

Employer  
**SAKO BRNO A.S.**

Project  
**High-efficient combined heat and power facility utilizing renewable sources (OHB  
II - line K1)**

Date  
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# **PART III, APPENDIX 21**

## **OPTIONS**



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OPTIONS**

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(OHB II - line K1)**  
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# 1. OPTION 1: LOW TEMPERATURE ECONOMIZER AND FLUE GAS CONDENSATION

## 1.1 Scope of Supply

Option 1 includes the design, manufacture, supply, erection, testing, commissioning and documentation of the following:

- Low temperature economizer (LT ECO)
- Flue gas condenser and heat pump
- Droplet fallout mitigation (e.g. flue gas re-heater; droplet separator)
- Condensate water treatment system
- All necessary connections to the DH system for heat transfer
- All necessary auxiliary equipment including heat exchangers, circulation pumps, pipes, valves
- All necessary modifications to the scope of Contract Object (including but not limited to ID fan, ducts and stack pipe) as a result of this option.

The low temperature economizer and flue gas condenser shall be located downstream the bag-house filter and upstream the ID-fan. Re-injection of bleed from flue gas condensation to the reactor upstream the bag house filter is to be included.

All technical specifications and functional, guarantee and environmental requirements specified in the Contract applies for this option unless otherwise specified in this option specification.

If the Contractor subcontracts the Works included in this option the Contractor shall make the Sub-contractor available for all meetings and correspondence in order to secure a direct dialogue with the Employer in relation to all technical clarifications during the Contract period.

## 1.2 Process and Design Data

Process and Design Data for option 1 are as presented in appendix A13 *Process and Design Data*.

## 1.3 Technical specification

Technical specifications for option 1 are as presented in Appendix A *Scope of Works and Technical Requirements* and Appendix A3 *Technical Specifications for Flue Gas Treatment*.

## 1.4 Forms for technical data

There are no specific forms to be filled for option 1 but the Contractor shall state if the option raises any technical data that differs from those stated in part 0.g *Forms for Technical Data*.

## 1.5 Guarantee Data

No additional guarantee data is requested for option 1, other than the ones stated in Part II.h *Guarantees*. In case that any parameter of Part II.h *Guarantees* is changed this shall be indicated.

## 1.6 Validity

The option shall be valid minimum 90 days after signing of Contract.

## 2. OPTION 2: DESIGN FOR FUTURE INTERCONNECTION OF STEAM HEADER FOR LINE K1 WITH STEAM HEADER FOR LINE K2 AND K3.

### 2.1 Scope of Supply

Option 2 includes design of the steam system of the Line (i.e. spare threads in new headers, live steam pipe stress analysis accounting T-piece, steam pipe routing to the existing headers and condensate pipe routing to existing condensate tank etc.) to allow for a future interconnection of steam header for Line with steam header for EfW Line K2 and K3, i.e. line K2 and K3 including all effects on the water/steam cycle of Line K1.

The option includes all design, manufacture, supply and erection. Further the option includes all engineering documentation necessary for installation of the future interconnection of the steam systems including:

- Proposal for entire steam pipe routing to K2+K3 common steam header
- Proposal for entire condensate pipe routing to K2+K3 common condensate tank
- All detailed engineering documentation and layout documentation for reserved pipe routing in the Line (fix point for stress calculations to be defined together with Employer).

### 2.2 Process and Design Data

None further.

### 2.3 Technical specification

None further.

### 2.4 Forms for technical data

None further.

### 2.5 Guarantee Data

None further.

### 2.6 Validity

The option shall be valid minimum 90 days after signing of Contract.

### 3. OPTION 3: NEW ACTIVATED CARBON BIG BAG SYSTEM

#### 3.1 Scope of Supply

The option includes a completely new activated carbon big-bag system. Final position is to be coordinated with the Employer.

The option includes all design, manufacture, supply, erection, commissioning etc. for establishment and connection of the silo to the Line.

#### 3.2 Process and Design Data

Refer to Part III-Appendix A13 *Process and Design Data*.

#### 3.3 Technical specification

Refer to Part III-Appendix A3 *Technical Specifications for Flue Gas Treatment System*, section Silos, tanks and storage for consumables and products.

#### 3.4 Forms for technical data

Refer to Part 0.g *Forms for Technical Data*.

#### 3.5 Guarantee Data

None further.

#### 3.6 Validity

The option shall be valid minimum 90 days after signing of Contract.

## 4. OPTION 4: NEW QUICK LIME SILO

### 4.1 Scope of Supply

The option includes a completely new quick silo located close to existing residual product silos. Final position is to be coordinated with the Employer.

The option includes all design, manufacture, supply, erection, commissioning etc. for establishment and connection of the silo to the Line.

### 4.2 Process and Design Data

Refer to Part III-Appendix A13 *Process and Design Data*.

### 4.3 Technical specification

Refer to Part III-Appendix A3 *Technical Specifications for Flue Gas Treatment System*, section Silos and tanks for consumables and products.

### 4.4 Forms for technical data

Refer to Part 0.g *Forms for Technical Data*.

### 4.5 Guarantee Data

None further.

### 4.6 Validity

The option shall be valid minimum 90 days after signing of Contract.

## 5. OPTION 5: DOCUMENT MANAGEMENT SYSTEM (DMS)

### 5.1 Scope of Supply

The option includes a complete electronic Document Management System (DMS).

The electronic document system shall be a commercially available state-of-the art system, with a documented and verified successful track record of system development and maintenance on similar large process plants.

The supplier can suggest a documentations system they have good experience with, and which meet the requirements for a Line documentation system, with all the necessary functionalities for using, maintaining and updating the documentation. The system shall be intuitively and easy to use.

From the computerized maintenance management system (CMMS) it shall be possible to make electronic reference (link) to all specific documents in the documentation system, and it shall be possible to view all documents in the CMMS system. The electronic version of the documentation must therefore be an integrated part of the CMMS system.

Status for all documents shall be visible, and for each document shall, as a minimum, be status such as 'new revision', 'document under revision', 'old revision', 'approved revision', 'obsoleted revision', etc. When a document is approved the electronic reference (link), shall be updated, so no changes on other system shall be made and the electronic reference (link) from e.g. CMMS will open the new approved document, if the link is activated.

The documentation system will be placed on the office network side and must be a Client/Server solution, with interface to more than 30 PCs on the office network, where up to 15 users can be logged on to the documentation system simultaneously. The office network and computer systems on office network are based on well-known operating system infrastructure, and the document system will be integrated in the well-known operating system infrastructure.

The documentation server and all documentation system software included software for Employer and all need license is included in the scope.

The DMS shall be suited for handling all documentation for both the Line and the Employer's EfW Line K2 and K3.

The option includes all design, supply, and testing etc. for establishment of the DMS.

The scope of works shall include a manual to be used during project execution as well as for structuring and importing the as-built documentation into the DMS. The manual shall be provided to the Employer such that he can import all documentation to the DMS for the existing facility.

### 5.2 Process and Design Data

None further.

### 5.3 Technical specification

None further.

**5.4 Forms for technical data**

None further.

**5.5 Guarantee Data**

None further.

**5.6 Validity**

The option shall be valid minimum 90 days after signing of Contract.