



# **TENDER DOCUMENTATION FOR THE SELECTION OF THE CONTRACTOR**

**Refurbishment of the Combined Heat and Power Plant  
in Mladá Boleslav**

**Business Package OB 2**  
**BOILER HOUSES**

## **VOLUME III** ***TECHNICAL REQUIREMENTS***

**Annex A1 - Scope of Work**

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## 1 INTRODUCTION

### 1.1 Project objectives

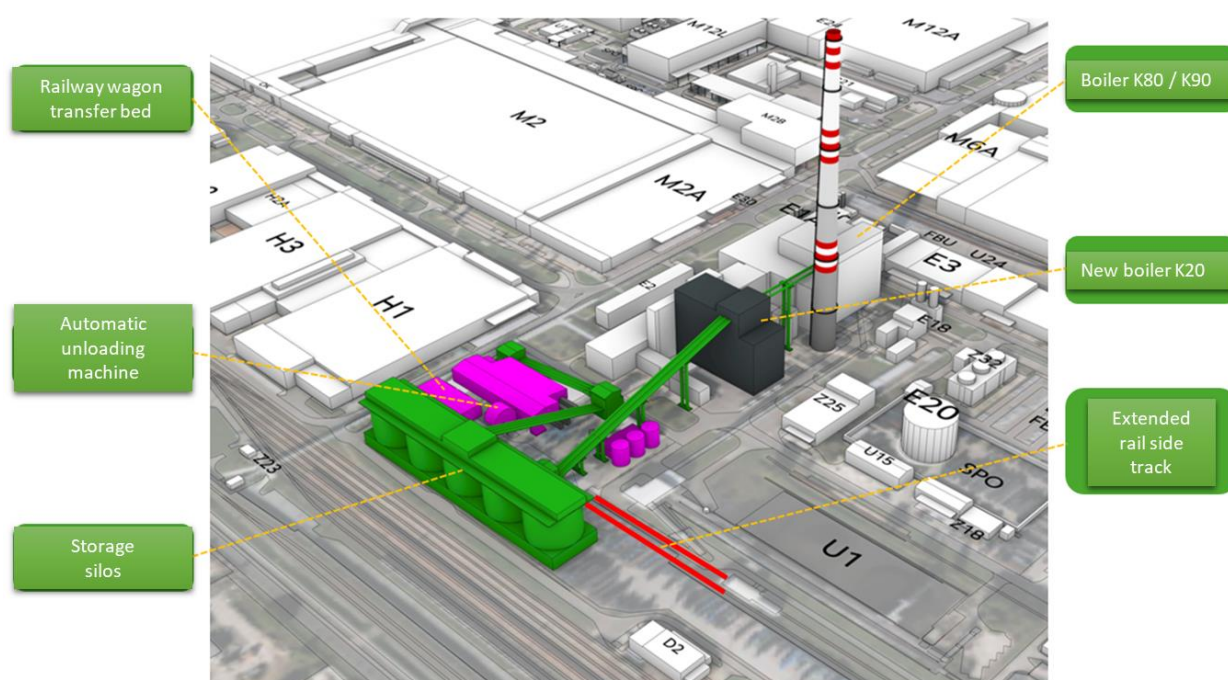
ŠKO-ENERGO s.r.o. will, as part of the CO<sub>2</sub> neutrality programme (part Modernization of the heating plant) refurbish the heating plant in Mladá Boleslav, whose production programme is the production of heat and electricity. The objective of the modernisation, which is to reduce the direct CO<sub>2</sub> emission factor, will be achieved by fundamentally changing the fuel base. The existing main fuel, lignite, will be replaced by biomass. The combustion of additional fuels, natural gas, and oil emulsions will be maintained.

### 1.2 Project scope

The modernisation includes all modifications of the PRODUCTION PLANT related to the change of the fuel base. As a result of the reduction in fuel calorific value, the steam output of the existing K80 and K90 coal-fired boilers will be reduced from 140 t/h to 100 t/h. The power deficit will be replaced by a new K20 boiler with a steam output of 80 t/h, which will burn only wood chips.

The preparation of sufficient wood chips for the boilers will be ensured by a new fuel handling system that will allow the transport and unloading of wood chips from railway containers or trucks. The maximum unloading capacity will be 1,400 m<sup>3</sup> /h. The fuel handling system includes a system of wood chip sizing, metal separation and storage in closed silos with a total capacity of 45,000 m<sup>3</sup>. Transportation from the receiving sites to the storage silos, the new K20 boiler house and the modified K80 and K90 boilers will be provided by a conveyor belt system.

New buildings and technological facilities will be constructed for the new and modernized technology, its power supply and automatic control. The WORKS will also include infrastructure, security, and monitoring systems. The division of the WORKS into operational files and construction facilities is given in the chapter 1.3 Table 1.



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### 1.3 Supplier breakdown of the project

The project is divided into the following business packages (hereinafter OB). Within the framework of the implementation of individual OBs, individual contractors will ensure coordination and synergy with the contractors of other OBs.

Breakdown of the TENDER DOCUMENTATION - Division into OBs		
OB	PS, SO, IO	Name
<b>OB 1 Fuel handling system</b>	PS101.1	Unloading system within OB 1
	PS 102	Intake of wood chips by road transport
	PS 103	Sorting and treatment of wood chips
	PS 104	Transport of wood chips
	PS 105	Wood chip storage technology
	PS 106	Ventilation and dedusting – woodchip system
	PS 107	Electrical part - woodchip system
	PS 108	I&C part - woodchip system
	SO 102.1	Wood chips storage silos (OB 1) - superstructure, stair towers
	SO 103.1	Transportation of wood chips to the storage silos (OB 1) - upper structure of transfer towers and conveyor bridges
	SO 104.1	Transport of wood chips to boiler houses (OB 1) - upper structure of transfer towers and conveyor bridges
<b>OB 2 Boiler rooms</b>	PS 109	Natural gas system
	PS 113	Air compressor station
	PS 201	Boiler house K20
	PS 202	Fuel handling system – boiler house K20
	PS 203	K20 boiler downstream systems incl. flue cleaning and gas exhaust pipes
	PS 204	Ash transport system
	PS 205	Reconstruction of K80 and K90 boilers
	PS 206	Reconstruction of K80 and K90 boilers' fuel handling system
	PS 207	Dismantling works and relocations
	PS 208.2	K20/K80/90 - I&C part
	PS 209	CEMS
	PS 210	K20/K80/K90/ Electrical part
	PS 211	Inter/connection pipes
	SO 201.1	Boiler house K20 (OB 2) - upper structure including cladding
	SO 202.1	K20 boiler downstream systems - flue gas cleaning - see SO 201 (OB 2) - upper structure
	SO 203	Modifications of boiler room K80/K90 (OB 2) - upper structure including cladding
	SO 204.1	External gas exhaust pipes - foundations and construction (OB 2) - upper construction
	SO 205.1	Ash removal - pipeline bridge and foundations (OB 2) - superstructure

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Breakdown of the TENDER DOCUMENTATION - Division into OBs		
OB	PS, SO, IO	Name
<b>OB 3 Rail transport</b>	PS 04-01	Railway wagon transfer bed for railway tracks 13 and 13a
	PS 04-02	Scales for wagons for railway tracks 13 and 13a
	SO 10-01	Railway superstructure
	SO 10-02	Railroad substructure
	SO 30-01	Substructure of the railway wagon transfer bed
	SO 31-01	Modification of the sewerage system
	SO 50-01	Railway track crossing modification
	SO 78-01	Demolition of the coal unloading facility including the removal of the logistics facilities
	SO 86-01	Modifications of the lighting
	SO 86-02	Power supply for the railway wagon transfer bed
	SO 86-03	Power supply for rail scales
<b>OB 4 Automatic unloading machine</b>	PS 101.2	Intake of wood chips - rail transport
<b>OB 5 I&amp;C</b>	PS208.1	Human Machine Interface
	PS 111	Fire alarm system
	PS 112	CCTV
<b>OB 6 Construction</b>	PS 401	Dismantling works
	SO 401	Demolition of buildings 1st stage
	SO 402	Demolition of buildings 2nd stage
	SO 101	Intake and treatment of wood chips
	SO 102.2	Wood chips warehouse (OB 6) - lower and upper structure, silos
	SO 103.2	Transportation of wood chips to the warehouse (OB 6) - lower structure of the transfer towers and conveyor bridges
	SO 104.2	Transport of wood chips to boiler houses (OB 6) - lower construction of transfer towers and conveyor bridges
	SO 105	Firefighting systems – valve stations and tank foundations
	SO 106	Electrical substation for wood chips - see SO 101
	SO 107	Unused
	SO 108	Unused
	SO 109	Railway wagon transfer bed - upper structure including cladding (*)
	SO 111	Landscaping and grassed areas
	SO 112	Wood chip sampling plant - see SO 103
	SO 113	Road scales
	SO 201.2	Boiler room K20 (OB 6) - substructure, internal brickworks
	SO 202.2	Substructure for Boiler K20 downstream systems - flue gas cleaning - see SO 201 (OB 6)

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Breakdown of the TENDER DOCUMENTATION - Division into OBs		
OB	PS, SO, IO	Name
	SO 204.2	External flue-gas pipes - foundations and structures (OB 6) - substructure
	SO 205.2	Ash removal - piping bridge and foundations (OB 6) - substructure
	IO 301	Communications and paved and handling areas
	IO 302	Sewerage system
	IO 303	External lighting
	IO 304	Drinking water
	IO 306	Industrial water (incl. hydrant relocation)
	IO 307	Electrical relocations and new connections
	ZS	Site facilities
<b>OB 7 SEE</b>	PS 110	Firefighting systems
	IO 305	Firefighting water

#### 1.4 Basic scope LOT OB 2 - Boiler houses

LOT OB 2 is part of a larger functional unit provided by different contractors and constituting a complex work.

The scope of LOT OB 2, which includes the dismantling and demolition of parts of the existing equipment in Buildings E1 and E1A, modification of the existing boilers K80 and K90, compressor station and auxiliary systems, construction of a new boiler K20, flue gas cleaning system, ash transport and storage, internal fuel handling system, associated parts of the I&C, the electrical part, fire protection systems (with the exception of the EFA system) and the related civil part, which is in the scope of LOT OB 2, is required to be delivered in the form of turnkey delivery (EPC) within the scope of LOT OB 2 allocated below.

The tender documentation is divided into the following annexes, which specify the requirements for LOT OB 2.

TECHNICAL ANNEXES	
<b>A1</b>	<b>SCOPE OF WORK</b>
<b>A2</b>	<b>GENERAL DATA</b>
<b>A3</b>	<b>BINDING TECHNICAL AND FUNCTIONAL REQUIREMENTS OF THE WORK</b>
<b>A4</b>	<b>TECHNICAL REQUIREMENTS</b>
A4.1	TECHNOLOGCAL PART
A4.2	ELECTRICAL PART
A4.3	I&C PART
A4.4	CIVIL PART
<b>A5</b>	<b>ACCEPTANCE PROCEDURES</b>
<b>A6</b>	<b>GUARANTEE VALUES</b>

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TECHNICAL ANNEXES	
<b>A7</b>	<b>DOCUMENTATION REQUIREMENTS</b>
<b>A8</b>	<b>STANDARDS</b>
<b>A9</b>	<b>CONSTRUCTION CONDITIONS</b>
<b>A10</b>	<b>Vendor list</b>
<b>A11</b>	<b>Drawings</b>
<b>A12</b>	<b>Technical annexes (current state) - only electronically</b>
<b>A13</b>	<b>CLIENT's informative standards (electronic only)</b>

## 1.5 Existing CHP Plant

The buildings of the existing CHP PLANT are located in the Škoda Auto complex, which is situated in an industrial zone on the eastern edge of the Mladá Boleslav district. The CHP PLANT is operated by ŠKO-ENERGO s.r.o.

From the eastern side, the plant area is bordered by the railway body, which is connected to the land of other areas without use. To the north, the site is surrounded by industrial buildings. To the west and south of the site are built-up areas of the urban area, the eastern edge of the site is defined by the D10 motorway.

The altitude of the area of interest is around 210.0-212.0 m above sea level.

## 2 APPLICATION OF THE SOLUTION IN THE TENDER DOCUMENTATION

The tender documentation specifies the functional specification of LOT OB 2, including the definition of the location, maximum building dimensions, which must be met. In addition, the tender documents and the actual construction permit documents represent the proposed technical solution for LOT OB 2, the BIDDER's flexibility in applying its technical solution, designing, and selecting specific equipment according to its technical practice, experience and custom is acceptable. The BIDDER may offer just such a LOT OB 2 more technically advanced and more efficient for the CLIENT, and in such a way as to meet the requirements specified in the Tender documents and the requirements, statements and opinions of the governmental authorities.

## 3 SHORT DESCRIPTION OF THE LOT OB 2

LOT OB 2 includes the construction of a new wood chip boiler K20 with an output of 80 t/h, modernisation of the existing boilers K80/90 each with an output of 100 t/h and steam parameters 12.5 MPa/535 °C with conversion to combustion of wood chips and co-firing of pellets. The modernisation includes modifications and replacements of the flue gas cleaning systems, ash transport, modifications of the cooling circuit, internal fuel handling system, I&C systems, and electrical systems. Also included in the process section are the steel structures of the boilers or boiler room, modifications to the existing boiler room structures in connection with modifications to the fuel handling system and possibly other systems. The LOT OB 2 is required in the form of turnkey delivery as defined within the connection points.

LOT OB 2 includes (applies to both boiler rooms unless otherwise specified):

1. Dismantling, demolition
2. Temporary and cleaning operations

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3. Internal fuel handling system and fuel transport to boilers
4. New boiler K20 including accessories
5. Reconstruction of existing K80/90 boilers
6. K20 flue gas system up to the stack
7. Flue gas filtration: new K20 and modification of existing K80/90
8. Systems for compliance with emission limits
9. New air compressor station in boiler room K20
10. Auxiliary cooling circuit incl. cooling tower water supply for K20
11. Modifications to the auxiliary cooling circuit in E1A
12. K20 ash removal system, and/or modifications of the existing ash removal for K80/90 up to the dispatch silos or even the necessary modifications of the dispatch silos
13. All interconnecting piping, including the piping connection of media to the existing machine hall auxiliary plant
14. Service platforms and gangways
15. Steel overhead structures of pipeline/cable bridges
16. Adjustments to the urea holding
17. Piping system for mobile industrial vacuum cleaner incl. modification of the existing one in E1A
18. K20 boiler feed water system
19. Natural gas pipeline modifications
20. Fire hydrant water distribution systems in K20 (with the exception of the premises of OB 1 and all piping in K20 – within the scope of OB 7)
21. Lifts and elevators

#### **Electrical part**

1. Complete electrical part for K20
2. Cabling for the new consumers of the CHP PLANT will be connected to the new switchboards RM\_SO201 and possibly to other secondary switchboards.
3. Within the object E1A - dismantling of selected cable routes and el. consumers
4. New cable routes with installation of new power and control cabling
5. Cabling for the socket circuits will be connected to the new switchboard RM\_SO201
6. New LV substation in K20

#### **I&C part**

1. New part of the control system for K20 boiler technology that will be integrated into existing control systems
2. Relevant HW and SW equipment
3. Continuous emission monitoring for K20 and modifications to the existing K80/90 emission monitoring
4. Power and communication cabling

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### Field instrumentation and cabling

1. Field instrumentation, joint boxes
2. Cable routes and cabling

### Civil part

The scope of LOT OB 2 includes all building structures for the boiler house K20 and the existing boiler house E1A and related technological systems within the scope of LOT OB 2 (see the list of building objects within LOT OB 2), including its necessary modification for the installation of new technology within LOT OB 2.

The scope of LOT OB2 also includes ensuring readiness of civil part for LOT OB 1, LOT OB 5, LOT OB 6, LOT OB 7 in the scope of boiler room K20 and in the scope of boiler room E1A.

### Scope of civil part - Boiler room K20 and boiler room E1A

1. supporting structures of the K20 boiler and the K20 boiler room
2. modifications of and new supporting structures of boiler room E1A
3. preparation of boiler house support structures for belt transport and connection of belt transport bridges (OB 1)
4. perimeter walls, plastering, acoustic insulation vertical partitioning structures of boiler rooms
5. roof, floors, staircases, ladders, boiler room lifts
6. waterproofing and thermal and acoustic insulation
7. hole fillers
8. surface finishes of newly supplied parts
9. water, sewage and sanitary installations for levels above 0.0 m
10. HVAC of the K20 building (except for the ventilation of the fuel passage transport area to E1A)
11. the civil part of the electrical boiler rooms and other parts supplied under LOT OB 2
12. construction of new and modification of existing steel structures of flue gas pipe bridges, ash ducts up to the dispatch silos, including possible modifications of the supporting structures of the existing gas boiler flue ducts due to the connection of the K20 boiler into the stack.
13. fire water distribution within the buildings of PART OB 2 (except for the stable fire extinguishing system (OB 7)) and fire equipment according to the Fire Safety Solution of the building

## 4 LEGISLATIVE CONDITIONS

The CONTRACTOR is obliged to apply the relevant Czech legislative regulations, valid Czech standards, the decision on the conclusions on the best available techniques (BAT) of the latest edition in the design of the OB 2.

## 5 CURRENT STATUS OF THE PERMIT DOCUMENTATION

- Permission for removal of buildings (SO 401, SO 402),
  - Municipality of Mladá Boleslav, Department of Building and Urban Development, Department of Building Authority,
  - entered into force on 12.1.2023.
- Documentation for planning decision
  - documentation prepared - 03/2023,

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- all DOSS (special authorities' statements) were obtained,
- the application for verification statement of the Ministry of the Environment was submitted,
- submission of an application for a planning permission after obtaining a verification opinion
- obtaining a planning permission - 4 March 2024.
- Documentation for the building permit is in the final stage of preparation
  - Finalization of the documentation
  - obtaining DOSS opinions - 04/2024
  - submission of an application for a building permit - 05/2024,
  - obtaining a building permit - assumption 07/2024.

## 6 SCOPE OF WORK

LOT OB 2 is required in the form of a turnkey delivery to meet the quality requirements for LOT OB 2 as specified in Technical Annexes A1 to A13. The minimum requirements are specified in this chapter. The OB 2 CONTRACTOR shall include in the scope of its delivery all items not explicitly listed in Technical Annexes A1 to A13 but necessary to ensure the proper function, efficiency, and safety of the LOT OB 2. There are references throughout the documentation to annexes marked as A14, these annex is available on request, more information on the legal procedure is provided in the Tender Documents.

### 6.1 Verification of input data

OB 2 CONTRACTOR shall be responsible for keeping informed and receiving all input and information necessary for the execution of the LOT OB 2, for exchanging information with other contractors of other OBs.

The OB2 CONTRACTOR shall carry out its own investigation of the connection points and technological connections of the PLANT, other OBs to the UNIT OB 2 - existing operations, access roads and their potential use, possibilities of connection to existing networks and roads, compliance of the Documentation for building permit and its design proposal.

The CONTRACTOR OB2 **shall check that the** parameters/data of the existing equipment, connected systems, associated processes, building structures and facilities of the PLANT and other OBs are **functionally and technically correct in the context of OB 2 operability and clear and enable the correct design of the LOT OB 2.**

In the event of any discrepancies between the input data or the CONTRACT and the CONTRACTOR OB2 findings, OB 2 CONTRACTOR shall verify the data and immediately inform the CLIENT to determine the next course of action.

The OB2 CONTRACTOR is obliged to actively cooperate in coordination with the Client in the exchange of relevant design information required for the design of other OBs.

### 6.2 Implementation of the LOT into the PLANT

The OB2 CONTRACTOR is responsible for the proper operational and technical implementation of the UNIT OB2 into the existing PLANT and ensuring technological and technical connections to other OBs that are required by LOT OB 2 or are necessary for the proper operation of other OBs.

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If modifications to existing equipment, piping, cabling, SW, or modifications on/to existing facilities or buildings of the PLANT will be required for the safe and reliable operation of LOT OB 2, such modifications are within the scope of LOT OB 2 unless they are within the scope of other OBs.

The construction takes place during the operation of the PLANT.

### 6.3 Surveys

OB 2 CONTRACTOR shall conduct its own investigations and surveys, in particular information on: the condition of existing structures and other characteristics of the SITE OB2. If necessary, the OB 2 CONTRACTOR shall provide, at its own expense, the necessary surveys for the execution of the LOT OB 2. The OB 2 CONTRACTOR shall deliver anchor bolts of the steel construction of the K20 boiler room, which shall be installed by the OB 6 CONTRACTOR in the baseplate. The OB 6 CONTRACTOR must provide to the OB 2 CONTRACTOR underlying documents required for the production of the anchoring elements,

### 6.4 Elaboration of documentation

The requirements for the DOCUMENTATION and its scope are given in Annex A7.

The DOCUMENTATION shall be prepared in such a way as to allow for the smooth execution of all activities during the construction of LOT OB 2.

The documentation will be prepared in accordance with the applicable legislation.

DOCUMENTATION will be delivered in Czech language or in accordance with the definition of Annex A7.

The CONTRACTOR shall deliver the documentation to the CLIENT according to the schedule in Annex A7 or according to the approved schedule. The documentation approval process is described in Annex A7.

Approval of any documentation by the CLIENT does not relieve the OB 2 CONTRACTOR of its full responsibility for its accuracy and completeness.

#### Documentation of the planning decision and documentation of the building permit

In the event that the design or construction of LOT OB 2 will show deviations from the permit documentation (valid building permit or planning decision), the LOT OB 2 includes the preparation of the relevant part of the permit documentation for the Change of the construction before completion.

The LOT OB 2 also includes proposed changes to the current operating manuals and regulations of the PLANT, which will be affected by the LOT OB 2.

### 6.5 Site facilities

Part of the LOT OB 2 is the below given list of obligations. The OB 2 CONTRACTOR is responsible from the moment of acceptance of the SITE OB 2 together with other contractors, in particular for:

- construction of site facilities for the execution of LOT OB 2,
- from the time of acceptance of the SITE, for the separation of the SITE OB 2 from the other facilities of the PLANT, cleanliness, and security of all parts of the installed equipment and stored equipment, site equipment, temporary structures, and the SITE OB 2 itself,
- The OB 2 CONTRACTOR shall ensure at his own expense the necessary measures in terms of health and safety measures, environmental protection, and protection against noise at the site of the LOT OB 2,

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- d) The OB 2 CONTRACTOR shall prepare design documents for the site facilities of the site (indicating dimensions of all mobile cabins and storage areas, sanitation facilities, roads, parking, and access areas, etc.). identifying connection points for construction (including testing phase),
- e) Training of employees and monitoring compliance with OHS and environmental protection,
- f) To carry out its works in such a way as not to disturb the existing operation of the PLANT or in accordance with the construction plan.

The CLIENT has appointed a General Designer and Project Management for the construction period. The basic scope of their activities is given in Annex A 3, ch. 4.1.1.

Conditions for the construction are set out in Appendix A9.

## **6.6 Dismantling and demolition**

The LOT OB 2 includes all demolition and dismantling of existing equipment and facilities of the PLANT necessary to ensure the proper construction of the UNIT OB 2, the proper operation of the UNIT OB 2, and to ensure the current operation and serviceability of the PLANT during construction and subsequent operation.

The design of temporary measures to ensure the operation of the PLANT during the construction of LOT OB 2 is presented in Annex A4.1.

## **6.7 Procurement and supply of equipment**

### **6.7.1 Procurement**

OB 2 CONTRACTOR shall be responsible for the purchase and delivery of materials and services for the performance of LOT OB 2 in accordance with its specifications and in accordance with the Schedule.

### **6.7.2 Material handling**

OB 2 CONTRACTOR shall be responsible for the proper packaging and transportation of all components and systems for the construction of LOT OB 2, for their proper storage and security, and for all other activities to make the equipment ready for construction and installation.

### **6.7.3 Inspection**

The OB 2 CONTRACTOR is responsible for carrying out the necessary:

- a) Inspections, tests, trials, and assessments of the suitability of the existing equipment, systems, structures of the PLANT which will be used for future operation of the UNIT OB 2, and which is located outside the scope of the LOT OB 2 and the operation of the LOT OB 2 may impact such PLANT equipment. For this inspection, the CONTRACTOR OB 2 shall issue the relevant documents required by legislation and standards.
- b) Inspection and storage of materials and equipment delivered to the CONSTRUCTION SITE OB 2.
- c) inspections, tests, including the issue of the necessary certificates and approvals for the equipment to be delivered to CONSTRUCTION SITE OB 2 or completed at CONSTRUCTION SITE OB 2 in accordance with the inspection and testing plan or legislative requirements.
- d) The OB 2 CONTRACTOR OB is responsible for Replacement of damaged or substandard materials/equipment and equipment.

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## 6.8 Construction and installation

The quality management of the work shall be carried out in accordance with the quality plan prepared by the SUPPLIER in accordance with the ISO 10005 standard and the requirements specified in Annex A 7, Chapter 6.

### 6.8.1 Works

The OB2 CONTRACTOR is responsible for:

- a) Construction and installation of equipment according to the DOCUMENTATION,
- b) Supervision of installation and construction,
- c) Performing cleaning operations, rinsing, boiling, and purging of components and systems,
- d) Provisions,
- e) Coordination of works in accordance with quality plans and manufacturers' instructions and in accordance with applicable legislation, applicable standards, and good engineering practice,
- f) Coordination of their work with the operation of the PLANT,
- g) Protection of all parts of the LOT OB 2 during the assembly period against damage of any kind,
- h) Ensuring a safe working area and compliance with applicable safety rules during operation, including the appointment of an OHS Coordinator, fire protection according to legal requirements,
- i) Dismantling of makeshift structures, temporary constructions, etc.,
- j) Supply of equipment and services - i.e. necessary modifications to existing PLANT equipment, or design/design boundaries that go beyond any existing PLANT equipment, and are outside the scope of the connection points that directly impact equipment designed within the connection points - typically piping calculations, etc.

### 6.8.2 Connecting connection points

OB 2 CONTRACTOR shall be responsible for preparing the connection and connection of LOT OB 2 to the PLANT and to the existing infrastructure of the PLANT.

### 6.8.3 The first filling

Filling of all equipment with required consumables (lubricating oils, greases, etc.) are included in LOT OB 2.

### 6.8.4 Waste during construction

The owner of all categories of waste generated during construction of the OB 2 WORK shall be the OB 2 CONTRACTOR, who shall ensure their recycling or disposal in accordance with legislation and the CLIENT's conditions.

## 6.9 Licensing, approval, certification

The OB 2 CONTRACTOR is responsible for engaging a specific Notified Body for all required certification of the equipment and systems of LOT OB 2.

The OB 2 CONTRACTOR shall designate a specific technical notified body with which it shall deal during the design/design and construction phases of the LOT OB 2, in order to control step by step the design work and the implementation work on site and to obtain the necessary statements, approvals, decisions

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and permits which are within the competence of the OB 2 CONTRACTOR OB as the entity placing the LOT OB 2 on the market.

The OB 2 CONTRACTOR shall provide with all necessary support and required documentation to enable the CLIENT to obtain all required permits and licenses from the appropriate authorities. This also includes any activity related to updating and/or revising existing permits.

For this reason, the OB 2 CONTRACTOR is required to carry out all related activities in close cooperation with the technical notifying authority and to provide any support and/or documentation where necessary.

## 6.10 Training

The OB 2 CONTRACTOR shall provide training of all operating personnel of the CLIENT allocated for the future operation of the UNIT OB 2 so that the personnel are theoretically and practically prepared for the administration, operation, and maintenance of all parts of the new UNIT OB 2.

Czech language will be used for all training sessions, if necessary, the OB 2 CONTRACTOR will provide translation into Czech language. All training documentation provided by OB 2 CONTRACTOR shall be in Czech language.

It is assumed that the CLIENT will have properly qualified operating and maintenance personnel already in place during the installation phase (second half of the installation period, in any case before commissioning).

The aim of the training is to train the CLIENT's operation and maintenance personnel to the extent that after the training they are able to:

- a) safely and efficiently operate the UNIT OB 2 with all auxiliary equipment without the support of the OB 2 CONTRACTOR,
- b) carry out routine maintenance and repair work independently and correctly.

## 6.11 Completion of construction

The OB 2 CONTRACTOR is responsible for the removal of site equipment, cleaning of the SITE OB 2 for the handover of the SITE OB 2 to the CLIENT.

## 6.12 COMMISSIONING

See Annex A 5 for details of commissioning procedures.

The OB 2 CONTRACTOR is responsible for performing mechanical tests and functional tests of all parts of UNIT OB 2 in order to confirm compliance with the design and construction proposal and operating conditions. UNIT OB 2 will be commissioned in parts - individual boilers and their auxiliary systems.

The following objectives must be met and verified:

- The UNIT OB 2 or their respective part operates safely as a functional entity, including its implementation into the operation of the PLANT,
- The UNIT OB 2, or the relevant part thereof, operates safely under all operating conditions,
- UNIT OB 2 or the relevant part thereof operates as proposed,
- training of the operation and maintenance staff is completed.

The commissioning tests shall be carried out under the responsibility of the OB 2 CONTRACTOR and under its supervision according to the test programme prepared by the OB 2 CONTRACTOR and agreed by the CLIENT.

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All functions of the individual components and process systems must be tested with the operating medium wherever possible. Particular attention will be paid to the testing of protective equipment and components.

### **6.12.1 INDIVIDUAL TESTS**

As part of the completion of the installation, the OB 2 CONTRACTOR shall inspect the installation, the integrity of the equipment and all connections (mechanical and electrical), safety systems and verify the functionality of the individual devices. This stage shall also include cleaning operations. The contractor shall keep a separate logbook on the progress and results of the individual testing. Upon completion, the OB 2 CONTRACTOR shall submit the individual test reports to the CLIENT.

### **6.12.2 PREPARING FOR TRIAL RUN**

After the completion of the INDIVIDUAL TESTS, the PREPARATION FOR TRIAL RUN will be initiated within the framework of which the OB 2 CONTRACTOR will perform tuning and testing of individual parts of the UNIT OB 2 in operation and perform successful functional tests in accordance with the test program approved by the CLIENT.

### **6.12.3 COMPLEX TEST, TRIAL RUN, GUARANTEE MEASUREMENT**

These activities will be carried out gradually depending on the phasing of the construction of UNIT OB 2.

#### **6.12.3.1 COMPLEX TEST**

The relevant part of the UNIT OB 2 is operated by the CLIENT's trained personnel under the continuous supervision of the OB 2 CONTRACTOR based on the CLIENT's requirements so as to demonstrate the functional capabilities of the UNIT OB 2, or the relevant part and the ability of continuous operation of the UNIT OB 2, and so as to enable the CLIENT to check the operating characteristics of the UNIT OB 2.

The time of the COMPLEX TEST is 72 hours.

#### **6.12.3.2 TRIAL RUN**

Part of the scope of WORK OB 2 is the trial run of the UNIT OB 2 or its relevant part at least for 30 days by the personnel of the CLIENT under the continuous supervision of the OB 2 CONTRACTOR. The UNIT OB 2 is operated in accordance with the needs of the CLIENT This chapter is explained in more detailed in Appendix A4, including requirements for documentation where this process shall be appropriately described.

It is not a trial run according to the Building Act.

#### **6.12.3.3 GUARANTEE MEASUREMENT**

The scope of the OB 2 CONTRACTOR is to provide a GUARANTEE TEST A and a GUARANTEE TEST B.

GUARANTEE TEST A will be performed in the course of the TEST RUN. GUARANTEE TEST B will be performed before the expiration of the PRIMARY GUARANTEE PERIOD.

OB 2 CONTRACTOR, as part of LOT OB 2 for GUARANTEE TEST A and GUARANTEE TEST B, shall provide a qualified independent accredited organization - testing company to perform the guarantee tests to demonstrate compliance with the guarantee values listed in Appendix A 6.

The selection and appointment of the accredited company is subject to approval by the CLIENT at the CONTRACTOR'S expense.

OB 2 CONTRACTOR shall prepare a GUARANTEE MEASUREMENT PROJECT.

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The OB 2 CONTRACTOR shall follow the requirements specified in Annex A6 Guaranteed Values when planning and performing the guarantee measurement.

During the tests, the UNIT OB 2 or its relevant part will be operated by the CLIENT's employees under the supervision of the OB 2 CONTRACTOR.

#### **6.12.4 PRELIMINARY ACCEPTANCE (PAC)**

After a successful TRIAL RUN and GUARANTEE TEST A, a PAC (Preliminary Acceptance Certificate) will be issued and the WORK OB 2- the relevant part - the boiler will be handed over to the CLIENT and the period of operation during the PRIMARY GUARANTEE PERIOD begins.

At the same time, the period of the EXTENDED GUARANTEE PERIOD for the civil part of LOT OB 2 begins.

#### **6.12.5 FINAL ACCEPTANCE CERTIFICATE (FAC)**

The FINAL ACCEPTANCE CERTIFICATE shall be signed by mutual agreement by both parties after the completion of the PRIMARY GUARANTEE PERIOD, successful completion of the GUARANTEE TEST B and the removal of all defects and deficiencies by the OB 2 CONTRACTOR found in LOT OB 2 that were included in the list of defects and deficiencies at the PRELIMINARY ACCEPTANCE.

### **6.13 Spare parts and parts with a shorter lifetime than the PRIMARY GUARANTEE PERIOD**

The scope of LOT OB 2 includes:

- spare parts to ensure availability of the LOT OB 2 for the duration of the PRIMARY GUARANTEE PERIOD,
- parts with a shorter service life than the PRIMARY GUARANTEE PERIOD based on the list of spare parts prepared by the OB 2 CONTRACTOR. These spare parts are listed in the offering price for the OB 2 WORK

#### **6.14 Special tools**

The CONTRACTOR OB 2 shall list and supply the special tools required for maintenance and testing of the LOT OB 2. Special tools shall be defined as tools, jigs and mounting aids specially made for the maintenance of the equipment supplied.

#### **6.15 Usage rights**

The LOT OB 2 includes provision of licenses, know-how, usage rights, software and any other intangible property rights necessary for the use of the LOT OB 2, including relevant documentation to the extent.

## **7 OBLIGATIONS OF THE CLIENT**

The CLIENT is responsible for:

1. Access to the SITE and other necessary cooperation for the successful completion of LOT OB 2.
2. Time, material, technological coordination of individual contractors of other OBs.
3. Accessing all connection points and ensuring the necessary media parameters at the connection points, such as flow, temperature, pressure, and media consistency at any connection point.

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4. Upgrades, repairs, commissioning of existing PLANT systems that are outside the connection points and outside the scope of the OB 2 CONTRACTOR that are necessary for the proper operation of the UNIT OB 2.
5. Access to electricity, water and any other utilities and fuels during construction, commissioning, and testing, for the requirements of the site equipment and construction (does not include media required for the operation – fuels, additives – which are parts of the CONTRACTOR'S delivery). Water and electricity consumption shall be measured at the CONTRACTOR'S expense and their costs shall be paid by the CONTRACTOR. Such measured commodities are associated with the construction the OB WORK but not with the commissioning thereof.
6. The free disposal of all operational waste from the operation of the OB 2 Unit.
7. The CLIENT's personnel will be available for the commissioning and testing phase.
8. If it cannot be done otherwise due to labour safety requirements, the CLIENT shall be obliged to shut down the common distribution systems of the boilers to allow the installation of technologies with the scope of OB 2. Such shutdown must be scheduled and approved with the CLIENT.
9. Coordination of work on other project activities at the PLANT that could impact the progress of the work on the LOT OB 2 that are outside the connection points and outside the scope of LOT OB 2.

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## 8 CONNECTION POINTS

### 8.1 Ownership of connection points:

The owner of the connection point is responsible for its marking, connection to the connected entity in cooperation with the connected entity.

The contractor of the respective OB is the owner of the connection point in the case of:

1. The connection point is the point of connection with the PLANT.
2. The contractor provides the connection of the underground infrastructure to the buildings, the connection point in the case of pipe connections is 1 m outside the building outline.
3. Connection point between other OBs - the owner is the contractor from whom the medium always or predominantly flows.
4. At the OBs e.g. civil part – civil part interface, the owner of the connection point is the contractor from whom the medium flows or is vertically higher.

Close design and construction cooperation is required for the implementation of the connection points.

The connection points required for the retrofit of boilers K80 and L90 depend on the scope of changes associated with the transfer of fuel and thus also with the offered technical solution of OB 2; hence, they are not strictly defined but are limited in any case to the fluid boiler room E1A.

### 8.2 List of connection points of LOT OB 2

NB	From	To	Description	Medium	DN	t [°C]	p [MPag]	Note
S1	OB 2	E1A	life steam from boiler K20	life steam	200	535	12.5	for K20
S2	E1A	OB 2	auxiliary steam for K20	auxiliary steam		240	1,8	for K20
S3	E1A	OB 2	feed water for 2.VTO regeneration of K80	feed water		210	18	for K20
S4	E1A	OB 2	feed water for 2.VTO regeneration of K90	feed water		210	18	for K20

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NB	From	To	Description	Medium	DN	t [°C]	p [MPag]	Note
S5	OB 2	OB 6	connection of cooled water from the aftercooling sump to the sewerage system	wastewater				for K20 sump
S6	OB 2		condensate and scum drainage to the condensate collection tank in the engine room	condensate/scum				from K20 to existing
S7	E1A	OB 2	internal auxiliary cooling circuit of K80	demi-water		15	0.5	for K20 or supplementing of retrofit
S8	OB 2	E1A	internal auxiliary cooling circuit of K80	demi-water		40	0.5	for K20 or supplementing of retrofit
S9	E1A	OB 2	internal auxiliary cooling circuit of K90	demi-water		15	0.5	for K20 or supplementing of retrofit
S10	OB 2	E1A	internal auxiliary cooling circuit of K90	demi-water		40	0.5	for K20 or supplementing of retrofit
S11	OB 1	E24	flue gas piping connection	flue				from K20
S12	OB 2	E1A	fly ash dispatch silo 1	ashes				includes possible modifications of the whole silo
S13	OB 2	E1A	fly ash dispatch silo 2	ashes				includes possible modifications of the whole silo
S14	OB 2	E1A	control air from K20 to E1A HEATING PLANT	compressed air		30	0.8	TRB -40°C
S15	E1	OB 2	transport air from the ŠA distribution to K20	compressed air		30	0.6	TRB +3°C

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NB	From	To	Description	Medium	DN	t [°C]	p [MPag]	Note
S16	OB 2	E1	K20 transport air to the ŠA distribution system (branch for E1A)	compressed air		30	0.6	TRB +3°C
S17	OB 2	OB 1	control air for dust extraction equipment in E1A (within OB 1)	compressed air		30	0.8	TRB -40°C
S18	OB 2	OB 1	pressurised air for outdoor objects	compressed air		30	0.6	TRB -40°C
S19	OB 2	E1A	control air for dust extraction equipment on K20 (within OB 1)	compressed air		30	0.6	TRB -40°C
S20	OB 1	OB 2	fuel from BC14 to K20 operating silo 1	Flue gases				top edge of the silo inlet flange
S21	OB 1	OB 2	fuel from BC14b to K20 operating silo 2	wood chips				top edge of the silo
S22	OB 1	OB 2	fuel from BC16a to K80 operating silo 1	wood chips				top edge of the silo
S23	OB 1	OB 2	fuel from BC16b to K80 operating silo 1	wood chips				top edge of the silo
S24	OB 1	OB 2	fuel from BC16a to K80 operating silo 2	wood chips				top edge of the silo
S25	OB 1	OB 2	fuel from BC16b to K80 operating silo 2	wood chips				top edge of the silo
S26	OB 1	OB 2	fuel from BC16a to K80 operating silo 2	wood chips				top edge of the silo
S27	OB 1	OB 2	fuel from BC16b to K90 operating silo 1	wood chips				top edge of the silo
S28	OB 1	OB 2	fuel from BC16a to K90 operating silo 2	wood chips				top edge of the silo
S29	OB 1	OB 2	fuel from BC16b to K+0 operating silo 2	wood chips				top edge of the silo

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NB	From	To	Description	Medium	DN	t [°C]	p [MPag]	Note
S30	E1A	OB 2	fuel to K80 – chute 1	plant pellets				gas exhaust pipe to the boiler
S31	E1A	OB 2	fuel to K80 – chute 2	plant pellets				gas exhaust pipe to the boiler
S32	E1A	OB 2	fuel to K90 – chute 1	plant pellets				gas exhaust pipe to the boiler
S33	E1A	OB 2	fuel to K90 – chute 2	plant pellets				gas exhaust pipe to the boiler
S34	OB 6	OB 2	industrial water	industrial water				for K20
S35	OB 2	OB 6	rainwater drainage	rainwater				for K20
S36	E 1	OB 2	drinking water supply	drinking water				doe K20
S37	OB 2	E1A	rainwater	rainwater				for E1A
S38	E1A	OB 2	gas fire extinguishing system	nitrogen gas				for K80/90i emergencies
S39	E1	OB 2	gas fire extinguishing system	nitrogen gas				for K20 in emergencies
S40	E1	OB 2	natural gas	natural gas				for K20
S41	E1A	OB 2	connection of the SNCR technology	DeNox agent				for K20
S42	E1A	OB 2	feed water for K80	feed water		210		
S43	E1A	OB 2	feed water for K90	feed water		210		
S44	OB 2	E1A	life steam from K80	life steam		535	12.5	
S45	OB 2	E1A	life steam from K90	life steam		535	12.5	

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			<b>Electrical part</b>	<b>Note</b>
NB	From	To	Limits of supply of electrical parts:	
E1	E1A	OB 2	newly armed switchgear field 80,90BBA	HV for K20
E2	E1A	OB 2	terminals of technological switchboard 80,90BFB pins	HV for E1A (retrofit)
E3	OB 2	E1A	to the existing electrical part of the civil objects	
E4	OB 1	OB 2	connection of equipment located on the spillways to the internal silos on K20	
E5	OB 1	OB 2	connection of equipment located on the spillways to the internal silos on E1A 1 to 80,90BFB pins	
E6	OB 1	OB 2	switchboard LV 00BHS, 00BHD,00BHF pins	LV for K20
E7	OB 1	OB 2	switchboard LV 00BUA, 00BHC,00BHD, 00BHF pins	LV for E1A (retrofit)
E8	OB 6	OB 2	HV cabling for cables to K20	HV cables between switch rooms in OB 6
E 9	OB 6	OB 2	LV cabling for cables to K20	LV cables between switch rooms in OB 6

NB	From	To	<b>I&amp;C part</b>	<b>Note</b>
A1	OB 2	existing	connection to Procontrol P14	
A2	OB 2	existing	connection to the industrial network - network switchboard DR 1	
A3	OB 2	existing	technological network	
A4	OB 2	E1A/K20	connection to 800xA control system	

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## 9 LIST OF ABBREVIATIONS

Abbreviation	Text
AŘ	Administration procedure code
I&C	Automated management system of technological process
ATEX	ATEX Directions (Atmosphères Explosibles) for equipment and protective systems intended for use in areas with explosion hazards
BAT	Best Available Techniques
BEP	BIM Execution Plan
BIM	Building Information Modelling/Management
RR	Routine repair
OHS	Occupational safety and health
CE	Conformité européenne
CCTV	Closed Circuit Television
CEMS	Emission monitoring system
CDE	Common data Environment
No.	Number
CR	Czech Republic
ČSN	Czech technical standard
DIN	Deutsche Industrie Normen
DOSS	State administration authorities concerned
DPS	Documents required for building construction
DSP	Documents required for building permit
DSPS	Documents of as-built condition of the building construction
WCh	Wood chips
WRW	Waste rainwater
EIA	Environmental impact assessment
EIR	Exchange Information Requirements
EMC	Electromagnetic compatibility
EN	European standards
EFAS	Electronic fire alarm system
FAC	Final Acceptance Certificate
FAT	Factory Acceptance Test
FC	Frequency converter
GO	General overhaul
H	Hold point
HMG	Time plan

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Abbreviation	Text
HAZOP	Hazard and Operability Study
HW	Hardware
CHOPAV	Protected area of natural water accumulation
IAPWS	International Association for the Properties of Water and Steam
IEC	International Electrotechnical Commission
IFC	Industry Foundation Classes/format
IO	Engineering object
I/O	Input/output signals
IPPC	Integrated Pollution Prevention and Control
ISO	International organization for standardization
IT	Information Technology
ITS	Internal technical standards
ITE	Individual tests
k.ú.	Cadastral territory
KV	Comprehensive testing
LV	Low voltage
FWT	Feed water tank
NV	Government regulation
OB	Business package
SS	Steel structure
parc.No.	Parcel number
PED	Pressure Equipment Directive
P&I	Piping and instrument diagram
BC	Belt conveyor
PD	Implementation documentation
SIT	Schedule of inspections and tests
PAC	Preliminary Acceptance Certificate
PBŘ	Fire Safety Concept
POBC	Plan and organization of the building construction
PRE-BEP	Design plan of BIM implementation
PS	Operational file
SCR	Selective catalytic reduction
CGM	Combustible dust mixture
SEE	Stable extinguishing equipment
SIL	Safety Integrity Level
I&C	Instrumentation and Control system

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Abbreviation	Text
SNCR	Selective non-catalytic reduction
SNIM	3D model non-graphic information standard
SO	Building object
CfW	Contract for work
SP	Building permit
QMS	Quality management system
SW	Software
CS	Control system
SP	Solid pollutants
ÚSES	Territorial system of landscape ecological stability
HV	High voltage
VOC	Volatile organic compound
ACS	Air-conditioning system
HP	High pressure
W	Witness Point
WF	Workflow