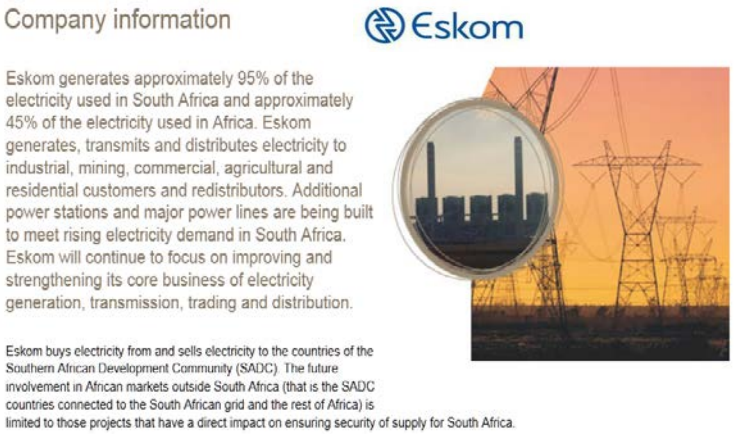
Steinbeis Advanced Risk Technologies Project ESKOM RBI

Implementation of Risk Based Inspection Programme at Eskom Head Office and 13 Power Stations

Customer:
Eskom Holdings SOC Limited, South Africa

Project Start/End:
Jan. 15, 2013 / Jan. 14, 2016

Project value:
approx. **4.3 million €**



Steinbeis Advanced Risk Technologies (R-Tech) has been granted a contract with Eskom, the main South African power generation utility state-owned company. R-Tech was awarded the contract after a strong competition process involving leading global consulting companies, primarily due to its proven track record of accomplished RBI projects in Europe and Asia, and due to to its leading role in establishing the new European approach and procedures for Risk Based Inspection and Management (RIMAP) which became a European pre-standard CEN-CWA15740:2008 and is currently under the process of becoming an EN standard.

1 Project background

The contract foresees provision of consultancy services for the development and implementation of a RBI Management System for Eskom's 13 coal fired power plants and the Eskom head office. When the South African OHS Act Vessels Under Pressure (VuP) regulations were changed to Pressure Equipment Regulations (PER) in line with the European practice in July, 2009, Eskom familiarized with these regulations and started developing the appropriate compliance strategies for the company. This led inherently to the initiation of the Risked Based Inspection programme.

As an alternative to the periodic pressure tests and inspection interval requirements, the PER offers an option of implementing a certified Risk Based Inspection (RBI) programme as part of a plant life cycle management strategy. This involves creating a comprehensive programme for risk based asset management which will benefit both the new-build projects as well as the currently ageing fleet. The compliance will support the business in ensuring that legal, statutory and regulatory requirements are properly understood and best practice is applied in the management of safety and plant integrity risks. Where different technologies exist on a power plant, RBI Programme will be adapted accordingly to cater for the change in technology.

2 Specification and Description of the Services

The R-Tech's/Sebenzana services, responsibility and related deliverables are defined in relation to the following project phases:

i) Gap Analysis

ii) Implementation Stage

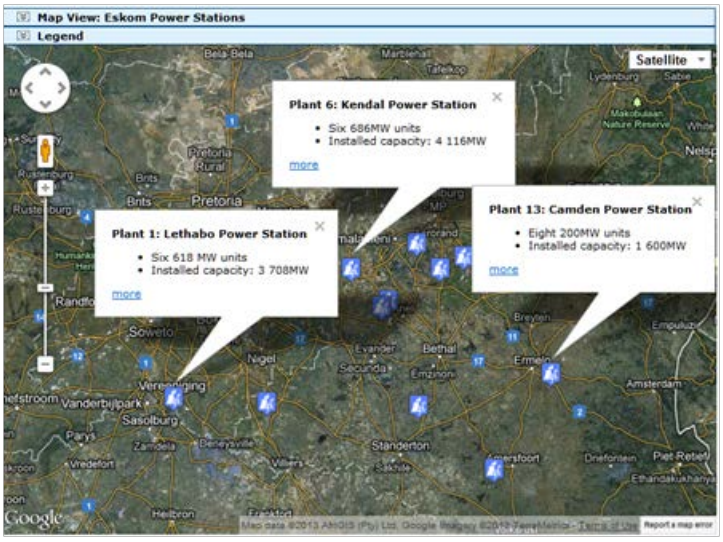
iii) Certification Stage

In addition to the above mentioned phase related services R-Tech/Sebenzana is responsible for ensuring that the Eskom's RBI programme provides the following, as a minimum:

- Enables integration with the overall Asset and Engineering Management Framework of the Employer.
- Defines data requirements and validation best practices.

- Defines a strategy for the selection of systems and components to be considered for analysis.
- Develop suitable RBI programme software for the Employer's review and acceptance which interfaces with the Employer's existing systems.
- Defines the limitations of inspection capabilities e.g. intrusive vs. non-intrusive inspection, indicative vs. absolute detection on the determination of the PoF.
- Enables the capturing and management of determination of the degradation mechanisms, rates and failure modes.
- Allows for seamless transition between qualitative and quantitative analysis.
- Enables a standardized approach for the different types of plants and equipment with respect to risk assessment and data capturing as a minimum.
- Enables the determination of the PoF taking into account the remaining life, effect of human error and the operating history, as a minimum.
- Enables the evaluation of the CoF taking into account the safety, environmental and financial consequences, as a minimum.
- Enables multilevel risk analysis.
- Enables the ease of understanding of the RBI processes at all levels of the organization by developing an effective communication strategy.
- Meets the Regulatory Authority's Certification and Approval requirements.

3 Gap Analysis



The Gap Analysis stage consists of the following activities:

- Evaluate the current state of readiness for the RBI programme at the Employer's Head Office and 13 coal-fired power stations, which consists of 87 operating units.
- Provide formal strategy and solutions to address the shortfalls identified by the Consultant.
- Provide a formal report upon completion of Gap Analysis.

For the *Evaluation of the Current State of Readiness* phase for all 13 plants (plus head office) it is necessary to organize plant visits from RBI Experts. The Experts will be a part of local teams visiting all plants and will be entitled to:

- Inspect critical components/facilities of the plant
- Discuss completed questionnaires with relevant staff members of the plant
- If necessary conduct additional interview with staff members of the plant
- Provide expert opinion for the gap analysis, compile reports and submit meeting minutes to Eskom for acceptance

Plant visits are planned in the period from mid-February until May 2013, taking approx. 4 days each, plus the time required to process data and write reports for Eskom. The results of the gap analysis will the basis for further plan and its implementation and certification.

Contact

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