



clean energy ahead

TURBODEN

MS Standard Maintenance

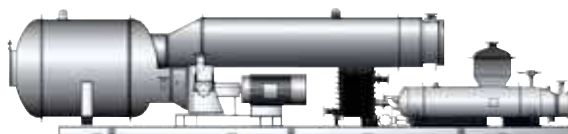
MS+MP Standard Maintenance plus
Predictive Maintenance

OT Optiturbo

OT+ Optiturbo Plus

Spare parts

AFTER-SALE SERVICES



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Standard Maintenance includes planned, remote assistance and access to the Turboden Online Service (TOS) system.



Planned maintenance

Planned maintenance will be performed once or twice a year and requires checks with the system both stopped and running.

Examples of activities to be performed in the presence of a planned maintenance contract:

- Check of turbine-generator alignment with a laser aligner.

- Acquisition of turbine, generator and pump vibration spectra.
- Replacement of lubrication system filters.
- Replacement of the lubrication system oil.
- Replacement of the vacuum pump oil.
- Checking and backing-up control system (PLC) data.
- Calibration of pressure - measurement instruments.
- Checking leak-detection instruments.
- Checking the correct operation of the electro-mechanical cut-off protecting the turbine from over-speeds.



Remote assistance

The turbogenerator's PC supervisor is connected to Turboden's service center by modem. Turboden's personnel will intervene remotely to make adjustments, remove defects and optimize the turbogenerator's performances. The system operator will assist Turboden during the connection, if necessary.

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Turboden Online Service

Turboden will offer the customer TOS (Turboden Online Service), a fast, personalized, transparent and guided tool that allows the customer to report any system anomalies over the Internet. The report goes directly to Turboden's service personnel via an SMS. The customer will receive fast, problem-solving responses over the Internet and consult the history of the received assistance anytime.



MS

Standard Maintenance



MS+MP

Standard Maintenance plus Predictive Maintenance

This packet includes **MS** services and besides these ones, includes the **MP** Predictive Maintenance, which encloses:



Replacement of wear parts

The **MP** service assigns Turboden to maintain/replace worn parts,

including the cost of personnel and necessary materials.



Replacement of organic fluid

The **MP** includes the replacement of organic fluid, if necessary.



OT Optit turbo

The Optit turbo service includes all the services that are counted in **MS+MP**. Added to these services, Optit turbo includes:



Guarantee of reliability

If a customer subscribes to the Optit turbo service, a minimum reliability of the turbogenerator of 95% will be guaranteed. In the case of lesser reliability, Turboden will reimburse the loss of income from energy production within the limits

and conditions described in the contract.



Extension of the guarantee on the main components

Subscribing to Optit turbo after the expiration of the standard guarantee period automatically includes the extension of the guarantee on the main items. Moreover, any service-call and travel expenses for the performance of maintenance and repairs will be Turboden's responsibility.



OT+ Optit turbo Plus

Optit turbo Plus includes all the services which are enclosed in **Optit turbo** packet. To these services, must be added:



Extension of the guarantee on all components

It includes the replacement, at Turboden's expense, of all turbogenerator components, if defective or worn.

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Mini kit of spare parts

Turboden will be responsible for evaluating the opportunity to provide the customer a mini spare parts kit for the availability of spare system parts on-site.

Spare parts

Turboden offers a set of standard spare parts, anyway the list may be extended as a function of the customer's needs. A preliminary list of standard spare parts is available at

the time the contract is perfected, with the right of defining the exact models later, depending on the effective characteristics of the system.