Minutes of Meeting

VGB-Technical Committee:	**Generation and Technology**
VGB-Working Panel:	**PGMON**
	Power Generation Maintenance Optimisation Network
	47th Meeting on 17./18. 10. 2013 in Hannover

Agenda

Welcome (Henk Wels)

Spare parts strategy

TOP 1: Oscar Powerspares
Dr. Hilz, Oscar Powerspares

TOP 2: CEZ spare parts strategy
Milan Andrejkovic, CEZ

Failures in high pressure parts

TOP 3: Gelderland PP
Mr. Vogelaar,

TOP 4: GKM, Mannheim
Heinrich Grimmelt, VGB

TOP 5: Steag, Bexbach
Heinrich Grimmelt, VGB

TOP 6: Experience with the management of high-pressure steam pipes lifetime - an example of Prunéřov power plant
Milan Andrejkovic, CEZ

TOP 7: Infracor, Marl
Heinrich Grimmelt, VGB

TOP 8: Improvement of maintenance processes
Henning Lundström, Vattenfall

TOP 9: Place and date of next venue

TOP 1: Oscar Powerspares
Dr. Hilz, Oscar Powerspares

OSCAR offers solutions for the optimization of spare part management for power plant operators: pooling and trading of spare parts, the marketing of entire power plants and consulting services.

OSCAR Pool organizes pools of strategic spare parts i. e. a power plant operator A makes a spare part available for pooling and sells access rights in form of options – in return, he receives a yearly option fee. The option fee depends on the specific risk profile of the power plant, for which the spare part is needed. Power plant operator B, the buyer of an option, pays a yearly fee to the option seller. The option provides access to the spare part in case of a damage. Such an option or access right can be sold to several power plant operators. Both, power plant operator A as option seller and power plant operator B as option buyer have access to the spare part in case of a damage. An example of the economical advantage for the pool is shown in following figure.

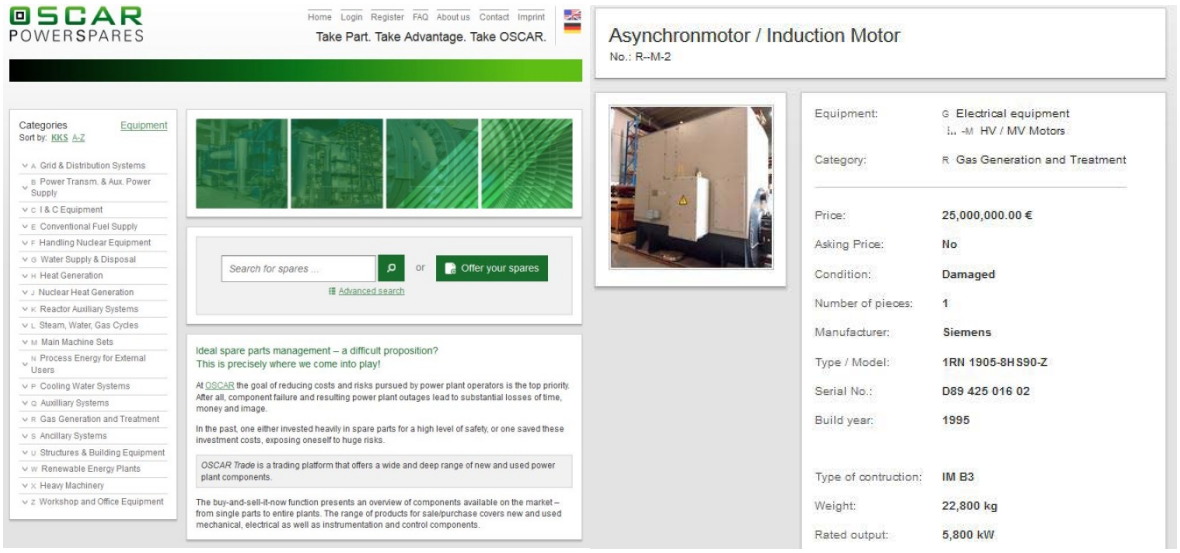
Example: Generator rotor of a plant with 700 MW, hard coal, 3.500 full load hours > 50 Mio. EUR losses of profit in the event of damage

Trade off:
Decrease outage risk Single procurement
Decrease costs No procurement
Optimum?

	Procurement of spare part	Pooling	No procurement of spare part
Capital investment	5.000.000 €	no	no
Outage time	30 days	45 days	370 days
Cost p. a. (capital- and inventory costs versus option fee)	500.000 €	49.000 €	no
Risk- / cost ratio	no risk high cost	low risk low cost	high risk no cost

Summary: for 49.000€ p.a. an option buyer can decrease his absolute risk by 50 Mio. € in an event of damage.

On the OSCAR Trade platform (see figure below) power plant operators can sell and buy newly and used spare parts and components. On the one hand the power plant operators have the opportunity to get a survey of the spare part and components market in order to buy them cheaper than from the OEM and on the other hand to gain a more valuable price for functioning spares and component than only scrap price.



Additional OSCAR Service provides services related to the pooling and trading of spare parts. Such services are i. a. ABC analysis, price potential analysis, development of risk scenarios or identification of technical base information and audits.

TOP 2: CEZ spare parts strategy
Milan Andrejkovic, CEZ

To be added later

TOP 3: Gelderland PP
Mr. Vogelaar,

To be added later

TOP 4: GKM, Mannheim
Heinrich Grimmelt, VGB

At company GKM in Mannheim a starting up pipe (bus bar) (20 bar, 530 degree celsius, NW 300) broke without leaking before. The turbine hall was filled with steam. It was so loud that the personal could not talk together. One by one all boilers and turbines failed. Five of the turbines ran out without oil supply.
The pipe was installed in 1966 and was in operation since more than 300000 hours. The reason for the damage was creep, cracks started from grooves from manufacturing at the inner side of the pipe.
The presentation can be found in the closed user group.

TOP 5: Steag, Bexbach
Heinrich Grimmelt, VGB

At company Steag a drain pipe (DN 25 – 30) of a 250 bar line was broken. The turbine hall was filled with steam, no personal was near.
The pipe was not manufactured as it should according to the drawings. Instead of a DN 25 armature a DN 15 armature was installed. The pipe diameter had to be changed and the material was eroded at the joints.

The presentation can be found in the closed user group.

TOP 6: Experience with the management of high-pressure steam pipes lifetime - an example of Prunéřov power plant
Milan Andrejkovic, CEZ

To be added later

TOP 7: Infracor, Marl
Heinrich Grimmelt, VGB

At company Evonik in Marl, a pipe elbow got defect right behind a bypass valve.
Due to maintenance works at the boiler the output of the boiler was decreased and the turbine was shut down. After finishing the works the turbine was started again when a streaming noise could be heard. The emergency button of the turbine was pressed and directly afterwards the noise was much louder. A part of the pipe elbow was flown away. The reason was bad welding during erection. The relevant components were changed.

The presentation can be found in the closed user group.

TOP 8: Improvement of maintenance processes
Henning Lundström, Vattenfall

Back ground
2 streams of improvement projects for Vattenfall thermal plants in Denmark have been in progress during the recent years

THERMAL CHALLENGE
A general business project to secure thermal plants to remain as an attractive business despite the new challenges. Among the main activities are:
- Implementation af RCM analyses
- A standard overhaul procedure
- Spare part optimization
- Alignment of cost structure

TURN AROUND (Safety first)
A transformation project to align and to improve procedures with special focus at safety.

The project has 4 corner stones:
Visible management - Safety culture - Learning organization - Clarity and structure in everyday

Resume
At the PGMON meeting in Hannover, October 2013 some of the results in improvement of safety and maintenance procedures were presented.

Maintenance processes includes task and overhaul planning, execution and the related feed backs.
The improvement of safety procedures are related to most of the maintenance processes.

Examples

Safety
Video introduction and a test are obligatory for all employees and contractors at the site.
Working place HAZID analyses and the mitigation description must be in place before any work stat up.

New projects in relation maintenance improvements
Tender specifications have more detailed demands for RCM analyses, maintenance plans and documentations. Comments from safety and environmental officers as well as from the Procurement Department are obligatory before tenders are submitted.

Maintenance and overhaul - task planning and feed back
The task planning is based at a very detailed standard template including operators in SAP PM and the related accounting structure.
A goal has been sat up to ensure all maintenance plans are based at RCM analyses, spare parts optimization is a part of the RCM analyses.

Feed back can be based at e.g. maintenance reports and RCA analyses.

Overhaul time schedule procedure
Overhaul procedure for the time schedule is running in a 3 step estimation to ensure optimal planning for Vattenfall internal as well as for the national grid company.

SAP changes
Among the SAP improvements is a template with standard accounting and SAP PM operators to support the detailed technical maintenance and overhaul task planning.

TOP 9: Place and date of next venue

The next meeting will be held on 24./25. April 2014 in Berlin.