

On-site service for power station maintenance and overhaul

Regular overhaul of large-scale technical facilities such as power stations ensures operational safety – and means a huge amount of work for technicians and maintenance engineers. Whole blocks are taken off-grid, and undergo a general overhaul within a fixed time window. The components that are inspected, and are sometimes replaced in a time-consuming process, include seals. Seals are found everywhere: in turbines and generators, in pumps, and in the wide-ranging pipe network with its wealth of valves. To err on the side of caution when providing the right sealing solution, many operators are now opting for an on-site service which allows them to order all the seals they need from a single source. Short distances and top quality seals, which are often produced individually, are guaranteed by a service trailer which is parked in the middle of the site during the overhaul, just like a mobile workshop.

EagleBurgmann has been successfully providing its mobile seal service for nearly three years now. The Packings & Gaskets On-Site Service is a module of the TotalSealCare package; EagleBurgmann experts first determine the likely seal requirements in a direct dialog with the operator in advance of an overhaul or conversion (e.g. to conform to the TA-Luft requirements). They also identify “bad actors”, i.e. seals that the maintenance engineers have noticed as being prematurely worn, and which will be specifically replaced with an optimized solution during the overhaul.

Accurately planned and prepared

EagleBurgmann records this inventory in a database, and uses it to stock the Service trailer or container. This will be taken as a mobile workshop to the site when the overhaul starts, and will



contain the seal materials that are actually needed. “Every plant – whether it is a refinery, chemical plant, coal-fired or nuclear power station – has its own special features, which is why this advance calculation is extremely important,” says Rolf Luyken, a technician from the Cologne Service Center – one of EagleBurgmann’s ten customer service locations in Germany – who is intensively involved with the on-site presence during overhauls. “The better prepared we are, the faster and more smoothly we are able to supply precisely-

fitting seals to all the different technical staff on the platform. There is simply no room for delays and lateness in the tight schedule that inevitably occurs during overhauls and conversions at large plants.”

The mobile workshop is equipped with materials by specifically accessing the sophisticated range of sealing systems and materials that make a complete package supplier, such as EagleBurgmann, ideally equipped for all installation

and application tasks. The basic equipment includes machine-braided packings that are needed as standard in order to reliably and cost-effectively seal pump shafts and valve spindles. Modern materials such as PTFE, aramide or graphite fibers, combined with special impregnating agents and lubricants and special production techniques guarantee wear-resistant packings that can be designed for temperatures from -200 °C to +700 °C. (-328 °F to +1,292 °F) The packings are available by the meter, and can then be cut exactly to size on site – or as compression-molded rings or ready-to-fit sealing sets.

Variety of materials and workshop with direct line

There is also an incredible variety of gaskets that are needed for stationary machine and housing parts, not to mention flanges and flange-like connections in instruments and pipes. State-of-the-art materials, material combinations, and production methods allow us to supply a multitude of versions, variants, and shapes. Gaskets are available, from the factory, as off-the-shelf and preassembled sealing systems – or in sheet form which is then cut to exactly the right size in the on-site service trailer. The mobile workshop generally keeps a basic stock of different sheet materials. This mix allows us to cover a relatively broad range of applications on an ad hoc basis.

The on-site workshop, which is permanently staffed by at least one experienced service engineer, has shelves for the maintenance and overhaul items, and a mobile cutting table with sheet store. The basic equipment ranges from packing extractors,



On-site seal service – mobile workshop on site at the Neurath power station

via packing and gasket cutters, through to the nibbler, and an office workstation with state-of-the-art equipment including telephone, fax, and PC with CAD software. This workstation is used primarily for internal and external communication and stock management. Recently several workshop trailers have been equipped with a CNC-controlled plotter that allows accurately-sized gaskets to be made to any shape even faster. “A direct line – our ‘hotline’ – connects our mobile service colleagues directly with the central warehouse in Wolfratshausen, a recently-created express production center for gaskets in many material combinations, and the control center for our worldwide production network,” explains Luyken. “We have preferential access to all our resources – and are specifically served before the normal daily business.”

Maintenance and overhaul practice at the RWE power station in Neurath

If we take a look at the RWE power station in Neurath, close to the Rhineland’s brown coalfield, it will show us how the mobile seal service works in practice. The coal-fired station has five blocks which were connected to the grid between 1972 and 1976. The total output is 2,200 MW. EagleBurgmann has been involved with three successive overhauls in the last two years. In late Summer 2011, the silver-grey workshop trailer with the ‘On-Site Service. TotalSealCare’ logo was set up for several weeks on the RWE site in the Grevenbroich district of Neurath during maintenance and overhaul of a 600 MW block.



A vast range of compression packings (sizes, types of mesh, materials) are kept in stock on rolls or coils in the service container – and are cut exactly to fit on site. These packings are typically used to seal pumps and valves. They are cut with a special packing cutter (a tool from the EagleBurgmann toolbox).



Final inspection: Bursil gasket produced by hand in the container for sealing a flange between the turbine housing and overflow pipe. The 1.6 m seal with 32 through holes (d=28 mm) in total for the bolts required considerable technical ability.

During this period there were over 1,000 people working on the site at peak times; many hundred meters of compression packing and some 1,700 other sealing items were delivered. The EagleBurgmann technician who remained on site the entire time had a vast amount of work to do: Every day, the seal expert demonstrated his technical skills and knowledge by accurately cutting complicated seals to size, for example. His exemplary work included two hand-made gaskets just over 2,000 mm in diameter. "Cutting this seal, which was made up of eight segments, including the through holes and other necessary projections, exactly to the millimeter is excellent work," is the expert assessment of EagleBurgmann employee Luyken, who supported the Neurath overhauls from start to finish, and was regularly on the site.

Part of the EagleBurgmann deployment at the last overhaul involved monitoring the fitting of large expansion joints which act as flexible connecting elements in flue gas pipes, or between the machine room and cooling tower. As such they must compensate for pressure and temperature fluctuations, plus vibrations and misalignment. The preassembled fabric expansion joint, which weighed in at over 100 kilos, was delivered just-in-time from the EagleBurgmann production facility in Denmark.

"With our computer-aided data acquisition system, we know very accurately at any time which sealing solution we have delivered when, for which trade and to which maintenance engineer or service provider", says Luyken. This guarantees maximum possible transparency and seamless traceability for the seals we supply – and at the end of the day for a system in which the customer, specifically the operator, only counts the materials that were actually used.

However, the biggest plus from the operator's viewpoint is the high reliability and precision timing that characterize the mobile seal service. "By being on site, EagleBurgmann made a significant contribution to ensuring that our maintenance and overhaul operations ran smoothly, even during the time-critical phases", was the assessment of Uwe Reitzki, deputy manager for Machinery and Engineering Systems at the RWE power station in Neurath.

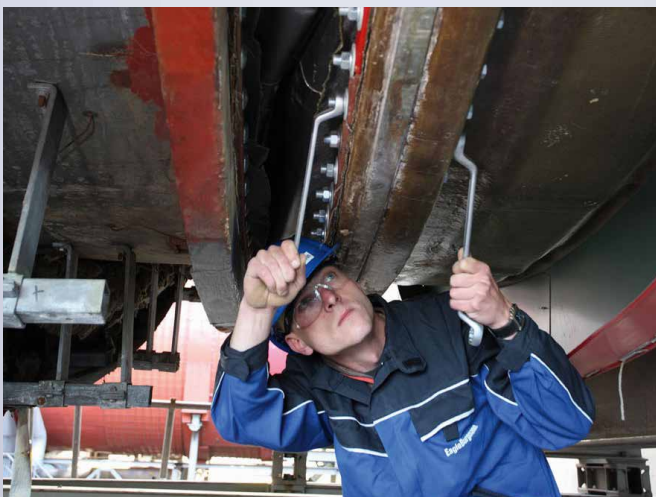
Mobile seal service

The benefits at a glance:

- Planning security (costs and time)
- No unnecessary stocks
- No additional personnel required
- State-of-the-art sealing solutions (quality)
- Transparency (quantity supplied, price)
- Specialist application and industry knowledge based on decades of experience



Reliable partner: Uwe Reitzki, deputy manager, Machinery and Engineering Systems, RWE power station, Neurath (left) and Rolf Luyken, EagleBurgmann Cologne Customer Support Center



Transition expansion joint for the connections between the machine room and cooling tower in the RWE plant.



A flange is measured for the on-site production of a seal with 2,000 mm diameter.

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