



# **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 A 1 - Scope of Work**

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## 1 INTRODUCTION

### 1.1 Project objectives

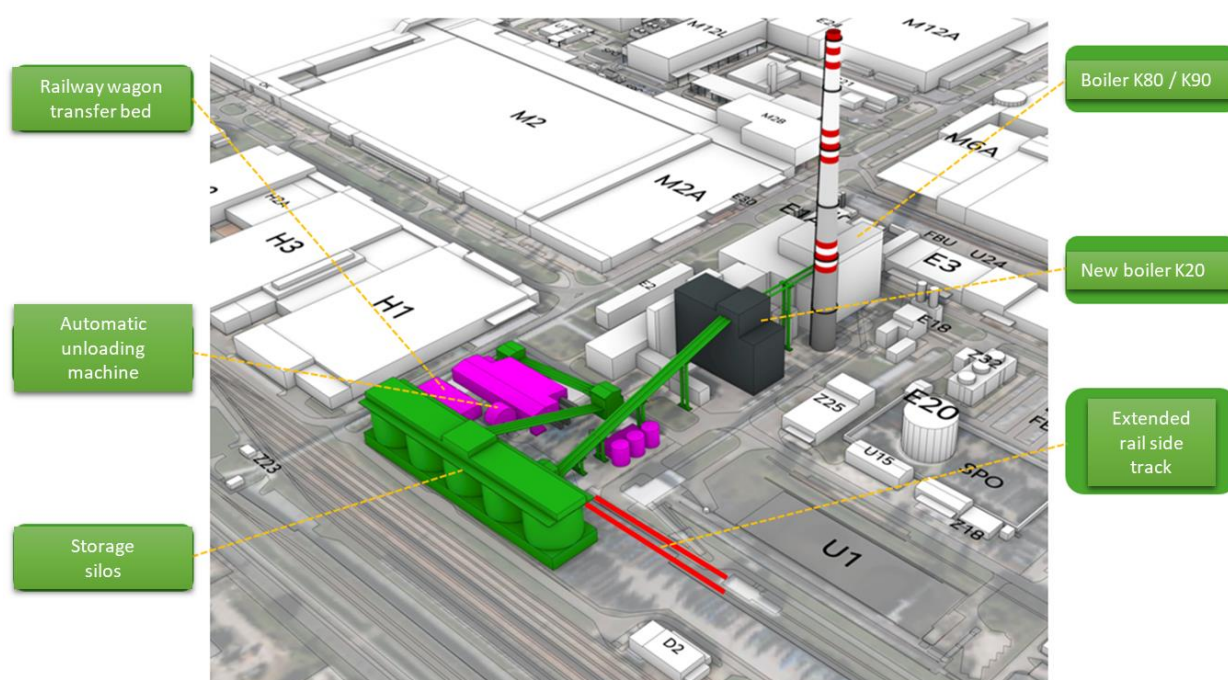
ŠKO-ENERGO s.r.o. will, as part of the CO<sub>2</sub> neutrality programme (part Modernization of the heating plant) refurbish the heating plant in Mladá Boleslav, whose production programme is the production of heat and electricity. The objective of the modernisation, which is to reduce the direct CO<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<br/>Fuel handling<br/>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<br/>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 flue 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 flue 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<br/>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<br/>Automatic unloading machine</b>               | PS 101.2   | Intake of wood chips - rail transport  |
| <b>OB 5<br/>I&amp;C</b>                                   | PS208.1    | Human Machine Interface  |
|   | PS 111     | Fire alarm system  |
|   | PS 112     | CCTV   |
| <b>OB 6<br/>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<br/>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, electrical and 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              | TECHNOLOGICAL 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>  |
| <b>A7</b>         | <b>DOCUMENTATION REQUIREMENTS</b>                                |

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| TECHNICAL ANNEXES |  |
|-------------------|--|
| <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 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
3. Internal fuel handling system and fuel transport to boilers



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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. 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

#### **Field instrumentation and cabling**

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

#### **Civil part**

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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 for civil structures for level above 0.0 m.

Applies to levels above 0.0 m (the civil part for the level below 0.0 m is provided by the CONTRACTOR of LOT OB 6).

#### **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
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,
  - all DOSS (special authorities' statements) were obtained,

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- 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 - assumption 10.2023.
- Documentation for the building permit is in the final stage of preparation
  - Finalization of the documentation - 08.2023
  - obtaining DOSS opinions - assumption 08. to 10.2023
  - submission of an application for a building permit - assumption 10.2023,
  - obtaining a building permit - assumption 12.2023.

## 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 A12. 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 A12 but necessary to ensure the proper function, efficiency, and safety of the LOT OB 2.

### 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 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 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.

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.

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### 6.3 Surveys

OB 2 CONTRACTOR shall conduct its own investigations and surveys, in particular information on: geological conditions, soil contamination, 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.

### 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.

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:

- a) construction of site facilities for the execution of LOT OB 2,
- b) 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,
- c) 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,
- 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.

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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.

Technical specifications of major components must be approved by the CLIENT prior to purchase.

### **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.

## **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:

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- 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 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 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.

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## 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.

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.



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### **6.12.2 PREPARING FOR A COMPREHENSIVE TESTING (KOMPLEXNÍ VYZKOUŠENÍ)**

After the completion of the INDIVIDUAL TESTS, the PREPARATION FOR COMPREHENSIVE TESTING 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 COMPREHENSIVE TESTING, 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 COMPREHENSIVE TESTING**

The OB 2 CONTRACTOR will carry out a COMPREHENSIVE TESTING of the UNIT OB 2 within the framework of which it will perform the tuning and testing of the UNIT OB 2 or the relevant part as a whole, including cooperation with other parts of the PLANT.

The UNIT OB 2 is operated by the OB 2 CONTRACTOR on the basis of the OB 2 CONTRACTOR's requirements by agreement with the CLIENT, so that the OB 2 CONTRACTOR can perform all the necessary tests in the required operating modes. The maximum time for COMPREHENSIVE TESTING is 30 DAYS.

#### **6.12.3.2 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.

#### **6.12.3.3 TRIAL RUN**

Part of the scope of WORK OB 2 is the trial run of the UNIT OB 2 or its relevant part 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.

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

#### **6.12.3.4 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 after the completion of the TEST OPERATION. GUARANTEE TEST B will be performed before the expiration of the 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

OB 2 CONTRACTOR shall prepare a GUARANTEE MEASUREMENT PROJECT.

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.



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#### **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 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 GUARANTEE PERIOD**

The scope of LOT OB 2 includes:

- spare parts to ensure availability of the LOT OB 2 for the duration of the GUARANTEE PERIOD,
- parts with a shorter service life than the BASIC GUARANTEE PERIOD based on the list of spare parts prepared by the OB 2 CONTRACTOR.

### **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 Wear Parts and Consumables**

The LOT OB 2 includes wear parts and consumable parts for a period of 6 months - the list will be proposed by the OB 2 CONTRACTOR.

### **6.16 Guarantees**

The LOT OB 2 includes the provision of guarantees for the faultless operation of the UNIT OB 2 and the faultless performance of the LOT OB 2 as a whole and for the entire period of the BASIC GUARANTEE PERIOD for the technological part, or for the period of the GUARANTEE PERIOD for the CIVIL PART.

### **6.17 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.

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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.
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.
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. 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.

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

| NB  | From | To  | Description  | Medium     | DN  | t [°C]    | p [MPag]] | Note   |
|-----|------|-----|--|------------|-----|-----------|-----------|--|
| 201 | OB 2 | E1A | life steam from boiler K20 - connection to systems K70, K80, K90 | life steam | 200 | 535       | 12.5      | steam distributor auxiliary machine hall +13,0 m |
| 202 | OB 2 | E1A | life steam from boiler K20 to RS auxiliary steam                 | life steam |     | 535       | 12.5      |  |
| 203 | OB 2 | E1A | life steam from the K20 boiler to the reserve DH heater          | life steam |     | 535       | 12.5      |  |
| 204 | OB 2 | E1A | steam condensates to the existing expander 2x                    | condensate |     | saturated | 12.5      |  |
| 205 | OB 2 | E1A | feed water for HP regeneration K90                               | feed water |     | 210       | 18        |  |
| 206 | OB 2 | E1A | feed water for HP regeneration K80                               | feed water |     | 210       | 18        |  |

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| NB  | From | To       | Description  | Medium           | DN | t [°C] | p [MPag] | Note   |
|-----|------|----------|--|------------------|----|--------|----------|--|
| 207 | OB 2 | E1A/OB 6 | connection of cooled water from the aftercooling sump K20 to the sewerage system | wastewater       |    | 40     | 0.5      |  |
| 208 | OB 6 | OB 2     | industrial water   | industrial water |    | 30     | 0.5      |  |
| 209 |      |          | not used   |                  |    |        |          |  |
| 210 | OB 2 | E1A      | not used   |                  |    |        |          |  |
| 211 | E1A  | OB 2     | inner cooling circuit  | demi-water       |    | 15     | 0.5      |  |
| 212 | OB 2 | E1A      | inner cooling circuit  | demi-water       |    | 40     | 0.5      |  |
| 213 | E1A  | OB 2     | not used   |                  |    |        |          |  |
| 214 | E1A  | OB 2     | not used   |                  |    |        |          |  |
| 215 | OB 2 | E1A      | not used   |                  |    |        |          |  |
| 216 | OB 2 | E24      | flue gas piping connection   |                  |    |        |          |  |
| 217 |      |          | not used   |                  |    |        |          |  |
| 220 | OB 2 | E1A      | fly ash dispatch silo  | Ashes            |    |        |          | includes possible modifications of the dispatch silo |
| 221 | OB 2 | E1A      | fly ash dispatch silo  | Ashes            |    |        |          | includes possible modifications of the dispatch silo |
| 222 | OB 2 | E24      | K20 flue gas to the chimney  | Flue gases       |    |        |          | chimney inlet flange                                 |
| 251 | OB 2 | E1A      | control air from K20 to E1A HEATING PLANT  | compressed air   |    | 30     | 0.8      | TRB -40°C  |
| 252 | E1   | OB 2     | transport air from the ŠA distribution to K20                                    | compressed air   |    | 30     | 0.6      | TRB +3°C   |
| 253 | OB 2 | E1       | K20 transport air to the ŠA distribution system (branch for E1A)                 | compressed air   |    | 30     | 0.6      | TRB +3°C   |

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| NB  | From | To   | Description  | Medium         | DN | t [°C] | p [MPag]] | Note                 |
|-----|------|------|--|----------------|----|--------|-----------|----------------------|
| 254 | OB 2 | OB 1 | control air for dust extraction equipment in E1A (within OB 1)     | compressed air |    | 30     | 0.8       | TRB -40°C            |
| 255 | OB 2 | OB 1 | pressurised air for outdoor objects                                | compressed air |    | 30     | 0.6       | TRB -40°C            |
| 256 | OB 2 | OB 1 | control air for the dust extraction equipment on K20 (within OB 1) | compressed air |    | 30     | 0.8       | TRB -40°C            |
| 120 | OB 1 | OB 2 | wood chips to K20 operating silo 1                                 | wood chips     |    |        |           | top edge of the silo |
| 121 | OB 1 | OB 2 | wood chips to K20 operating silo 2                                 | wood chips     |    |        |           | top edge of the silo |
| 180 | OB 1 | OB 2 | wood chips to K80 operating silo 1                                 | wood chips     |    |        |           | top edge of the silo |
| 181 | OB 1 | OB 2 | wood chips to K80 operating silo 1                                 | wood chips     |    |        |           | top edge of the silo |
| 182 | OB 1 | OB 2 | wood chips to K80 operating silo 2                                 | wood chips     |    |        |           | top edge of the silo |
| 183 | OB 1 | OB 2 | wood chips to K80 operating silo 2                                 | wood chips     |    |        |           | top edge of the silo |
| 190 | OB 1 | OB 2 | wood chips to K90 operating silo 1                                 | wood chips     |    |        |           | top edge of the silo |
| 191 | OB 1 | OB 2 | wood chips to K90 operating silo 1                                 | wood chips     |    |        |           | top edge of the silo |
| 192 | OB 1 | OB 2 | wood chips to K90 operating silo 2                                 | wood chips     |    |        |           | top edge of the silo |
| 193 | OB 1 | OB 2 | wood chips to K90 operating silo 2                                 | wood chips     |    |        |           | top edge of the silo |

| NB | From | To       | Electrical part   | Note |
|----|------|----------|---|------|
|    |      |          | Limits of supply of electrical parts:   |      |
| E1 | OB 6 | OB 2     | primary terminals 2x transformer xxBFTxx 6/0,42kV under the new substation K20 fed from 80/90BBA from field No.12 |      |
| E1 | OB 2 | existing | newly armed switchgear field 80,90BBA   |      |
| E2 | OB 2 | existing | newly armed Irodel switchgear field   |      |
| E3 | OB 2 | existing | terminals of technological switchboard 80,90BFB newly armed pins  |      |

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|    |      |          | <b>Electrical part</b>                               | <b>Note</b> |
|----|------|----------|--|-------------|
| NB | From | To       | Limits of supply of electrical parts:                |             |
| E4 |      |          | not used   |             |
| E5 | OB 2 | existing | to the existing electrical part of the civil objects |             |
| E6 | OB 1 | OB 2     | technology of spillway room on K20                   |             |
| E7 | OB 1 | OB 2     | technology of spillway room on E1A to 80,90BFB       |             |

| 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   |             |

| NB  | From     | To       | <b>Civil part</b>   | <b>Note</b>   |
|-----|----------|----------|---|---|
|     |          |          | <b>SO 201 - Boiler room K20</b>   |   |
| S1  |          |          | not used  |   |
| S2  | OB 2     | OB 6     | - rainwater drainage  |   |
| S3  | existing | OB 2     | - drinking water supply   |   |
| S4  |          |          | not used  |   |
| S5  | OB 2     | OB 6     | - LV electrical - IO 307  |   |
|     |          |          | <b>SO 203 - Modification of boiler room K80 and K90</b>   |   |
| S6  |          |          | not used  |   |
| S7  | OB 2     | existing | - rainwater drainage  |   |
| S8  | existing | OB 2     | - drinking water supply   |   |
| S9  |          |          | not used  |   |
| S10 | existing | OB 2     | - LV electrical - IO 307  |   |
|     | OB 2     | OB 6     | The connection point between OB 2 and OB 6 in terms of structures is the 0.0 m level, unless otherwise specified. | The owner of the connection point, i.e. responsible for the connection, is the OB from where the medium flows, or in the case of vertical building structures from where the water flows. |

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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   |