Section B

Turbo-set work specific requirements

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1 CONTRACTOR's personnel

The CONTRACTOR shall have its own responsible supervisors and skilled qualified personnel for all phases of the works. All employees assigned by the CONTRACTOR must be technically and personally qualified for work at the plant sites of the CLIENT. On request of the CLIENT, personnel´s qualification and compliance with the qualification requirements shall be evidenced by the CONTRACTOR.

The CONTRACTOR shall assign a Site Manager and a Project Manager responsible for coordinating all work carried out on the turbo-set according to this technical specification. The CONTRACTOR is responsible to ensure the verbal communication on site in English and national language between the Site Manager and the CLIENT.

All instructions, guidance and directions to be given by the CONTRACTOR to its employees with regard to their work and duties shall be given in a language understood by the employees and additionally be provided in writing. CONTRACTORS project- and all site manager (shift supervisor) shall have at least fluent english language skills. CONTRACTOR employees and SUBCONTRACTORS shall have at least a basic understanding of the local language. The CONTRACTORS names of the management and supervisory personnel and the responsible safety expert appointed by the CONTRACTOR shall be communicated to the CLIENT in the overhaul preparation meeting.

Note: The CONTRACTOR shall submit with its Bid a Project Organization Chart (identifying the functions) which shows the project and site organization.

2 Secured work area of the CONTRACTOR

The CONTRACTOR may set up secured work areas in order to ensure quality of work and occupational safety and protect the progress of work against disturbances. Such secured work areas shall be visibly marked off by the CONTRACTOR in consultation with the responsible contact person of the CLIENT; consultation with the CLIENT shall be done prior to commencement of work.

Access to secured work areas is reserved to the CONTRACTOR's employees. The CLIENT shall be entitled to appoint persons that are also authorized to access such areas; such persons shall be instructed by the CONTRACTOR and have access to the secured work areas at any time. Persons authorized to access these areas are obligated to comply with the applicable rules of conduct. Other personnel of the CLIENT may access the secured areas only after application and in consultation with the CONTRACTOR; they have to comply with the applicable rules of conduct.

All persons present in the CONTRACTOR's secured work area shall follow the instructions of the site manager or his representative. In the case of threat to life or equipment and other abnormal conditions resulting from adjacent plants, the CLIENT's personnel shall decide on the measures to be taken and on the behaviour of all personnel in the power plant; such decisions and instructions shall also be applicable to the secured work areas.

The CONTRACTOR shall immediately notify the CLIENT of any contraventions of the above rules by personnel of the CLIENT or of other contractors that result in delays or other impairments, and shall state the potential consequences.

3 Work permit

Work permit

The work can only start after the CLIENT has issued a work permit and in particular after discussing the required management measures and the internal rules regarding the organization of the assignments and the tests. Work may only be carried out while the Site Manager of the CONTRACTOR is in possession of a valid work permit.

It is strictly prohibited to manipulate installation parts (valves, pumps, etc.), unless explicit permission has been given for this in the work permit. The permission to manipulate is cancelled once the work permit has been returned to the CLIENT.

The work permit is subject to a risk analysis consisting of two parts, which form the basis for the prevention measures. The first part is carried out by the CLIENT and the second part by the Site Manager of the Contractor covering the risks and hazards involved in its activities and those of any subcontractors it may have.

Work in confined spaces requires special attention and must be prepared in consultation with the CLIENT, in accordance with the procedures that are in effect.

Hot work permit

For the execution of all works in which heat, fire or sparks are produced an additional hot work permit is needed. Such work shall be completed in accordance with the current legal requirements. The Fire Permit is a document that has to be present, in addition to the work permit, at the work station during work with an increased risk of fire, such as welding, cutting, grinding and roofing works. The Fire Permit includes the results of a risk analysis and is only valid for one location and for one day at most.

Mobile cranes and self-unloading vehicles

The Site Manager of the CONTRACTOR shall apply for and obtain from the CLIENT a work permit for mobile cranes and self-unloading vehicles, prior to setting up such equipment at the site (instruction with regard to earthing and limitation of slewing range). In addition, the precise location shall be signed off by the CLIENT.

4 Project communication

Overhaul preparation meeting

At least two overhaul preparation meetings with the CONTRACTOR shall be held in order to prepare the overhaul work. This preparatory meeting shall take place not later than some days before the start of disassembly and reassembly work at the site. For the meeting, the CONTRACTOR shall prepare all relevant documents as identified in the Checklist "Preparation Meeting".

Overhaul preparation meeting dates to be scheduled in,

- **April 2022**

Fact Finding Matrix

All inspection findings and the resulting measures and costs must promptly be listed in the Fact-Finding Matrix. The Fact-Finding Matrix will be initially defined and created by the CLIENT.

The CONTRACTOR shall compile all information coming from the site and workshop and record them in the Fact-Finding Matrix. The document must be constantly updated by revision index. The form of the revision index will be discussed and agreed in the overhaul preparation meeting.

Based on the updated Fact Finding Matrix a weekly update call will take place. The CONTRACTOR is obliged to participate within this update call presenting latest / last week's findings. The duration of the update call will not exceed one hour per week. The invitation and organisation to the meeting is by imitated and lead by CLIENTs procurement.

Control of component parts

The CLIENT shall be notified in writing of any components removed from the power plant site. Any such turbine components must be clearly and durably marked as property of Uniper. The written notification shall include the following information:

- Component name and designation, including origin and sender;
- Destination address of the recipient;
- Forwarding company, including transport, shipping and package identification numbers.

Daily site reports and meetings

CONTRACTOR´s site manager and Health & Safety technician shall participate in brief daily meetings to report the progress of their work.

CONTRACTOR's site manager shall prepare daily site reports and forward them to the CLIENT every day. The daily site report documents the work performed on the turbine components in each work shift. At least the following information shall be documented in the records:

- Day, date, shift, time, name of the site manager on duty;
- Number of personnel present at the site and work performed;
- Any special occurrences at the site.

Detailed time schedule

After contract award, the CONTRACTOR shall prepare, on the basis of the contractual dates and deadlines, a detailed time schedule which shall reflect the CONTRACTOR's planned sequence of works.

The CONTRACTOR shall present and explain the detailed time schedule to the CLIENT during the overhaul preparation meeting. Interfaces with other works shall be discussed and complemented, if necessary. The detailed time schedule shall then be filed as a basic version.

The detailed time schedule shall reflect the following milestones:

- Setting up of site facilities;
- Start of disassembly/reassembly work at the site;
- Findings discussion meeting(s);
- CLIENT witness points, as specified in the Inspection and Test Plan (ITP);
- Interfaces with rotor and casing parts transports;
- End of disassembly/reassembly work and readiness for turning gear operation.

The detailed time schedule shall show the following periods:

- Periods of disassembly/reassembly and repair work on the components, both on-site and off-site;
- Periods of use of the turbine house crane;
- Period of inspection and testing of the components and recording of findings;
- Periods requiring special operating conditions of the turbine system (e.g. operating weight, turbine oil system).

The detailed time schedule filed as a basic version shall be constantly followed up by the CONTRACTOR and promptly updated as necessary (e.g. to reflect changes in milestone dates, dates changed due to findings or optional work ordered) and the updated version shall be marked with a new revision

index and forwarded to the CLIENT. The detailed time schedule shall at least be updated after each findings discussion meeting.

5 Quality Assurance

Quality Assurance (QA) shall be based on the CONTRACTOR's Quality Management (QM) system. The QM system shall at least comply with the requirements of EN ISO 9001:2012. CONTRACOR's QA shall also cover all of the CONTRACTOR's suppliers and subcontractors. The CONTRACTOR shall be responsible for planning, implementation, monitoring and documentation of the QA for its entire scope of supply and services. The CONTRACTOR shall have in place its own responsibly QA supervisory and technical personnel, duly qualified for the scope of supply and services. Even if the CLIENT puts into place its own quality and field supervision, the CONTRACTOR shall remain fully responsible for quality assurance.

The CONTRACTOR shall prepare a non-conformance report for major quality defects and inform the CLIENT immediately. The non-conformance report shall contain the following information:

- Description of the quality defect;
- Classification of the quality defect, including reasons for the classification made;
- Description of the impact on the steam turbine functional unit;
- Description of the corrective action to be taken, including reasons;
- Impact on dates and deadlines.

The CLIENT reserves the right to inspect the presented documents or have them inspected by a skilful and independent third party that will not be a competitor to the CONTRACTOR, and to expand the scope of testing in consultation with the CONTRACTOR.

Note: The CONTRACTOR shall submit with its Bid a description of the main elements of quality assurance programme (organization, responsible/contact persons);

6 Inspection and Test Plan (ITP) and fact finding

The CLIENT's Inspection and Test Plan (ITP) shown in Section C of the Technical Specification covers the **minimum scope** of fact finding, measurements, inspections and tests to be performed by the CONTRACTOR and the CLIENT witness points to be considered by the CONTRACTOR.

Within the inspection and test plan the CONTRACTOR shall foresee the execution/taking and assessment the microstructure Replica according to VGB-TW 507. The detailed position for these replica will be mutually agreed within CLIENT and CONTRACTOR within HP/IP Valves, HP/IP Inner Casing, HP/IP Rotor.

On the basis of its technical expertise and experience, the CONTRACTOR shall prepare a project-specific Inspection and Test Plan (ITP) which must duly reflect the minimum scope specified by the CLIENT in the present Technical Specification.

The CONTRACTOR shall update the ITP to reflect any subsequent technical changes /additions to the ITP that become necessary as a result of inspection findings. The CONTRACTOR shall inform all parties involved (e.g. subcontractors) of any changes or additions made to the ITP.

Note: The CONTRACTOR is required to submit with contract award the project-specific ITP. It shall at least contain the following information:

- Time and location of fact finding, measurements and tests/inspections;
- Reporting points and CLIENT witness points;
- Testing centre, testing methods, main focus(es) of the inspection/test;
- Document numbers of the applicable testing procedures and test specifications;
- Recording.

CONTRACTOR's testing procedures and test specifications must be available during the inspection/tests and the CLIENT shall have the right to inspect such procedures and specifications. The procedures and specifications must cover the following testing and inspection requirements:

- Scope of application;
- Applicable standards and codes (standards, directives and codes of practice);
- Qualification of testing/inspection personnel;
- Preconditions for testing and preparation of test surfaces;
- Acceptance levels;
- Testing and procedural instructions.

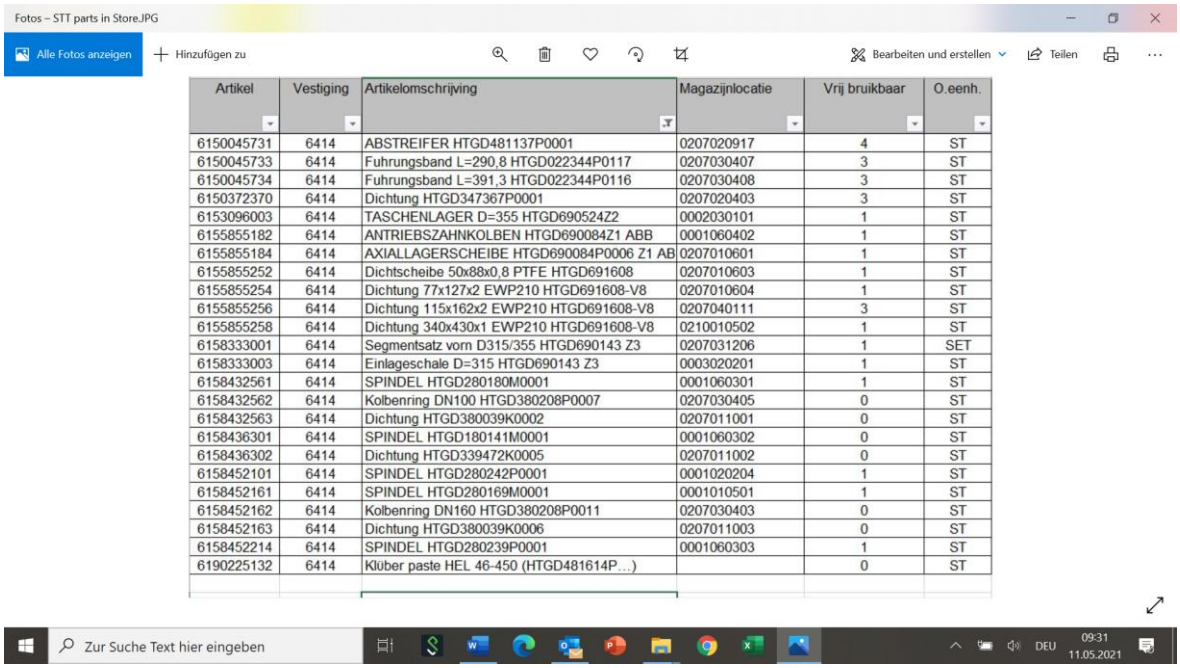
The CONTRACTOR is responsible for performing all fact finding work, fact finding, measurements, inspections and tests, for prompt recording and evaluation of results, and for preparing the reports. The records and reports shall be prepared at the construction site as inspection work proceeds and shall be kept available for inspection by the CLIENT at the site at any time; on request, photocopies of all records and reports shall be supplied to the CLIENT during the overhaul project. The CLIENT shall have the right to inspect at its discretion the testing procedures/test specifications and manufacturing documents for the component parts and subassemblies of the CONTRACTOR.

The CONTRACTOR shall derive from the findings and the measurement and test results the measures required and present them to the CLIENT. The CONTRACTOR shall document the findings, tests/inspections and the measures agreed in the findings follow-up matrix. The CLIENT and the CONTRACTOR shall aim at carrying out a joint fact finding effort upon complete disassembly of the components to be overhauled.

The records and reports compiled by the CONTRACTOR shall contain all information necessary for evaluation. The location and sizes of the findings/flaws shall be identified by stating the precise position in the form of quadrants (e.g. 03:00 hrs) and the size. In case of photographic documentation, a clear allocation of the photo shall be ensured and a scale shall be included in the photo. Existing component part identification codes shall also be recorded.

The CONTRACTOR commits itself to notify the CLIENT in writing of any findings necessitating additional supplies and/or services within 1 workday from their identification at the latest, and to submit to the CLIENT within 3 days an offer covering the additional supplies and/or services (including optional variants, if any).

7 Spare parts


Fotos – STT parts in Store.JPG

Alle Fotos anzeigen | Hinzufügen zu | Bearbeiten und erstellen | Teilen

Artikel	Vestiging	Artikelomschrijving	Magazijnlocatie	Vrij bruikbaar	O.eenh.
6150045731	6414	ABSTREIFER HTGD481137P0001	0207020917	4	ST
6150045733	6414	Fuhrungsband L=290,8 HTGD022344P0117	0207030407	3	ST
6150045734	6414	Fuhrungsband L=391,3 HTGD022344P0116	0207030408	3	ST
6150372370	6414	Dichtung HTGD347367P0001	0207020403	3	ST
6153096003	6414	TASCHENLAGER D=355 HTGD690524Z2	0002030101	1	ST
6155855182	6414	ANTRIEBSZAHNKOLBEN HTGD690084Z1 ABB	0001060402	1	ST
6155855184	6414	AXIALLAGERSCHEIBE HTGD690084P0006 Z1 AB	0207010601	1	ST
6155855252	6414	Dichtscheibe 50x88x0,8 PTFE HTGD691608	0207010603	1	ST
6155855254	6414	Dichtung 77x127x2 EWP210 HTGD691608-V8	0207010604	1	ST
6155855256	6414	Dichtung 115x162x2 EWP210 HTGD691608-V8	0207040111	3	ST
6155855258	6414	Dichtung 340x430x1 EWP210 HTGD691608-V8	0210010502	1	ST
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6190225132	6414	Klüber paste HEL 46-450 (HTGD481614P...)		0	ST

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Together with the Bid for the overhaul services, the CONTRACTOR shall submit a separate and complete Bid for any spare parts which will be necessary for and during the performance of the overhaul services (both for the base scope and for the optional scope). All new components, and especially their materials, must be absolutely suitable for the operating conditions. The materials to be used shall be stated for each specific spare part.

Spare parts and/or the design changes/adjustments made to component parts and/or subassemblies must not cause any additional operational restrictions. Any design changes/adjustments made to component parts and/or subassemblies shall be documented in the final documentation.

After contract award, the CLIENT will provide the CONTRACTOR with a list of spare parts available/on stock at the power plant site. The CONTRACTOR shall visually inspect the spare parts on stock at the power plant site for usability and identify the components to be used.

8 Hazard potential of the steam turbo set

The CONTRACTOR shall carry out a risk assessment for each replacement or modification of components made to the turbo-set, in order to analyze whether such actions are expected to result in significant additional risks and hazards or an increase of existing risks and hazards. This case has to be considered as a “significant modification” of the turbo set.

The risk assessments regarding the described technical scope of works (base and optional scope) shall be finalized prior to the overhaul and shall be presented and handed over to the CLIENT during the overhaul preparation meeting.

Note: The CONTRACTOR shall, jointly with the bid, submit a brief risk assessment of the technical scope regarding significant modification to the turbo-set.

No significant modification

In case the replacements or modifications of the CONTRACTOR do not constitute a significant modification, the CONTRACTOR shall proceed as follows:

- Specification of the requirements of the component
- Evidence of conformity of the changed design / material / manufacturing procedure to the requirements

Significant modification

In the event, that the CONTRACTOR within the scope of its work makes (or proposes to make) a significant modification to the turbo set the CONTRACTOR shall execute a conformity assessment according to Machinery Directive (2006/42/EC) and proceed as described hereinafter:

In order to determine hazards and assess risks during the design phase and construction work, the CONTRACTOR and CLIENT shall execute a Hazard and Operability Studies (HAZOP according to IEC 61882). The CONTRACTOR shall provide supporting documentation (e.g. P&IDs, system descriptions) and qualified personnel for the necessary meetings for their scope of supply and support and participate in HAZOPs for the overall plant within all phases of the plant life including the design, construction, operation, servicing and maintenance. A single HAZOP may cover more than one of the previously described phases.

An additional quantitative or qualitative risk assessment shall be carried out, e.g. using Risk graph, FMEA, Fault Tree Analysis, or Proven in Use Calculations to assure that all risks have been sufficiently mitigated. Where system safety depends on a Safety Instrumented System (SIS) the risk

assessment shall also be used to determine the Safety Integrity Level (SIL) of safety related protection systems according to IEC 61508/ 61511.

The CONTRACTOR shall supply documentary evidence to demonstrate that the supplied equipment provides the necessary risk reduction (SIL) as identified in the risk assessment. The CONTRACTOR shall make a continual record of the hazards identified, along with the measures taken to reduce the risks to personnel from these hazards.

If the CONTRACTOR's design works result in necessary modifications on steam turbines safety and/ or control system the CONTRACTOR shall check the existing safety and/or control system for retrofit compatibility and implement the according modification together with the CLIENT personnel. Especially the compatibility of the control system for the optimization/ improvement of the start-up behaviour and operational performance shall be investigated.

The CONTRACTOR shall document the results of all risk assessments in writing and submit and explain them to the CLIENT prior to making the relevant modification.

9 Documentation

The CONTRACTOR shall compile, as its work proceeds, a preliminary documentation of the work on the turbo-set and hand it over to the CLIENT during the end of work meeting to be held at the site prior to re-commissioning of the turbine system.

The CONTRACTOR shall compile the complete final documentation, and present it and hand it over to the CLIENT by the agreed date after completion of the overhaul works; two hardcopies of the complete final documentation and two electronic copies (readable files as pdf) on data carriers shall be handed over to the CLIENT.

All documents must be legible and colour printed, if necessary. The documentation shall reflect the "as built" status. Any documents reflecting merely the planning/engineering status shall be explicitly identified as such. The documentation shall include, but is not limited to:

- Documentation of the parameter settings as recorded during decommissioning and re-commissioning;
- Documentation of the dimensions measured and recorded after reassembly and a comparison with the corresponding dimensions measured and recorded during disassembly, on the basis of the disassembly/reassembly records. The disassembly/reassembly records must be supported by clearly allocated sketches, drawings and/or photos;
- Documentation of findings, records of tests and inspections carried out, measures derived from the findings, heat treatment, non-conformances and rectification work (e.g. welding, welding instructions, grinding of flaws etc.) carried out on the component parts;
- Documentation of welded joints (including welding procedure specifications (WPS)) on component parts, including all heat treatment performed and non-conformances found and rectification work (e.g. grinding of flaws, etc.) carried out on the component parts;
- Documentation of design changes made to the component parts shall be provided in a separate section "Design Changes";
- Documentation of risk assessments and Hazard and Operability Studies for significant modifications within the meaning of the Machinery Directive 2006/42/EC;
- Compilation of operating instructions for modified subassemblies (e.g. a new solenoid valve), including an overview of the design and operating data and sectional views for functional identification, P&IDs, and the associated spare parts lists and parts lists;
- Material certificates for installed new parts;
- Qualification test certificates (material testers, welders, etc).