Efficiency improvement made simple
Retrofit with the BHS AeroMaXX

Our Service – Part of Your Business.

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What is the BHS AeroMaXX?

The BHS AeroMAXX technology available from Voith is a purely passive mechanical solution comprising optimized sleeve bearings as well as an inner housing for the gear set which separates the oil for heat dissipation from the lube oil for the gearing. This makes it possible to achieve a total reduction in efficiency losses of up to 30% and oil requirements can also be brought down by 30%.

This option is not only available for new gear units, but also as a retrofit solution for turbo gear units which are already in operation – and it is simple, fast and reliable! Externally, a gear unit that has been retrofitted does not change in appearance – the connection dimensions, as well as operating behavior, remain verifiably unchanged.

Reliable Technology for Increased Efficiency

There are various options available on the market which allow you, as system operators, to increase the efficiency of your gear unit within turbo trains, but they all have certain things in common: they are complicated, expensive, and often unreliable. Voith is different!

Design of AeroMaXX

[Diagram showing the design of AeroMaXX with labels for Upper part of inner housing, EcoMax efficiency bearing, Lower part of inner housing, and Lower part of old gear unit]
When is a retrofit with the BHS AeroMaXX recommendable and feasible?

- **High circumferential speeds and transmission performance**
  In general, installation is recommendable for gear units with a pitch line velocity at the gearing of more than 100 m/s or a bearing circumferential speed in excess of 50 m/s. In these cases, the power should be at least 10 MW in order to ensure economic efficiency and achieve short payback times.

- **Suitable applications**
  The above parameters apply primarily to gear unit applications for power generation using gas or steam turbines. They also apply to gas or steam turbine-driven compressors and, to a lesser degree, to electrically-driven compressors.

- **Sufficient installation space**
  To install the inner housing, a minimum lateral clearance of 60 mm from the gearing to the internal edge of the housing is required. It should be noted that amended regulations (for example, previously AGMA421 and now AGMA6011) or improved material properties can make it possible to use a narrower gear train.

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**Fig. 1: Retrofit concepts**

- BHS AeroMaXX Retrofit
  - Voith gear unit
    - On-site technology installation
  - Non-Voith gear unit
    - Replacement with the Voith AeroMaXX gear unit
  - Option: additional retrofit of the old gear unit with the BHS AeroMaXX
Which retrofit options are available?

Two basic options are available for retrofitting with BHS AeroMaXX technology. In both cases, we aim to keep expenses for the system operator as low as possible (see Fig. 1). In the ideal case we need about 75 days, from the start of the engineering process through the installation, to complete a retrofit project (see Fig. 2):

1. **For Voith gear units (with the brands Voith, BHS, BHS Voith, BHS Getriebe, BHS-Cincinnati and Krupp)**

   In this case, Voith equips the gear unit with the optimized bearings and the inner housing and a spare parts package is also installed. During the course of this process, the gear unit remains in the driveline! If combined with the overhaul, special prices are applied.

2. **For gear units from other manufacturers**

   In this case, the old gear unit is replaced with a Voith gear unit with BHS AeroMaXX technology during a regular system shutdown. This is performed by Voith personnel. If technically feasible, the old gear unit can be overhauled at a central Voith workshop, retrofitted with BHS AeroMaXX technology and then made available as a replacement gear unit. This entire scope of services is available at an attractive package price.

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**Fig. 2: Time required for retrofit**

<table>
<thead>
<tr>
<th>Retrofit of a Voith gear unit</th>
<th>Design: 1 – 5 days</th>
<th>Manufacture: about 40 days</th>
<th>Transportation to the plant</th>
<th>On-site installation: 4 – 6 days</th>
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<td>About 2.5 to 3 months</td>
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Advantages and benefits of a retrofit with the BHS AeroMaXX

+ Attractive prices and quick payback period
  In combination with a pending standard overhaul of your turbo gear unit it is now possible for you, as system operator, to obtain this technology and the required labor at particularly attractive prices. The break-even point can be reached in as little as three years.

+ Low time requirement
  Thanks to thorough preparation, well-coordinated procedures and a generally low scope of effort, a complete retrofit of the gear unit can be achieved within the one-week timeframe of a regular shut-down of the driveline.

+ Warranty
  Since Voith provides the entire scope of services from a single source, you can count on receiving the highest level of quality. We offer the user a warranty period of 12 months on functionality and materials, starting from the time of commissioning. In the unlikely event of a problem, just contact us.

Do you want to enjoy the benefits of a retrofit with the BHS AeroMaXX? For detailed information regarding topics such as usability of your system, complete scope of supply, prices, retrofitting methods and procedures, please contact either your local sales representative (details available on the internet) or Voith’s expert on retrofitting with BHS AeroMaXX: Mr. Daniel Bayer
  Phone +49 (0)7951 32 1349,
  daniel.bayer@voith.com.

To further access your needs, we would be happy to visit you directly on site.
You can also find more information in the separate BHS AeroMaXX brochure and at:

www.voith.com/bhsaeromaxx

An approximate calculation can be made there to calculate your efficiency gain and savings.