



TENDER DOCUMENTATION FOR 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 A2 General construction data

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1 CONSTRUCTION LOCATION AND SITE CHARACTERISTICS

The building is located in a closed part of the Škoda Auto heating plant. The complex is located in the industrial zone of Mladá Boleslav. The area is flat in character. ŠKO-ENERGO s.r.o. produces heat and electricity in a highly efficient cogeneration cycle.

The ŠKO-ENERGO heating plant is situated on the eastern edge of the Mladá Boleslav district. From the eastern side, the plant area is bordered by the railway body, which is followed by land of other areas without use. From the north and west the site is surrounded by industrial buildings. To the 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. The nearest inhabited buildings are located on the adjacent streets – f.e. Václava Klementa, Laurinova, Dukelská and others. However, due to the considerable height of the stack of the heating plant, it can be stated that the influence of the heating plant on air quality is manifested in a much wider area in its vicinity.

The project will be implemented within the existing heating plant on an area that is not part of the territorial system of ecological stability of the landscape (ÚSES). The project site and its immediate surroundings are not located in any specially protected nature area or in the European NATURA 2000 network of protected nature areas. The project is also not located in a nature park.

The site does not fall within any water resource protection zone or CHOPAV. During the construction of the areas, the contractors will be within the railway siding protection zone 30 m from the axis of the outermost track.

According to the available information, it can be assumed that the construction will not encroach on any other existing protection zone. Local utility relocations will be made.

The land with the buildings to be removed is located in the inner zone of the site.

There are also no old ecological burdens registered within the plant's area of interest.

The following chapters contain information that may not be relevant for the OB 2 CONTRACTOR, particularly chapters concerning earth and excavation works and related surveys, most of which fall within the scope of the delivery of OB 6.

2 SURVEY WORK – A REVIEW OF THE MAIN FINDINGS

As part of the preparatory work "Review of the assessment of geological, engineering-geological and hydrogeological conditions of the area", prepared by Geologické služby s.r.o. (9/2022), was carried out on the basis of available documents from the ČGS geofund archive.

The whole locality is characterised by a relatively simple geological structure, consisting of alluvial deposits above and immediately below them outcrops deluvial to fluviodeluvial clays, clayey sands to sands and weathered, deeply solid rocks of the Upper Cretaceous. On the ground surface, the overburden of variable composition is 1.2-2.4 m thick. None of the archive boreholes intercepted the soil profile (topsoil + subsoil), which has been removed in the past.

The deluvia soils below the overburden layer are considered to be plastic clays, with the top effects of groundwater of a stiff consistency, increasing in consistency (with decreasing weathering) to a firm consistency towards depth. According to archival laboratory test results, these are soils of class F8 CH (clay with very high plasticity). The typical characteristics of these materials are high friability - plasticity, dangerous icing, volume changes due to alternating drying and wetting, low bearing capacity values with simultaneous loss of consistency.

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3 A BRIEF OVERVIEW OF THE GEOLOGICAL CONDITIONS OF THE AREA OF INTEREST

The whole locality is characterised by a relatively simple geological structure, consisting of alluvial deposits above and immediately below them outcrops deluvial to fluviodeluvial clays, clayey sands to sands and weathered, deeply solid rocks of the Upper Cretaceous. The deepest unit is the crystalline represented by rocks of the Kralupsko-Zbraslav Group of the Neoproterozoic - clasts, dusty shales, black shales. The Upper Cretaceous consists of a complete sequence of Upper Cretaceous strata from the Cenomanian to the Upper Turonian, i.e. the Perucco-Korycan, Brezen, Jizera and Teplice Formations with a total thickness of at least 200-250 m.

The deluvia soils below the overburden layer are plastic clays, with the top effects of groundwater of a stiff consistency, increasing in consistency (with decreasing weathering) to a firm consistency towards depth. According to archival laboratory test results, these are soils of class F8 CH (clay with very high plasticity).

These materials are characterized by their typical properties of high friability – plasticity, dangerous frosting, volume changes due to alternating drying and wetting, low values of bearing capacity with simultaneous loss of consistency.

4 A BRIEF OVERVIEW OF THE HYDROGEOLOGICAL CONDITIONS OF THE AREA OF INTEREST

The area of interest of Škoda Auto a.s. Mladá Boleslav belongs hydrologically to the Jizera River basin, its sub-basin 1-05-02, which is the Jizera River from Kamenice pod Klenicí. In another subdivision, the territory of the site falls within sub-basin 1-05-02-101 Kosmonoska svodnica (Zalužanská vodotec) to Klenica below Kosmonoska svodnica. The area of interest is located in flat terrain. The recipient of rainwater from the premises of Škoda Auto a.s. is the Zalužanská watercourse. According to Annex 1 to Decree No 178/2012 Coll., the Klenice and Jizera are classified as significant watercourses. The plant site does not fall within the floodplain.

5 ENGINEERING-GEOLOGICAL CONDITIONS ON THE CONSTRUCTION SITE

As can be seen from the archival data, the possible foundation joint, with a flat foundation to a depth level of about 2 m, was built by heterogeneous silts, variable looseness, or deluvial highly plastic clays of class F8 CH, nor can the remains of the foundation structures of existing buildings be excluded, continuing to a depth of about 5-6 m, where they already show a solid consistency. In the immediate subsoil there are fluvial sands up to 1 m thick, aquiferous. From a depth of about 10 m, calcareous sandstones of the Upper Cretaceous Jizera Formation of hard consistency. The groundwater level is at a depth of approx. 1.5-3 m below ground level and will adversely affect the foundation conditions.

In view of the above data, the baseline conditions are assessed as complex.

The combination of complex foundation conditions and demanding construction is classified as geotechnical category 3 according to ČSN EN 1997-1.

6 GEOELECTRICAL AND RADON SURVEYS

Stray currents are not expected to occur in the area of interest and the newly proposed operational areas do not require permanent sites with radon load assessments. A medium radon risk is therefore considered for the future proposal.

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7 MAPPING AND GEODETIC DOCUMENTS

As part of the project documents, the CLIENT provided a digital version of the "Basic Plant Map" with geodetic surveying of existing buildings, roads, on-site utilities and other facilities in the S-JTSK coordinate system and the Bpv elevation system.

8 BASIC DATA AND INFORMATION ABOUT THE PROJECT

As part of the modernization of the existing energy source of the K80 and K90 boilers, which burn brown coal with co-firing of plant pellets, the investor decided to replace the burning of brown coal with wood chips. As the steam output of the existing K80 and K90 boilers will be reduced when switching to 100% biomass combustion, this power deficit will be compensated by the construction of a new K20 boiler house with the same steam parameters and with a connection to the existing HP steam distribution lines of the heating plant so that the steam produced can be used for high-efficiency cogeneration of heat and electricity. This requires the construction of a new fuel farm to replace the existing coal farm with an open coal stockpile. The new fuel farm includes the unloading of wood chips, wood chip treatment, storage silos and subsequent transport to the boiler houses. In the event of a failure of the container unloading equipment, the containers will be unloaded by a manipulator to an adjacent unloading point in the auger field area. In the event of a breakdown on the railway, the wood chips will be delivered by road with fuel unloading to the unloading points. The co-firing of plant pellets in the existing, upgraded K80 and K90 boilers will be maintained; no co-firing of pellets is foreseen for the K20 boiler.

9 BASIC INFORMATION ON THE WATER SUPPLY AND WASTEWATER DISPOSAL SYSTEM

The PLANT area is connected to the municipal drinking water and sewerage networks managed by VaK Mladá Boleslav, which are followed by internal drinking, fire and utility water, rainwater and sewage water distribution systems. Part of the rainwater is discharged into two purification lagoons Z 29.

Water is pumped from the Jizera River for treatment at the Bradlec station. The produced industrial water is accumulated in water tanks and then transported to the Škoda Auto plant.

The heating plant operates dry flue gas cleaning and the only wastewater is sewage and effluent from the boilers and cooling system. The cooling circuit effluents are directly discharged to the storm sewer and then through building Z29 to the Zalužanská watercourse. The quality of the leachate is monitored internally. Wastewater is discharged via transfer object Z23 to BWTP I or BWTP II Mladá Boleslav.

Rainwater from the roofs of the newly designed buildings and from paved areas will be discharged into the on-site storm and unified sewer system. Stormwater from the part of the PLANT site in the area of the existing boilers K80 and K90 will remain discharged to the lagoons Z29. New stormwater will be discharged to the stormwater sewer via a new retention tank and further to the lagoons from the area of the new boiler K20 and the original coal dump U1. The other areas of the PLANT site (the fuel management area and the existing areas to the east of the fuel management area) will remain discharged to the unified sewer and then via the transfer facility Z23 through the unified sewer managed by VaK Mladá Boleslav to BWTP I or BWTP II Mladá Boleslav. The overall balance of stormwater will be approximately the same as the original, however, due to the change in the drainage of the PLANT, the amount of stormwater discharged to the stormwater sewer managed by VaK Mladá Boleslav will be lower and, conversely, the amount of stormwater discharged to the Z29 lagoons will be increased.

10 OVERHEAD AND UNDERGROUND CABLE LINES - LOW CURRENT, HIGH CURRENT

Existing overhead and underground cable lines are installed in the production area. If it is necessary to relocate these overhead and underground lines, the applicable standards must be complied with, in

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particular ČSN 73 6005 (736005) Spatial arrangement of technical equipment lines and ČSN 33 2000-5-52 ed. 2 (332000) Low-voltage electrical installations - Part 5-52: Selection and construction of electrical equipment - Electrical lines. It shall respect the existing protection zones of overhead and underground utility lines, crossing roads and railways and comply with the conditions set out in the administrators' statements and general legal conditions. Underground relaying of cables falls within the scope of works of the OB 6 CONTRACTOR.

In case of disassembly of cabling, the cable may be blinded on both ends and no complete disassembly will be necessary; however, such cases shall be subject to the CONTRACTOR'S approval.

11 SEISMICITY

The site is not located in an undermined area or in an area threatened by seismicity.

12 CLIMATIC CONDITIONS OF THE CONSTRUCTION SITE

The site is located at an altitude of approximately 210-212 m above sea level.

Climatic data (weather station Semčice)

average annual temperature:	9.4 °C
average maximum temperature of the month - hottest month	25 °C
average air temperature in the coldest month	-1.9 °C
lowest daily temperature	-6,0 °C
average annual relative humidity	70 %
relative humidity dispersion	35 - 90 %
annual average rainfall	560 -620 mm
number of ice days	24 (max. 62)
number of Arctic days	81 (max.5)
Arctic Days	11 (max.34)
number of days with snow cover	44(max.94)
Extremes	
highest measured air temperature - extreme	38.1 °C
highest daily average temperature - extreme	30.9 °C
lowest measured air temperature extreme	-24.6 °C
lowest average daily temperature - extreme	-20.5 °C

13 LIST OF ABBREVIATIONS

Note: Sorted alphabetically according to the Czech version.

Abbreviation	Text
AŘ	Administration procedure code
P&I	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

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Abbreviation	Text
BIM	Building Information Modelling/Management
RR	Routine repair
OHS	Occupational safety and health
BaA	Baltic after alignment
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	Harmonogram

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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
PAC	Preliminary Acceptance Certificate
PED	Pressure Equipment Directive
P&I	Piping and instrument diagram
BC	Belt conveyor
PD	Implementation documentation
SIT	Schedule of inspections and tests
PBŘ	Fire Safety Concept
POV	Plan and organization of the building construction

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Abbreviation	Text
PRE-BEP	Design plan of BIM implementation
PS	Operational file
SCR	Selective catalytic reduction
CGM	Combustible dust mixture
SEE	Stable extinguishing equipment
S-JTSK	Unified cadastral trigonometric network system
SIL	Safety Integrity Level
I&C	Instrumentation and Control system
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