

Brush NEWS – 1996 – Two more RAMFORM ship sets ordered

Currently in production are two more sets of diesel-electric propulsion equipment for the **Ramform** series of seismic survey vessels, as announced in the last issue.

Following successful operating experience with the first two ships of this type – the **Ramform Explorer** and the **Ramform Challenger** – BEM was selected as the supplier of this vital machinery by Langsten Shipyard and owner PGS Exploration, both companies being based in Norway. Final negotiations were undertaken by Martin Rooney and Brian Clegg, with the assistance of Tormod Landsverk, our agent based in Oslo – the total value exceeding £4 million.

The evolution of these vessels has seen the power of the two main propellers grow from 2500kW each for the first ship, to 4000kW each for the two now under construction. Because of the resultant increase in generating capacity, it was necessary to raise the previous system voltages of 660V to a medium voltage level – 4160V being selected by BEM as the most economic for our generator design.

These larger power ratings have enabled a more extensive list of materials to be provided by Projects Dept., involving equipment from several FKI Group Companies. Much of the equipment comprises the latest developments from several product lines, the quantities below being for both vessels:

GENERATORS

Eight 3200kW, 800rev/min type BSC 100 generators from our “structured product range” are being manufactured to suit engines supplied by **Ulstein Bergen Diesel**. These machines will be installed onto the engine bedplates at Bergen in Norway.

A total of 24 marine generators of this type are currently in production for this and the P&O Nedlloyd contracts.

MAIN PROPELLER DRIVES

Four 4000kW **Synchrosil** variable-speed drive converters are being provided by **Brush Industrial Controls**. These units are 2200V versions from their medium voltage range, in this case fitted with water-cooled heat exchangers. Each is of the double-bridge 12-pulse type in order to minimise the production of harmonic interference on the supply system.

The synchronous motors are enlarged versions of the vertical shaft S100 type previously supplied, operating over a speed range of 0-600rev/min to suit the **Ulstein** controllable-pitch propellers.

BOW THRUSTER DRIVE

A fixed-speed 2000kW cage induction motor will drive the controllable-pitch propeller at the bow of each vessel. This thruster is far more powerful than usual, and enables the ship to continue on course during towing operations in the presence of extreme weather conditions.

Laurence Scott at Norwich are providing the 4160V auto-transformer starters, LSE being the only company in the UK with a technical certification complying with the rules of the Norwegian classification authority **Det Norske Veritas**, whose initials DNV are well known to our Test and QA departments.

MAIN SWITCHGEAR

The 4160V switchgear employs vacuum circuit breakers from the Hawkvac 15 range manufactured by **Hawker Siddeley Switchgear**. In order to meet DNV rules, such switchgear has now to guarantee the safety of personnel from the effects of a potential “internal arc fault”, in the event of a short-circuit developing within any of the compartments.

A special version of this new switchgear now meets this onerous requirement, following tests at the Short Circuit Testing Station over the past few months in which short-circuits of 20,000 amps were developed within the cubicles – the resulting blasts witnessed with some bemusement by staff from the Projects Dept.

AUTOMATIC VOLTAGE REGULATORS

For the first time in the marine sector, our **Micro-AVRs** are being provided for the main generators.

These afford additional integrity by the inclusion of dual control channels – main and standby – so that a single fault should not cause the associated generator to fail completely. This model of AVR is likely to be much more widely used in the future.

TRANSFORMERS

Four 5500kVA and four 2500kVA transformers are being provided via Projects Dept. as part of the composite equipment package.

Like the associated converters, the propulsion units are water cooled so that the heat developed can be efficiently extracted without undue warming of the equipment rooms.

The contract also includes commissioning on board the vessels, it being a condition of the contract terms that David Perkins performs the work on the converters!

From several points of view, the features incorporated within this project represent an “ideal” electric propulsion system, providing opportunity for several FKI Group companies. Langsten have already indicated that they will be offering similar equipment within other vessel proposals, reinforcing the continuing importance of this customer to our Company.

At present the **Ramform Challenger**, which was handed over to the owner last year, is undertaking a survey off the coast of West Africa on behalf of AMOCO Angola and Elf Exploration. This is the largest such survey ever to be carried out worldwide, covering over 6000 square kilometres during a five month period.

Because of the inherent stability of this design, a **Ramform** hull has recently been chosen for a floating production, storage and offloading (FPSO) vessel on behalf of PGS, Atlantic Power & Gas and Aker. Such vessels employ gas from the production wells to fuel gas turbines for power generation and BEM has recently been awarded a contract by ABB-STAL to supply a 19,200kW BDAX.7 turbo-generator for their G735 gas turbine for this particular vessel.

*Brian Clegg
Project Dept*