



**Alternative methods for
turbocharger overhauls
Non-OEMs offer their services**

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The development of non-OEMs

In the past, maintenance of power generation plants was exclusively handled by OEMs. By and by, service supply companies emerged. In the beginning, they offered simple standard services in this OEM-dominated market segment, but soon convinced through flexibility, attractively priced services and a new service mentality.

After displaying a certain amount of reluctance in the beginning, the operators now support this competition manufacturers are facing because they, the operators, are confronted with increasing cost pressure as well. Above that, they have realised that the knowledge of proven technologies is also available without manufacturers.

Over the years, the service supply companies developed their competences, acquired market experience, integrated engineering know-how and continuously invested in their skills to qualify for more sophisticated tasks. At the same time, they had to compete with manufacturers and other service suppliers. Therefore the demand for more stringent, performance-oriented organisations arose. These increasingly acted on a high technical level and simultaneously enabled their clients to have access to the knowledge of well-established technologies.

A component, for example, was replaced by a service supplier with the same proven quality known from manufacturers. The reason for this is that the operating data are available to the plant operator and therefore to any supplier as well. The manufacturer, however, is not able to offer replacements when the components are not available any longer and costly redesigns are required. The service supply company, on the other hand, can help the client save expenses and shutdown times by offering repair services or by redesigning single components.

The plant operators continue to make high demands on the service supply companies and expect, as a minimum, the same quality standards as granted by the manufacturer. Established service suppliers can, by all means, compete in the field of maintenance and offer the operator effective alternatives, since manufacturers are, for financial reasons, also using external companies, have moved their manufacturing plants abroad, usually do not keep spare parts in stock any more and are not offering what one might call low-cost repairs.

What are the possibilities non-OEMs are offering today?

The service supply companies have expanded their portfolio and are restricted neither to individual power plant segments nor to mere repair work.

They have, in the meantime, reached such a high level of competitiveness that they are now also involved in other industries.

Today service supply companies have the specialists and the comprehensive technical proficiency required for the execution of large-scale overhauls and cause analyses. Maintenance management, online diagnosis and 24-hour standby complement this broad service scope.

In addition, the plant operators can close long-term maintenance contracts, and the services are subject to the same penalties in connection with guarantees and liabilities as they would be for the manufacturer. In the event of a sustained quality assurance program, warranty periods can, in individual cases, be extended beyond the statutory periods.

Just a few years ago, no plant operator would have commissioned a service supply company with the overhaul of a complete turboset including all auxiliary components. It has, however, become apparent that even such comprehensive and sophisticated assignments, can, when properly planned and organised, be completed successfully.

In the past, operators carried out the required overhauls themselves, with their power plant crews and the support of the manufacturer. The entire organisation and supervision of the process, the involvement of specialist firms and suppliers, etc. was connected to an enormous workload for management and staff.

The liberalisation of the energy market and the consequent staff cuts in power plants led to a rethinking process in the organisation of maintenance. With regard to cost management, the overhaul intervals were extended and outages were usually not considered until the first signs of damage became apparent.

If the operator wishes to reduce his workload and interfaces in view of an upcoming overhaul and to award the complete contract – from planning and organisation to performance of tasks and commissioning - two essential issues have to be taken into account:

1. It must be assumed, particularly after a relatively long operating time, that additional problems arise during the execution of the overhaul and that these will most likely affect the schedule, as well as the budget.
2. Spare parts might be required which have become obsolete or cannot be obtained at short notice.

It is a known fact that most manufacturers have moved their production sites abroad and do not maintain any storage facilities in Germany. Therefore entire plant components will have to be exchanged due to the fact that individual parts are not available any longer.

Experience has shown that a proficient, manufacturer-independent service company has the ability to handle the problem of tedious procurement procedures or obsolete components differently.

In this case, a complete turboset overhaul was awarded to a service company and comprehensive repairs were performed during the overhaul in the workshop of the supplier, as e.g. on steam inlets and hydraulic drives of the turbine valves. It also included the machining of components generating target clearances on valves, the modification of the overspeed trip bolt guide and the re-setting of the tripping speed. In addition, the main oil pump was overhauled, the wear protection on the H₂-seal ring holder was installed and welding, as well as stress-relieving work was carried out. Parts of the generator synchronisation system and defective exciter parts which the manufacturer was not able to provide were reworked. A clear advantage for the operator.

Prior to the overhaul it was a known fact that special attention had to be paid to the increased heat consumption and the running behaviour of the low pressure part. During the inspection of the coupling between the low pressure part and the generator, a strong deviation from the specified alignment values was noticed. In principle, the generator should have been lowered. However, this was not feasible due to alterations in the foundations which had been made during the previous overhaul by the manufacturer. He had removed all base plates so he could carry out the required alignment.

The operator agreed to raise the level of the complete turboset by 5 mm. Thus the generator could be provided with base plates >2mm. If necessary, the alignment can be repeated in the future.

The turboset alignment did not affect the overall schedule since the supplier performed the contract during additional night and weekend assignments.

What will the future bring?

The following years will be characterized by new power plant projects and substantial changes on the service market.

The power plant companies expect their new plants to be completed on schedule and at the highest possible quality level that their old plants, until then, run reliably and, if possible, without any major investments. They would also like to see that the existing plants, which remain on the grid beyond the commissioning date of the new units, are modernized.

In the last 20 years, manufacturers have been increasingly focussing on the supply of services and are now forced to direct their capacities towards the booming power plant construction business. Above that, they will have to employ more staff. This will, however, not be possible without adequate leadtime. A clear shortage of specialists is looming ahead and is already showing today. In addition, the long-standing experience of a power plant technician cannot be replaced by a set of operating instructions. Therefore a short-term compensation of the staff shortage will not be possible.

Service supply companies must face new challenges. On one hand, the order volume for overhaul, repair and optimisation measures for existing plants is increasing rapidly, on the other hand, their services in connection with new investment project are in demand thanks to their competences and staff resources and therefore of utmost importance for them. The experience regarding new technologies and materials is essential for the development and preservation of the know how for tomorrow's tasks. The load they have to carry is enormous.

This development towards high quality technical services has resulted in growing staff numbers and long-term business cooperations with specialist firms in Germany and abroad.

The performance- and expansion-oriented strategy pays off now: Service companies which are set up favourably are by all means in the position to take care of their core business in existing plants and, at the same time, to handle different technical assignments in the power plant construction business.