From: Spress

1. **Air Quality Standard:** Could you please confirm which ISO standard applies to the required air quality?

We have not specified an air quality standard. Our requirement is related to the air pressure and delivery as this has an impact on the mode change times and availability. Water and oil can be drained off at the receiver(s) and does not pose a risk for contamination.

2. **Oil-Free Requirement:** Standard hydropower blowdown applications typically do not require oil-free compressors unless other processes at the plant demand this. Could you please confirm if this is the case here?

There is no requirement for oil free compressors. Oil lubricated are compressors are preferred for their reliability.

3. **Oil Content:** Ambient air without treatment usually contains between 0.05 mg/m^3 and 0.5 mg/m^3 of oil vapour, depending on environmental conditions. This vapour will still pass through an oil-free compressor. What is the maximum allowable oil content in this case? I assume some form of filtration would still be necessary, as an oil-free compressor alone cannot remove this contamination.

Oil free operation is not a requirement. Oil and water can be drained off in the air receivers.

4. **ISO Conformance:** Bauer Kompressoren systems can achieve 0.005 mg/m^3 oil content with after-filters, conforming to ISO 8573:2010 Class 1 at a relatively low cost. Is there a specific standard that must be adhered to regarding oil content, considering that even oil-free compressors are affected by ambient air quality?

No requirement in the Tender specification.

5. **Flow Rate and Altitude:** In our comparison at an altitude of 1177.5 m (under the specified thermal conditions), Bauer Kompressoren can comfortably achieve 12,000 L/min at 80bar, while other units fall below this. Is this flow rate a critical and non-negotiable parameter as per the tender requirements?

Yes. The flow rate directly impacts the time to fill the receivers after a blowdown and therefore the stations ability to change between modes.

6. **Package Size:** Lastly, is the overall package size a consideration? Oil-free units are typically larger than compact, cost affective oil-lubricated alternatives.

Yes, package size is a concern. The 4 x compressors, panels and cooling system equipment must be accommodated in the same area where the existing compressors are installed.

From: Actom

- Please confirm that the new compressors can be supplied with Variable Speed Drive (VSD) starting and control. Not only Star-Delta method. Please confirm that this is now allowed. This will be in ESKOMs best interest.

Variable Speed drives can be considered if there is technical benefit and return on investment for Eskom. This can be clarified during the design phase, after contract award. For the purpose of ensuring all tenders are assessed on a fair and equal base, please base the offer on the requirements in the tender specification.

- Please confirm that ESKOM will provide the contractor the overhead gantry crane, at no back charge, with ESKOM crane operator, in order that we can lift off the existing soft patch and rig out the old and in the new compressor. This would be in ESKOMs best interest.

Eskom will make the two x 250 Ton and two x 10 Ton cranes in the machine Hall available as per section 5.1.11.1 of the Works information. Use of these cranes needs to be coordinated and planned with the Eskom Project Manager. Eskom will operate the cranes under the supervision and instruction of the Contractor's rigger

- Please can we have a copy of the existing compressor mechanical, electrical & PI&D Schematics, which is a more than reasonable request, consequently we can ensure that all mechanical, electrical & piping system integration / services from the existing are resolved clinically in our new compressor offer. This is normal to see the existing As-Built data pack from the existing equipment. This is a fair and reasonable request.

- 18/38 5669-1 Blowdown System P&ID
- 0/48 1245 Sheets 101 – 115 and Sheets 116 – 130C - Blowdown System Control drawings
- 0.48/2286 Blowdown Compressor A,B,C&D Key Cabling Diagram
- 0.48/3204 380V Service Board 1A&1B General Arrangement

- Please can we receive the Site survey photos of all areas concerned with this project. Top floor (turbine hall as related to our rigging), the compressor area and all the respective views, the switchgear room where the DOL gets modified for the new compressor, the Existing C&I SCADA Interface node (Iaw discussions with the site C&I authority, the unit is 15meters from the first compressors, but we were not able to see the unit and confirm the FO Ethernet Link at this position. Kindly, in order that all parties have the same position, to please specify the length and Fibre Optic part number of the existing FO module in this cabinet so we can ensure our interface accordingly.

Some photos can be supplied - @Aldrin Cloete

Please accommodate for a distance of 50m for connection to the SCADA interface point.

- Wrt using existing power cable 2 x 3core x 185mm2 runs. Please can all parties be given the same length in order to make the bidding equal to all parties. Only once the design reviews are complete on contract award, will the final GA position be agreed, consequently the final position of the new Local Control Cabinets (LCP's) be anchored, consequently a schedule of rate per meter should be the premise on this cable supply portion from the existing Junction Box to the new compressor LCP.

For the purpose of tendering, please assume the existing power cable will terminate in a Junction box (to be supplied), and the compressor control panel will be fed from the Junction box. The following distances can be assumed:

Junction box to Compressor Panel: 30m (x 4)

Compressor Panel to compressor motor: 30m (x4)

- The PI&D drawings of the air receivers to their respective existing compressors and all cooling water circuits need to be studied against the new compressor PI&D. This global PI&D for all services to the existing compressors and plant, including the blowdown function need to be carefully studied to ensure a perfect System Integration of the new units and not compromise any other system. i.e.it was mentioned at the site visit that the supply feed into the heat exchangers would come from a common manifold, consequently could render all compressors out of service. We need this detail so we can study all Piping, electrical, control & instrumentation, pneumatic interfaces and ensure all positions are resolved in our tender response.

18/38 5669-1 Blowdown System P&ID

The comment related to the cooling supply coming from a common manifold and potentially rendering all compressors out of service is not understood? The existing design does allow for sectional isolation of the cooling water supply, as well as the air delivery.

- The Site / Eskom C&I authority indicated to us that we must only take the new Bus / network interface to the local Fibre Optic point and that ESKOM would program the PLC + SCADA / DCS on their side. Kindly confirm that this is the case for all parties tendering. Typically, the OEM would normally permit a remote Run, Stop, via the network link, furthermore get the salient alarm and stages (TBC). It would be fair for your C&I authority to list the Read/ Write commands they would want on their side so we can ensure an accurate C&I Bus link. To confirm that Ethernet TCP/IP Industrial Ethernet will be accepted.

The functionality of the Compressor plant (Start, stop, compressor priority, cooling pump automation etc.) must all be managed by the local control panel.

As per section 3.6.15 of the WI, all of this data must be made available across the SCADA link. I.E. We want full monitoring of what the plant is doing, but not control.

The primary purpose of the communication link is feedback to the control room, however Stop/Start operation from the control room (subject to certain conditions e.g. plant selected to Manual, receivers not full etc.) should be possible. Details can be clarified during detail design phase. The below protocols are acceptable:

- IEC 60870-5-104
- IEC 61850
- OPC UA
- Modbus TCP/IP (Ethernet)
- Modbus RTU (Serial)

- Please confirm that the respective Site establishment will be allowed in the Turbine hall. We see other site containers already in this area.

Yes, space will be made available for site establishment in the underground powerhouse. See section 5.1.11.5

- Please confirm that our trucks / bakkies transporting equipment, will be allowed to make use of the service access tunnel to deliver items to the envisaged site establishment underground at Turbine hall level / main floor.

Yes, access for equipment delivery via the main access tunnel can be arranged.

- Please confirm that we can mix cement onsite to resolve the existing / new base as applicable. It was made clear that any water would need to be brought in for this civils works and we are not to use the stations potable water.

Yes concrete can be mixed at the plant area where the compressors will be installed. Protective floor covers must be used and care needs to be taken to ensure no dust enters any panels or hampers the running plant.

Please note: The water underground is not potable. Only raw dam water is available in the underground powerhouse. If using the water available underground, it may be necessary to assess the suitability for concrete mixing.

- Please confirm that we may use the station ablutions facilities at no back charge.

Yes, the ablution facilities underground are available for Contractor use at no charge. See section 5.1.11.6

- Please confirm that we can use small power wrt our site establishment from the stations local services in this area. For office container, Temporary Distribution Board (DB) we would use would need some small power for minor site works (drilling, cutting , etc). The area is not conducive to have a stand-alone diesel generator for this function and in all parties interests that we can use small power to our temp. DB.

Yes power supply will be made available as per section 5.1.11.2

- During critical activities, like offloading new units and rigging, tapping into existing CW Supply lines, etc. Certain work will need to be finished same day and we cannot compromise the station. Please confirm if in special cases that we can work through the night, overtime and get supporting co-operation from ESKOM in these cases.

Yes, with adequate planning Eskom resources can be made available around the clock. Eskom Generation operates 24/7.