Steam Turbine Revamp
Installation of footprint steam turbine
For the long-term upgrading and optimization of an existing plant, MAN PrimeServ has installed a footprint steam turbine type DK063/80R featuring contemporary technology.

**Objective**
MAN PrimeServ was commissioned to conduct an engineering study in which it would develop a concept for the upgrading and modernization of an approximately 50-year-old machine train. The machine train, which consists of one high-pressure and one low-pressure steam turbine as well as a high-pressure and low-pressure compressor, was supplied by MAN Diesel & Turbo in 1965. The high-pressure steam turbine was already replaced in 2002 as part of a footprint solution. The aim of the engineering study was, in particular, to investigate upgrading the low-pressure steam turbine for a continued service life of 30 years as well as increasing efficiency and availability through the use of current technology.

**Modernization Solution**
Since the low-pressure steam turbine is located within the train between the high-pressure steam turbine, which was replaced in 2002, and the high-pressure compressor, it was not possible simply to install a new MAN Diesel & Turbo machine. Taking into account the findings for the existing machine and the available spare parts, it was decided for technical and economic reasons to replace the existing low-pressure steam turbine with a footprint steam turbine.

The footprint solution combines the latest steam turbine technology of MAN Diesel & Turbo with a casing concept adapted to the existing plant. With its dimensions and connections, the footprint machine exactly fits the existing connecting surfaces of the baseframe, the connection flange to the condensation unit as well as the shaft connections to the high-pressure turbine and compressor. This enables the on-site conversion and installation costs as well as the plant shutdown time to be reduced to a minimum. In addition, existing components and spare parts can largely be reused.
Based on the results of the engineering study, MAN PrimeServ defined the measures necessary for the modification as well as for compliance with the envisaged timescale in a detailed conversion concept. After careful investigation the customer decided to award the order for the conversion project to MAN PrimeServ in line with the proposed concept:

- Supply of footprint steam turbine
- Testbed run to verify performance data and running behavior
- Supply of new condensation unit including hotwell and vacuum unit
- Modernization of seal steam system
- Modernization of instrumentation and control system
- Supply of spare parts package for multi-year operation
- Performance of all installation and assembly work
- Training of operating personnel in PrimeServ Academy

**Summary**

With the implementation of the footprint steam turbine DK063/80R, the new condensing system and the modernization of the control system, it is possible to achieve the operating parameters and targets specified by the customer. The timescale of just five weeks available for the conversion – thereof one week for the disassembly of the steam turbine and three weeks for the implementation and commissioning of the new components – requires a detailed project preparation and an intensive project management on the part of MAN PrimeServ.

With the early manufacturing and supply of the new components required for the conversion, MAN PrimeServ can exclude possible bottlenecks during the preparation phase. By retaining the external casing it is possible to retain the existing unit design without major changes and therefore to further minimize as well the conversion time as the conversion costs.

**Comprehensive Modernization**

MAN PrimeServ provides you comprehensive modernization concepts to modernize your equipment – no matter if you want to optimize reliability, operating costs or any other characteristic. Within our footprint solutions we develop and realize tailor-made solutions to increase efficiency, to achieve energy savings and to improve environmental sustainability. Please contact us for further information.