

Scope of Work for High-Pressure Cleaning of Ash Water Return (AWR) Lines and Manifolds

1. Introduction

This document outlines the requirements for cleaning the Ash Water Return (AWR) lines and manifolds (AWR pump house inlet and discharge manifolds and High-level dams manifold) at Eskom's Arnot Power Station, located in Reitkuil, near the N4 highway. The cleaning services are necessary to restore the functionality of the AWR system, which is impacted by significant scaling in the pipes. The cleaning process will require the use of specialized high-pressure (HP) machines operating in 2000–4000 bars.

2. Scope of Work

2.1 Descaling of Ash Water Return Lines

The scope involves the descaling of three (3) AWR lines, each with a diameter of 300 mm, extending from the AWR pump house to the AWR high-level dams. The total descaling distance is 8940 meters (3 lines, each approximately 2980 meters long) and descaling of AWR pump house inlet and discharge manifolds and High-level dams manifold. These lines and manifolds have accumulated tough scaling over the years, restricting the return flow of ash water to the station.

2.2 Functional Specifications

The following requirements must be adhered to for the successful execution of this project:

- **HP Machine Requirements:** The HP machine must operate at a working pressure of 2000–4000 bars.
- **Competent Operators:** The supplier must provide trained and competent operators and assistants to operate the HP machine. Proof of operator competency and safety training is mandatory.
- **Qualified Personnel:** The supplier must provide a team comprising the following skilled artisans, each with a minimum of three years' experience working on steel pipelines:
 - Two (2) artisan fitters
 - One (1) artisan boilermaker
 - One (1) artisan welder
 - One (1) artisan rigger
 - Five (5) utility workers.
- **PPE:** The supplier must ensure all personnel are provided with appropriate Personal Protective Equipment (PPE).

- **Equipment and Tools:** The supplier must provide all necessary tools and equipment for opening, lifting, and closing the lines. This includes:
 - Big grinder and portable generator, 10mm x 3.5m x 3.2t0n 2 leg, Chain sling with self locking and clevis graps hooks, Ratchet straps 4m, Nylon sling 4m
 - 30m cutting horse (oxygen) 30m cutting hose acetylene, cutting torch, face shield, hammer 4 and 16 pounds gas cutting equipment
 - HIAB truck capable of lifting and transporting 12m pipes.
 - Diesel welding generator.
- **Water Tanker:** An 18,000-liter water tanker will be provided by Eskom Rotek Industries (ERI).
- **Diesel Costs:** The cost of diesel required to operate the HP machine must be included in the supplier's pricing.
- **Supervision:** The supplier must ensure that all work is always supervised.

2.3 Technical Specifications

The HP machine and accessories must meet the following specifications:

- Working pressure of 2000–4000 bars
- Minimum water flow rate of 60 litres per minute
- Pipe cleaning equipment, including retro jet nozzles, penetrating nozzles, and rotating nozzles
- Capable of cleaning pipes with a minimum length of 40 meters

2.4 Work Breakdown

The cleaning process will involve the following key activities:

1. Opening and closing (Dismantling and coupling) of AWR pipes and Manifolds using Johnson couplings (ERI to provide bolts, Johnson couplings, and gaskets).
2. Lifting and lowering pipes to provide access for the HP machine.
3. Descaling of AWR inlet and discharge manifolds at the AWR pump house, and at the High-level dams using the HP machine.
4. Descaling 8940 meters (3 lines, each approximately 2980 meters long)

2.5 Performance Specifications

- The supplier must attend a compulsory site meeting before commencing work.
- A detailed project plan, including timelines, must be submitted with the tender documents.
- A quality control plan must be submitted and approved.
- A safety file, in compliance with Eskom's safety standards, must be submitted and approved by the Arnot Power Station safety department before work commences.
- The supplier will be responsible for addressing and repairing any leaks detected after cleaning when the lines are returned to service.
- ERI will serve as the permit holder for all work requiring permits.

3. Conclusion

The supplier must deliver the service in strict accordance with the requirements and specifications outlined in this document. Completion and acceptance of the work will be based on adherence to the functional, technical, and performance specifications provided above.

AWR PIPES SCALED PICTURES



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