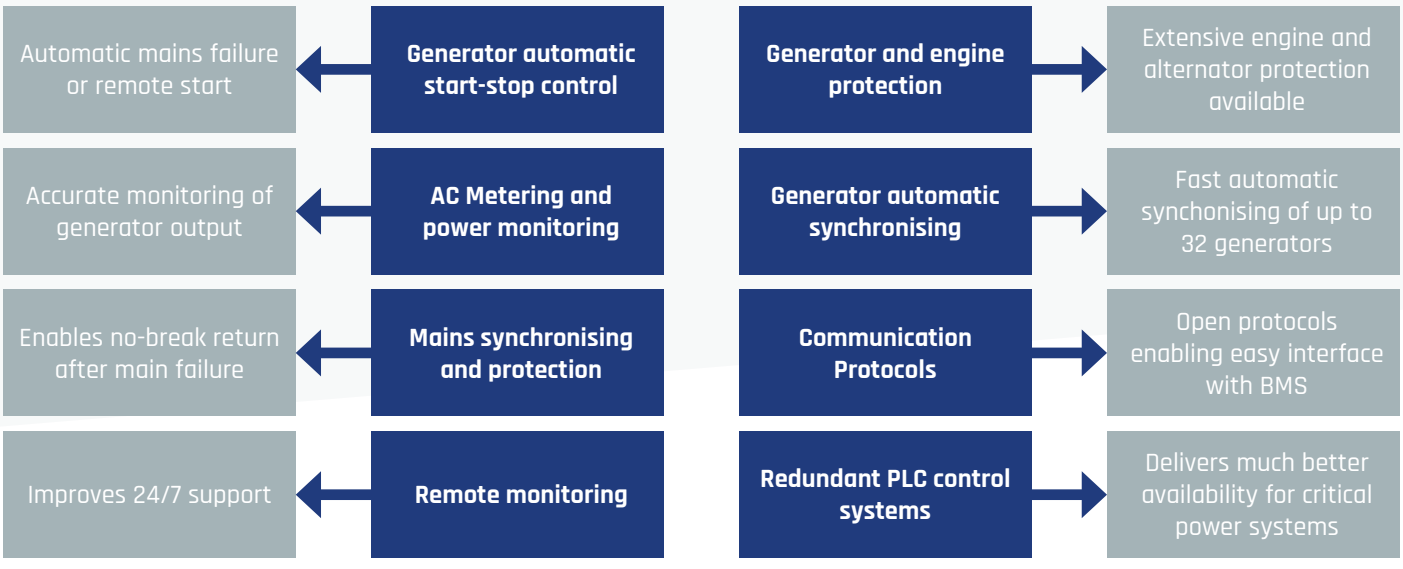


Generator Set Package Integration

After determining the rating and number of generator sets required to meet site load demands, the physical integration of the units means consideration of ambient, noise, local planning regulations and fuel autonomy. The outcome of these considerations influences the generator set package installation in terms of noise attenuators, exhaust silencers, cooling systems, package footprint, height and fuel storage. For example, if a very low noise level is required this will increase the size of attenuation, exhaust silencers and the overall package footprint, which of course will increase the package costs. It's vitally important that the criteria are as accurate as possible at the concept stage of the project. A generator set supplier should be able to provide in-depth support during this development phase.

Generator Set Control Systems

This covers a wide range of features and functions, many of them vitally important when delivering key control requirements for the generator set. For example, the ability to load sequence enables N+1 or N+2 functionally for redundancy. The extensive communication interfaces can facilitate interfacing with on-site management systems and enable operators to monitor the generator set remotely, improving 24/7 maintenance support. Redundant PLC control systems are essential for delivering a high level of availability when managing the primary power of the data centre, essentially the mains and standby primary incomers and distribution.

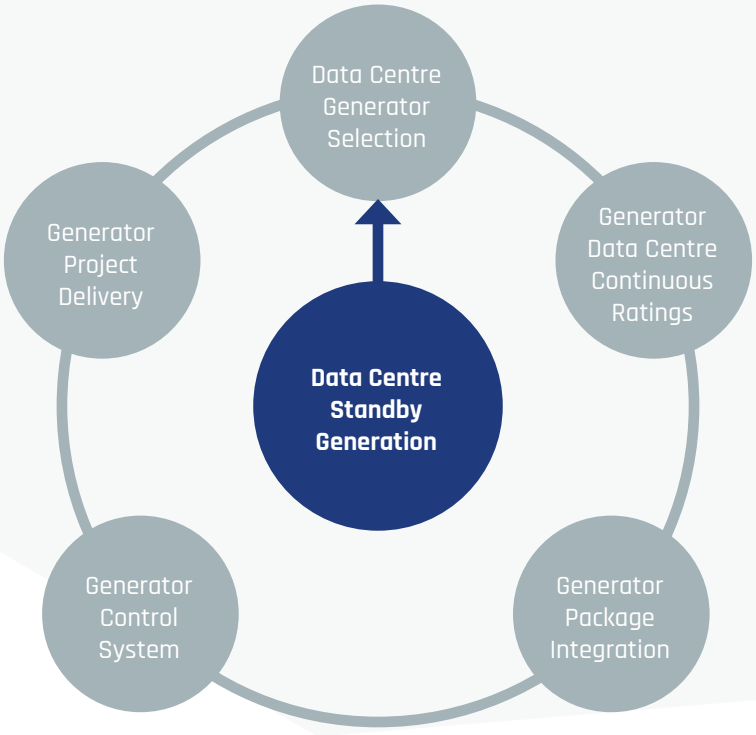


Project definition	• Understand client needs • Agree detailed scope • Identify project stages
Project plan	• Select suitable Genset • Develop operational control philosophy • Detailed site specification design: – System control – Fuel system – Noise attenuation – Site layouts
Project delivery	• Factory witness testing • Task specific method statement • Risk assessment • Commissioning protocols • Document handover
Project closure	• System walk down • Snag completion • Integrated System Testing (IST) • Client handover

Generator Set Project Delivery

When choosing a generator set brand it's important to evaluate a supplier in terms of their ability to support in the definition of the project, the development of a project plan, the manufacturing, testing, site installation to the final commissioning and most importantly after sales maintenance support.

Robert Breadon is an Application Consultant at FG Wilson.



Always Connected

The FG Wilson 6.8 – 25 kVA range of generator sets is designed to run efficiently for long intervals in remote locations, which means:

600, 1,000 and 2,000 litre fuel tanks so you need to refuel less often.

Service intervals up to 1,000 hours so you make fewer visits to site.

New LCD control panels with optional remote communications to make day-to-day operations much easier.

And three enclosure designs so you get the enclosure you really need.

Find out more at www.fgwilson.com

COAL MONGOLIA

From 5 – 6 September, our Mongolia dealer Monhorus International **www.monhorus.com** were at the British Embassy Booth at Coal Mongolia, **www.coalmongolia.mn** Mongolia's biggest coal trade and investment conference and exhibition, in the Shangri-La Hotel, Ulaanbaatar.

Powerful Performance

From the baseframe up, the FG Wilson Rental generator set range are thoroughbreds, designed for rental and construction applications.

The entire range comes with 500 hour service intervals, industry-leading fuel consumption and 110% extended capacity fully bunded fuel tanks.

In preparation for a long service life anywhere, our enclosures are fully galvanised, designed to withstand the harshest on-site conditions and offer excellent noise reduction.

And ease of installation and maintenance are built into every corner of our generator sets.

To find out more, visit

www.fgwilson.com

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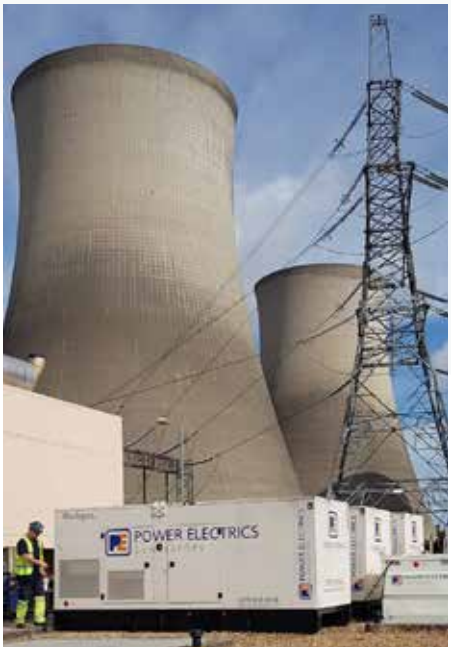
UEL'S 30TH ANNIVERSARY

In July, we were really pleased to see Uel McKinney back in Belfast to mark his 30th anniversary with FG Wilson.

Uel joined us in 1989, starting in a production role in First Street, Belfast, our original premises. He helped start up the FG Wilson sales office in Dubai in 1992, was with our Hong Kong Sales Office almost from the start in the early 90s, was one of the first employees at the Newberry, South Carolina, facility in the late 90s. Uel is now FG Wilson Regional Sales Manager for SE Asia, based in Singapore.

DIDCOT

Three FG Wilson 500 kVA rental generator sets from our UK dealer Power Electrics **www.powerelectrics.com/** supplied electric power to the works at Didcot a Power Station in Oxfordshire, UK, before the remaining three huge cooling towers disappeared in quick succession on 18 August.



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