

**Titel:**

**Holistic long-term training project to build  
capacity for effective operational management  
of  
power plants**

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The presentation shows on the basis of an example of a training project, what the possibilities are to make experiences and knowledge transfer effectively.

At the initial situation, the South African energy producer noticed an increased demand for training and wanted to optimize its internal training concepts and ways by international benchmarking.

Therefore, training content and training methods should be compared internationally and then be integrated into internal concepts in the future. Also contents should be implemented.

KWS as an independent training institute of the German energy industry was able to offer optimal solutions concerning training contents duration and methods.

The concept of the German energy is organized as follows, in training issues they work closely together, although in the energy market they are competitors.

In workgroups, training contents, duration and concepts are jointly developed and defined. These workgroups are composed of representatives of the energy industry, representatives of the competent Chamber of Commerce and Industry, representatives of the KWS as leading training institute.

In meetings of these workgroups, the education policies of different levels are set and published as VGB standards. There are currently VGB standards for these different training levels:

1. Operator
2. Shift Supervisor
3. Power Plant Engineering (cooperative program with the University of Aachen)

In the described project the training content of the level "operator" have been applied.

As an additional effect, the training methods should be compared and applied in this project.

After an international tender, KWS was awarded the contract for the training project of 20 young power plant engineers under the described conditions.

The implementation of the project has been divided into the following phases:

Phase 1: Assessment for competence analysis and selection of candidates

Phase 2: Preparation course to approximate the starting level of the individual candidates

Phase 3: 8 weeks of technical training course in South Africa

Phase 4: 4 weeks of technical training course in Germany

Phase 5: written and oral exam

Phase 6: practical training in a German power plant

phase 7: practical final exam

1st Phase:

Assessment in South Africa:

written test on the subjects:

- General knowledge
- Technical power plant knowledge
- Soft skills, team behavior

oral interview



Assessment situation

Detailed analysis with professional analysis tools

2nd Phase:

Based on the results of the assessments, a preliminary course was carried out to close knowledge gaps and refresh basic knowledge. The contents of the preliminary course were implemented on the basis of assessment analysis.

Thus, the starting conditions VGB guidelines for Operator training were fulfilled.



Pre course in ESKOM Training Center

3<sup>rd</sup> Phase:

8 week training in South Africa with the following content areas:

- Thermodynamics
- Electrical basics
- Power plant chemistry
- Science of Material
- Turbines
- Electrical Equipment
- Measurement Technology
- PLC Systems
- Control technology in power plants
- Flue gas cleaning



Training situation in South Africa

4<sup>th</sup> phase:

4 week training in Germany with the following content areas:

- Power plant operation
- Practical application using the simulators and laboratories

During both phases of training, written tests and project work of the participants, followed by presentations of the results were done.



Group picture in KWS simulator forum



Training situation in KWS laboratory 00



5<sup>th</sup> phase:

Written and oral exam by an examining board based on the VGB guidelines and legally binding IHK examination regulations.

6<sup>th</sup> phase:

Conducted training in a German power plant, supervised by the power plant operator. During this training period, conducting technical project work were done with support and control by KWS.



Training group in a German Power Plant

7<sup>th</sup> phase: Submission of project work and practical exams.

Through this international training program, national standards can now be compared and advantages and improvements can be implemented into the respective training programs.