



brushstrokes

The Newsletter of Brush Electrical Machines

winter 2000/2001

PART OF THE  FKI GROUP OF COMPANIES



Welcome to our latest edition of Brushstrokes - Brush Electrical Machines' twice-yearly newsletter. We are continuing to invest in our production facilities, as you will see inside with Dick Hogg's article on page 2 regarding our recent machine shop improvements. Moreover, with the inclusion of HMA Power Systems within the FKI group, we are now able to offer an increased range of 4-pole machines, together with increased capacity for our 2-pole DAX range of turbogenerators. In addition, FKI group strength is assisting us in pursuing further markets in the Marine and Offshore sectors as detailed in Martin Rooney's article on page 3. BEM's primary focus is complete customer satisfaction and to this end, we are improving our commercial systems to give faster quotes, better response to enquiries and customer feedback. Bringing us into the e-commerce age, we are working on systems that will enable on-line facilities for our customers requiring quick and easy access to spare parts information and ordering. Constant improvement at Brush is a permanent goal.

Tony Saia, Managing Director

DAX News

Meeting the Peak Demand Deadline



Dayton Power and Light in the State of Ohio - USA has commissioned Brush DAX generators coupled to Pratt & Whitney FT8 aero gas turbines engines at a Greenville site in time to meet the peak summer loading needs of the local utility, which commenced in June this year. The four generators are the second phase of a significant increase in peak generation capacity in this area.

Developed by DPL's unregulated subsidiary DPL Energy, the site comprises four combustion turbine units totaling 225MW, each unit being one generator and two turbines in the Pratt & Whitney, Twin-Pac configuration, a total investment of approximately \$80 million. The project was won by Pratt & Whitney with the objective of output power being available to meet the region's summer 2000 demand.

"DPL Energy's management team did an outstanding job completing the project in less than one year and in time to meet the summer 2000 energy demand. DPL is making excellent progress in our peaking generation strategy," said Allen Hill, President and CEO of DPL Inc. "The addition of these units has enabled us to capitalize on the strong economic growth in the region and the favorable market for wholesale power in the capacity short East Central Area Reliability Coordination Agreement (ECAR) region. We expect that the generation capacity increase provided by these units will make a significant contribution to our business growth objectives."

Based in Dayton, Ohio, DPL Inc. is a diversified energy company supplying energy services to customers in the Midwest. The Company sells electricity to 500,000 residential, commercial, industrial and governmental customers in a 6,000 square-mile area of West Central Ohio. For the last ten years, DP&L has ranked among the top ten energy companies in generation efficiency and productivity.



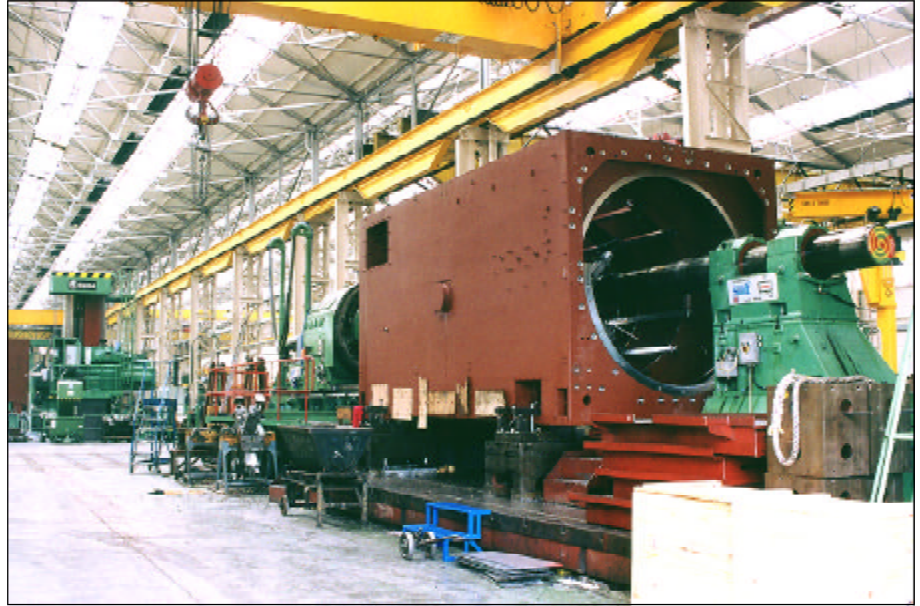
Machining's *Magnificent Millennium Move*

The last two years have been particularly busy for Dick Hogg, Machine Shop Manager at BEM. Dick has been busy leading the team responsible for the formation of a new and improved machine shop facility on Brush Electrical Machines' Loughborough site. This project, along with re-positioning and adding to the company's machining capability has led to better lead times, cost reductions and more flexible production capability than BEM has ever had. More than this, the major part of moving the 20 large machine tools and 51 other items of production equipment was achieved whilst **increasing** production output.

Work began on the £3million operation during 1997 when it was decided that a streamlining of the two current machining shops was necessary. This would result in benefits of a streamlined system of working, eliminating avoidable handling of work in progress, reducing floor space used by up to 30% and reducing time critical elements of production.

Having decided to go-ahead, a suitable location on the 85-acre Loughborough site was selected - this was a major decision, as the space required took over an assembly area previously used for railway locomotive assembly and refurbishment by sister company Brush Traction.

In addition to re-organising and re-siting existing machinery, an important addition to the machine shop capabilities was provided with the addition of a Horizontal Ram Floor Borer. This important new piece of equipment, customised to BEM's requirements and representing over £1million of investment by itself, is the centrepiece of the new machine shop. The addition of this piece of equipment had been contemplated for several years, before the FKI group gave permission to proceed following their acquisition of the company. Manufactured by Czech company Skoda, the borer incorporates a



Above: The relocated Machine Shop



Left: The new floor borer in action

Heidenhain 430CNC controller and is 25 metres long with a travel length of 14.5 metres and a 3.5m² rotary table. A maximum height of 3.8m and a ram reach of 2m can also be attained. The machine has been calibrated to give a radial accuracy of 13 microns in a 600mm diameter test, which is the size of a standard turbine/generator interface. The new borer replaces three existing machine tools, thereby eliminating the transfer of work between machines for boring, drilling and tapping operations previously necessary. Combined with an elimination of marking out operations, the floor to floor times of stator frames have been reduced by a factor of five. In addition, avoiding the extra steps eliminates any alignment error between machine tools, significantly improving the overall machining tolerances achieved. Efficiency is further enhanced by the ability to set up jobs on one part of the machine whilst it is carrying out operations on another.

Whilst simultaneously converting to a 3 shift system giving round the clock working, the machine shop project was completed in March 2000. Improvements have since been seen in productivity to the extent that over 100% of hours worked are being attributed to production. Helping to achieve this, a Manufacturing Cell approach was implemented into the area that includes specific responsibilities for; stator and enclosure parts, rotors and associated components and kit and assembly parts.

The next stages of the project are to install an additional slotting machine, which will considerably improve output capacity for generator rotors and help support BEM's continuing support for machines already in the field. Also planned is the addition of an extra 10" CNC lathe, which was allowed for at the planning stage and will give increased capacity and capability.

Overall, Dick thinks the changes have been a huge success with the target increases in production and efficiency already being exceeded and the space effectiveness objectives being met.

Marine News

Marine Focus for the *new Millennium*



Celebrity Cruises have taken delivery of the world's first gas turbine electric cruise liner, GTS (Gas Turbine Ship) MILLENNIUM, which incorporates Brush DAX and BRS turbogenerators.

The ship was handed over to Celebrity by Chantiers de l'Atlantique on June 22nd and was named in Southampton on June 27th. She will spend the summer season cruising around Europe and her winters in the Caribbean.

Continuing our 100% record for the provision of generators on gas turbine powered cruise ships, Brush will supply 16MW BDAX 62.170ERH machines for Holland America Line's 9000 CLASS cruise ships, to be built by Fincantieri in Italy. With BEM also due to supply the generators for P&O Princess Cruises' next phase of the GRAND PRINCESS and BABY GRAND vessels, a strategic focus has been developed which sees BEM become the Marine & Offshore co-ordinator for the FKI Engineering Group.

Manager of Marine & Offshore Sales, Martin Rooney commented "This initiative will enable the FKI Engineering Group product range to be available from a single source, enabling Shipyards, Ship Architects and Propulsion Integrators to source a total FKI solution from one supplier".

The Loughborough based sales team will offer products primarily from the BEM, HMA Power Systems, Laurence, Scott & Electromotors, Marelli Motori, FKI Industrial Drives and FKI Switchgear product ranges.

Exhibition Diary

Exhibition	Date
 Cruise Shipping Convention, Miami	5 - 9/3/01
 Electric Power, Baltimore	20 - 22/3/01
 Hannover Messe, Germany	23 - 28/4/01
 Offshore Technology Conference, Houston	30/4 - 1/5/01
 Cruise & Ferry 2001, London Olympia	8 - 10/5/01
 PowerGen Europe 2001, Brussels	29 - 31/5/01
 Offshore Europe, Aberdeen	4 - 7/9/01

Prismic News

New Excitation Controller Approved

A new excitation controller, the A30-M, has been developed in a short time to satisfy special performance requirements of the Millennium class gas turbine electric propulsion cruise ships. The new unit has been environmentally tested to the satisfaction of Lloyds Register of Shipping and Det Norske Veritas and has been launched in parallel with the new Brush Windows NT HMI Software for Excitation Controllers (HMIInt) which provides data trending and enables easy archiving of setup information.

Sales News

All change in Malaysia

The Kuala Lumpur office of FKI Rotating Machines International has seen a change in personnel from Brush Electrical Machines with a new face in the area but a familiar one to BEM's customers. Mark Alvey (top) has taken up the position in Malaysia vacated by Mick McTeague (below), who has completed his two-year tour of duty in the territory. Mark will spend up to five years in Kuala Lumpur developing the important Marine and Industrial markets in the region and also representing the other FKI Rotating Machines' companies in the area.

In a completion of the circle, Mick McTeague has returned to the UK to take up the position in the Marine & Offshore sales department vacated by Mark. Mick now has particular responsibility for all PRISMIC Power Management sales and Offshore markets, being based at BEM's Loughborough headquarters.



Service News

Major repairs in double quick time

Brush Electrical Machines' new Repair Shop is helping customers to benefit from an increased capacity and realistic turnaround times for critical repairs to major equipment. BEM now has an improved capability to take large air cooled turbogenerators, of Brush (and some others) manufacture and carry out a wide range of repair procedures. These can range from a simple "wash and brush up" exercise to total strip and re-build of large turbogenerators, possibly involving the provision of new factory-built major components such as re-manufactured rotors or a new stator and/or rotor winding. As the world's premier original equipment manufacturer of air cooled turbogenerators, BEM offers full engineering backup enabling the use of the latest design features and materials in its repairs of older machines, also the capability to advise on and implement any possible upgrades in performance of such machines.

This facility is just one more reason that BEM customers can feel assured that, whatever problems they face in operating their large air cooled turbogenerators, the ability of BEM to service and repair their power generation assets is something that they will always be able to rely on.



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