



brushstrokes



The Newsletter of Brush Turbogenerators

PART OF THE  FKI GROUP OF COMPANIES

Green Power comes ahead of schedule



DAX turbogenerator of the type being supplied to the South Houston Green Power energy plant in Texas, USA.



Dr Tony Saia, MD Brush Turbogenerators

Our latest Brushstrokes newsletter sees markets continuing to face the challenges presented by the developments in world events. The Brush turbogenerator companies have seen a combined history of over 300 years and are ideally placed to continue to drive forward to offer the technical and commercial requirements for supplying power generation equipment to the world's economies.

As the world's leading independent manufacturer, Brush turbogenerators are looked to when economic value, technical ability and superior after-sales service are the requirements for a power project, be it a new combined cycle generation plant, offshore power plants, independent power peak lopping units, hydrogenerator repairs or high output, combined-cooled turbogenerators.

We are confident that this history and capability will see us through this era of change and forward to the opportunities to come.

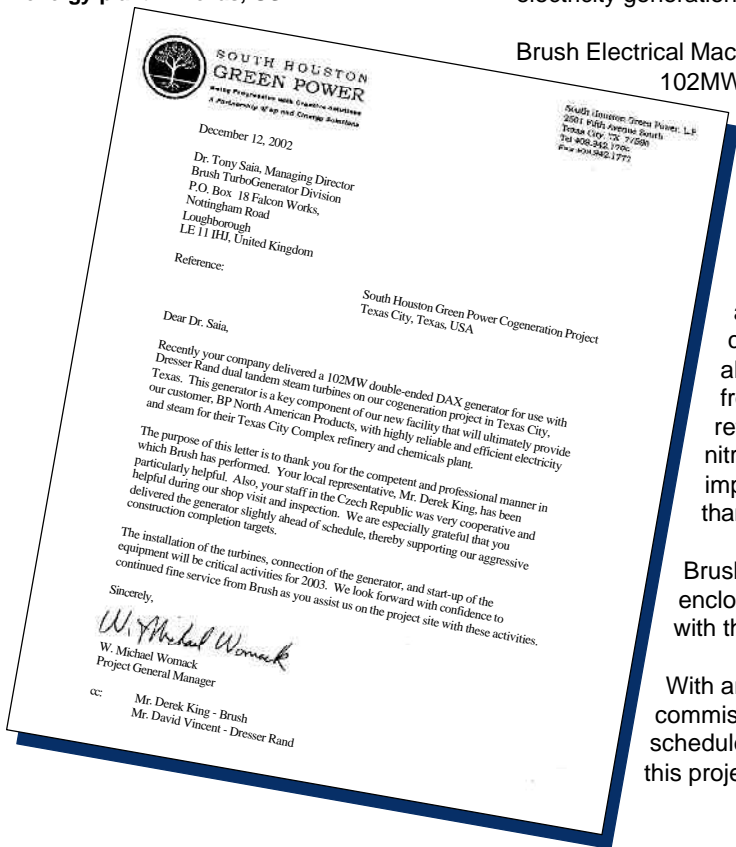
With world public opinion demanding cleaner energy, some producers are beating the policy makers with their targets to improve the environmental impact and efficiency of electricity generation.

Brush Electrical Machines supplied a double end drive DAX turbogenerator rated at 102MW to be driven by two Dresser-Rand steam turbines to the South Houston Green Power, L.P. (SHGP) energy plant in Texas City, Texas. SHGP is a partnership between BP and Cinergy Solutions, Inc. - an affiliate of Cinergy Corp., one of the USA's leading diversified energy companies.

The steam turbine driven generator set will be part of an 800MW combined-cycle energy plant supplying process steam and electrical energy to the nearby BP Texas City refining and chemicals sites. In addition to natural gas, the new facilities also will burn the complex fuel gas produced as a by-product from BP's process units. These new facilities will allow the retiring of older, less efficient power units and further reduce nitrogen oxide emissions from the Texas City site. In total, this will improve environmental air quality by reducing emissions by more than 50% in the local area.

Brush's scope for this project included the generator, the acoustic enclosure, and the PRISMIC excitation controller, which interfaces with the turbine and plant control system.

With an aggressive timescale target to meet in order to get the plant commissioned in 2003, Brush supplied the generator to site ahead of schedule to assist in meeting - or even beating - the timescale targets for this project.



SOUTH HOUSTON GREEN POWER
A Partnership with Cinergy Solutions
A Partnership of BP and Cinergy Solutions

December 12, 2002
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Reference:
South Houston Green Power Cogeneration Project
Texas City, Texas, USA

Dear Dr. Saia,

Recently your company delivered a 102MW double-ended DAX generator for use with Dresser-Rand dual tandem steam turbines on our cogeneration project in Texas City, Texas. This generator is a key component of our new facility that will ultimately provide our customer, BP North American Products, with highly reliable and efficient electricity and steam for their Texas City Complex refinery and chemicals plant.

The purpose of this letter is to thank you for the competent and professional manner in which Brush has performed. Your local representative, Mr. Derek King, has been particularly helpful. Also, your staff in the Czech Republic was very cooperative and helpful during our shop visit and inspection. We are especially grateful that you delivered the generator slightly ahead of schedule, thereby supporting our aggressive construction completion targets.

The installation of the turbines, connection of the generator, and start-up of the equipment will be critical activities for 2003. We look forward with confidence to continued fine service from Brush as you assist us on the project site with these activities.

Sincerely,

W. Michael Wornack
W. Michael Wornack
Project General Manager

cc: Mr. Derek King - Brush
Mr. David Vincent - Dresser-Rand

Generator News



The Shen Tou thermal power plant in Shanxi province will be supplied with 2x 500MW combined-cooled (Water and Hydrogen) machines to be driven by steam turbines for base load generation. The electricity will be supplied to the district of Beijing via Datang Shanxi Power Company. Shen Tou power station was built based on an agreement signed in 1979 between China and the then Czechoslovakia.

Largest Brush Generators go to China

The largest generators ever manufactured under the Brush name are to be used in a power station extension project in China.

The first two 200MW units have been generating power since 1985. Two years later, two more units of 500 MW power output were ordered, which were completed at the beginning of the 90s. Simultaneously, negotiations for a power plant extension continued and the Czech and Slovak companies offered two further units of 500MW each. In 1994 the former Prime Minister, Václav Klaus arrived in Beijing to promote the project, which represented a project value for the Czech and Slovak companies amounting to almost US\$ 400m.

These machines are being built at Brush SEM in Plzen, Czech Republic, where machines of up to 1100MVA have been manufactured in the past, but these are the largest to date which have borne the Brush name. They will be supplied to Skoda Energo, who are to supply the steam turbines and balance of plant, for operation beginning in 2005.



Brush Scope of Supply

- 3-phase synchronous 2-pole combined cooled turbogenerator
- AC exciter 4,200 kVA
- Static excitation set & AVR
- Generator auxiliary equipment
 - gas system
 - oil system (sealing)
 - water system
- Generator foundation equipment
- Spare parts
- Site services

Marine News

Cruising past 50,000 hours

DAX generators supplied for powering gas turbine cruise ships have passed the 50 000 hours of operation milestone.



Inspections carried out aboard the Celebrity Cruise Line's MILLENNIUM vessel recently have given the COGES system a clean bill of health and predicted that the anticipated 13,250 Hour overhaul interval can be safely extended.

Three further gas turbine powered cruise ships were delivered during 2002. Meyer Werft in Germany delivered the second VANTAGE class liner BRILLIANCE OF THE SEAS in July, whilst Princess Cruises' CORAL PRINCESS (shown above) was delivered by Alstom Chantiers de l'Atlantique in November. Italian shipyard Fincantieri delivered Holland America Lines' ZUIDERDAM in November, with further liners OOSTERDAM and WESTERDAM to be delivered during 2003 and 2004 respectively. Four further cruise liners are currently on order, including ISLAND PRINCESS and SAPPHIRE PRINCESS for Princess Cruises, all of which will incorporate Brush DAX turbogenerators.

Hours logged on each engine

Vessel	Port	Starb'rd
Millennium	9700	10200
Infinity	7200	5600
Radiance of the Seas	5100	6400
Summit	3100	2800
Total hours	25100	25000

Exhibition Diary

Exhibition	Date
 Elenex Malaysia 2003, Kuala Lumpur, Malasia	5 - 8/5/03
 PowerGen Europe 2003, Dusseldorf, Germany	6 - 8/5/03
 PowerGen Asia 2003, Ho Chi Minh City, Vietnam	23 - 25/9/03
 PowerGen International 2003, Las Vegas, USA	9 - 11/12/03

HMA News

Brush HMA continue the 'winning experience' with GE Oil and Gas

Brush HMA have won further contracts with GE Oil & Gas for the supply of 4-pole turbo-generators for use in the oil and gas market. A major factor in the choice of Brush HMA for these projects was the experience and working relationships developed and the delivery time offered.

P50 FPSO Platform – Albacora Leste Field

The contract was for the supply of four DG 185Z type 4-pole generators driven by PGT25+ gas turbines. The generators are rated at 28,750KVA and are 13,8 kV/60 Hz. The generators will be used to provide electrical power for the entire platform, and special attention was given during the design phase to ensure that the generator reactance values were suitable for island operation. The generators underwent stringent ABS certification before delivery due to their maritime application. This is the first supply for this Brazilian oil and gas company, which is the largest in Latin America, and further opportunities are expected to support current planned developments.

West shelf Joint Venture for Woodside, Burrup Peninsular, Australia



The North West Shelf project installation on the Burrup Peninsula

Brush HMA supplied two DG215ZL type 4-pole generators to be driven by LM6000PD type gas turbines. The generators are rated at 51,785 KVA and are 11kV/50Hz machines. The machines will be built to stringent Shell Dep. Specifications. Woodside is one of Australia's largest oil and gas companies and Shell has a large shareholding in the company.

These orders substantiate the growing acceptance for using higher rating 4-pole generators in the power market. Brush HMA is a clear market leader in this field and now has references covering the following gas turbines: Mars, GE10, PGT10, Titan, LM1600, Frame 5, LM2500, LM2500+, RB211, Frame 6 and the LM6000.

Service News

Houston parts inventory growing



To support more than 400 generator units now installed in North America, the FKI Rotating Machines Houston warehouse has expanded and the emergency spare parts stock increased. We always recommend expected service parts are maintained at the user's site, but these increased local stocks are able to back up the user's consumption and provide essential support parts in emergencies.

Keeping electric power generators on line or fully available for service is always a priority, and the maintenance of consumable components levels is an essential part of this support system. With the mechanical and electrical parts pre-packed and ready for delivery, airport desk-to-desk, overnight and regular dispatch alternatives are available to meet the jobsite need. Specialist technical assistance from either the main plant or Houston is also available to give routine support during scheduled servicing or to attend unexpected outages.

Combined with an enhanced Brush main plant inventory and manufacturing system, which now includes on line order placement via a secure Web site, parts orders can be placed and tracked on a 24-hour basis. Both Brush and MarelliMotori parts are available from the Houston FKI Rotating Machines operations.

The top picture shows Charles Mallon (Service Manager USA) checking an outgoing shipment, (a crated bearing assembly for delivery to a gas turbine generator company in California), Ed Apitz (Mechanical Service Engineer) is driving the fork lift truck.

Hydro Power



FKI Energy Technology and Voith Siemens Hydro Power Generation have announced the signing of a co-operation agreement for the manufacturing of hydro generators for medium sized-hydro generators rated up to 150MVA.



This development will bring together the world class engineering, design and marketing capability of Voith Siemens Hydro Power Generation and the experienced hydro generator production capabilities of Brush SEM as a part of the FKI Energy Technology Group in the Czech Republic.

Key strengths of both partners will be united to produce competitive products cost- and quality-wise in the hydro generator sector. The agreement will be followed by the foundation of a Voith Siemens Engineering company in the Czech Republic.

This co-operation will also focus on modernisation projects and provide the market with quality hydro generator after-sales services.

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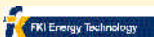
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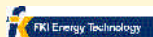
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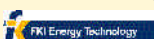
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Quality Assurance: BS EN ISO 9001

