LUBETECH
NO.4

Static Diesel Engine Development

London Branch held a technical visit to Allen Diesels at Bedford on the 18th September and included as part of the proceedings the BLF London Branch AGM. All who attended were extremely impressed by the range of products, which included digitally controlled fuel injected massive static diesel engines, gas turbines units and various other engines. The overall level of technical development and quality achievement was very impressive.

We were met by Dr G.H. Youdan, Product Technology Manager of Allen Diesels, one of the five business units, which form Allen Power Engineering Ltd, a trading company within Rolls Royce Industrial, and Marine Power Group. Dr Youdan acted as our guide for the tour of the manufacturing facility. The BLF party was made very welcome and the visit began with a presentation to ensure that everyone was up to speed on the various technical developments that Allen Diesels had incorporated into their products.

Allen Diesels shared with us some of the major innovations they had incorporated into their designs. These included very high strength cast iron, computer aided design for casting mould production and the associated feed rates for molten metal used, plus the use of electronic management systems/controls for the power units. The improvements incorporated into manufacturing process have facilitated reduced lead times for new products and the production of castings, which are many times stronger than conventionally cast components. Electronic management of fuel metering, injection and boost controls have improved output and new designs to pistons and crankshafts have increased reliability.

We saw assembly and construction of many of the different ranges of Allen engines, including versions used as pipeline engines and electric power generating units. We saw examples of the Allen 3000 & 4000 series with its massive V12 & V16 units with power output up to 5Mwe (7000+ bhp). Both these types of engines have some common features. These include, high efficiency turbochargers tailored to suit requirements and latest generation piston rings faced with ceramic/chrome materials, for lower wear rates and low lubricating oil consumption and remote monitoring and special instrumentation options.

The 4000 Series range of engines are moderately rated with an engine speed of 720 - 750 r/min, Mean Piston Speed of 9.25 m/s at 750 r/min and a B.M.E.P. of 17.2 bar. These are low mechanical and thermal stressed units and have a reputation for reliability, making them ideal for strategic installations around the world for the provision of base load and critical standby power.

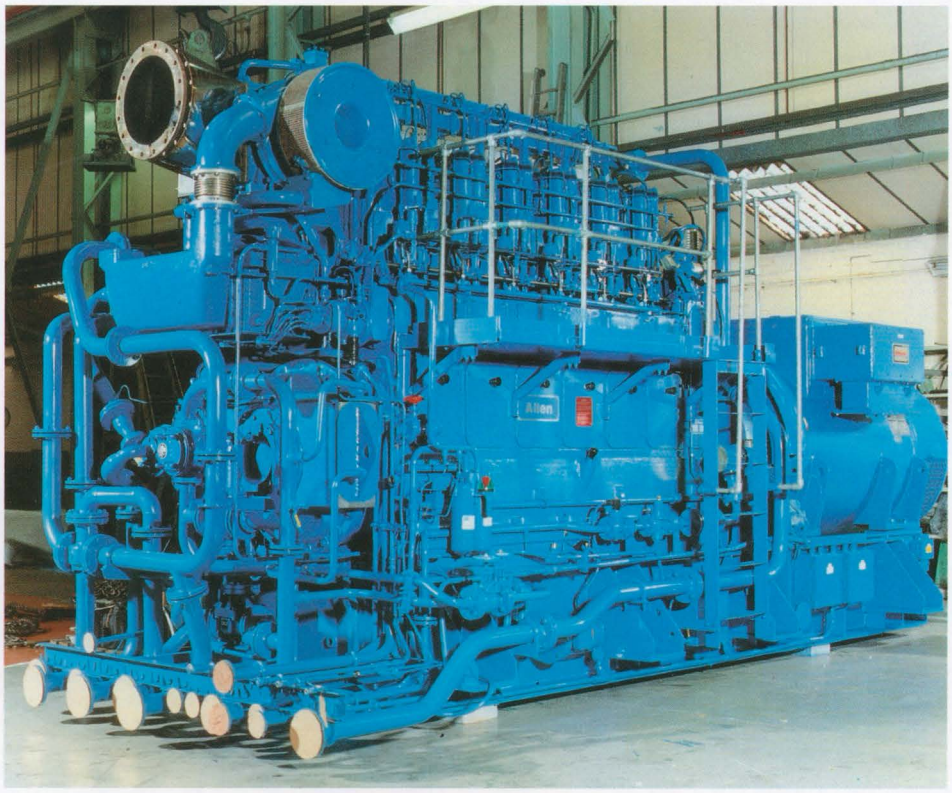
The 4000 Series features include: -

Conventional bedplate and crank design for robustness and reliability.

Flat deck cylinder block design in superior vermicular spherodial iron for greater strength.

Two stage inter-cooling to improve efficiency, whilst maximising heat recovery for CHP systems.

High-grade SG iron single piece pistons (oil cooled), for reliable operation on heavy grade fuels.



Allen 2000 Series for Thames Water sewage works.

Whereas, the 3000 Series sets new standards for modern medium speed diesels engines with its advanced power to weight and power to space ratios. It is one of the most advanced, compact and powerful engines of its type in the world. It has an engine speed of 720 - 1000 r/min, Mean Piston Speed of 10.0 m/s at 1000 r/min and a B.M.E.P. of 23 bar. It is one of the most cost-effective ranges of engines available as it has low capital cost, excellent fuel economy and long periods between overhauls.

The 3000 Series features include: -

Under slung die-forged crank with crankcase in high strength spheroidal iron for heavy-duty reliability.

Technically advanced composite S.G.iron pistons with steel crowns, for reliable operations at high pressures.

Individual unit injectors providing high fuel injection pressures and good combustion characteristics, resulting in excellent fuel economy.

Low parts count for simplified maintenance with long overhaul periods.

There were many of our members' lubrication products evident around the works both metalworking fluids and diesel engine oils. It was good to see our industry's technology was helping Allen Diesels manufacture their products and especially helping towards creating new export opportunities and aiding in the design of new engines. I have no doubt we shall want to re-visit Allen Diesels very soon.

Rod Parker