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**PHASING OUT OF THE USE OF ODS  
in the production of  
POLYURETHANE SANDWICH PANELS**

at

**PRVA ISKRA-FIM COMPANY LIMITED  
BARIC  
SERBIA & MONTENEGRO**

**COMMISSIONING / FINAL REPORT**

**UNIDO PROJECT No: MP/YUG/01/229**

**UNIDO CONTRACT No: 2003/010**

**UNIDO ORDER NUMBERS**

**16000442**

**16000548 (Amendment No.1)**

**March 2008**

## **Cannon Viking Project - 04 2045**

### **Phasing Out of ODS - at the Prva Iskra-Fim Company Limited Baric, Serbia & Montenegro.**

|                        |                      |                         |                 |
|------------------------|----------------------|-------------------------|-----------------|
| <b>Project Number:</b> | <b>MP/YUG/01/229</b> | <b>Contract Number:</b> | <b>2003/010</b> |
|------------------------|----------------------|-------------------------|-----------------|

#### **1. Introduction**

Within this Final Report, the Contractor details the works carried out at the plant site of the Prva Iskra-Fim Company Limited to phase out the use of ODS in the production of Polyurethane Insulated Sandwich Panels.

The following report briefly summarises the step-by-step activities performed under the Contract, in accordance with the Terms of Reference.

#### **2. Visit to the Project Site, Layout of the Plant and Specification of the Site Preparation (Section 12, Steps 1.1 to 1.9 of the Terms of Reference)**

Following the award of the order, the Contractor visited the Counterpart in August 2003 in order to verify the conditions of the site and to identify the best engineering solutions for the conversion of the existing lines.

During the visit, the Contractor discussed and checked with the Counterpart the following main subjects.

- A) Technical details regarding the supply of the equipment. In particular, the Contractor emphasised the Pre-mix Units, the Polyol Modules and Safety of the Plant (i.e. gas sensors, exhaust system with fan groups), n-Pentane Storage Tank and relevant accessories.
- B) The suitable site where the new equipment would be installed and the required modifications to the new plant layout.

With regard to the Pentane Storage Tank, the Contractor inspected and defined the area where it would be positioned.

Following the visit, the Contractor prepared the First Progress Report (February 2004), including preliminary layout and the basic requirements and specifications for the site preparation.

**2. Visit to the Project Site, Layout of the Plant and Specification of the Site Preparation (Section 12, Steps 1.1 to 1.9 of the Terms of Reference) (continued)**

The First Progress Report covered all the subjects listed during the discussion and provided the Counterpart with a list of all works and materials to be provided by them, with as much detailed information as possible at that phase of the project.

**3. Technical Specification and Engineering Design for the Plant Erection Preparation (Section 12, Steps 2.1 to 2.9 of the Terms of Reference)**

In January 2004, as part of the Second Progress Report, the Contractor provided the Counterpart with Final Technical Documentation for the conversion of the plant.

The above-mentioned documentation included the following type of detailed drawings and specifications –

- civil works for the storage tank and foaming lines
- grounding of the equipment
- piping arrangements and support details
- piping sketches
- box building construction
- ventilation construction
- cable run layout
- gas sensor positioning
- electrical drawings
- safety requirements

All documentation was discussed with the Counterpart, with some modifications being agreed to be implemented during the next phase.

An Engineer attended site on the 6<sup>th</sup> December 2006, in order to facilitate the training and installation.

**4. Delivery of Equipment and Erection/Commissioning Start-Up of the Plant (Section 12, Steps 3.1 to 3.9 of the Terms of Reference)**

In February 2004 the equipment relative to Project MP/YUG/01/229 was shipped.

The equipment arrived in mid-March 2004 after a brief spell in Customs.

In June 2004 a second site visit was arranged, with a list of all ancillary work which needed to be completed, in order to explain and liaise closely with the Counterpart as to their responsibilities in respect of the project. This list included performance dates which had to be adhered to in order to maintain the urgency of the project completion.

The crates in which the equipment was stored were opened briefly and their contents inspected. The crates were then re-sealed in order to protect their contents until the Counterpart was ready to begin the Installation phase.

The installation commenced in December 2006, following delays with the local supply of materials to the Counterpart and the application of Certificates. The initial stages of the installation involved opening the crates, checking for any damaged equipment and then positioning the equipment in accordance with the agreed Factory Layout, provided with Progress Report 2.

The Contractor's Engineers' then left site in order to enable the Counterpart to undertake the remainder of the civil engineering work, running of pipework and the installation of the n-Pentane tank. The Counterpart was given a list of work required to be completed before the Contractor's Engineers' could return to site.

The Contractor's Engineers' completed the Installation phase, including supervision of some of the work, scheduled at cost for the Counterpart's account.

When all necessary Civil and Engineering work had been completed, the Contractor's Engineers' returned to site in November 2007.

The Contractor's actions were basically concerned with the following areas of the modified plant -

- Polyol, MDI, Activator and Pentane Metering Units
- Wet areas
- Process fluid connection piping between wet and dry areas
- Laydown foaming area, traverse system.
- Safety areas of the plant (ventilation system and gas sensors, etc.)

**4. Delivery of Equipment and Erection/Commissioning Start-Up of the Plant  
(Section 12, steps 3.1 to 3.9 of the Terms of Reference) (continued)**

Following completion of the Installation, the Contractor performed the Commissioning and Start-up Phase of the modified plant, in accordance with the terms of the Contract.

Commissioning, trial production and test run phases of the plant mainly concerned the following operations –

- Pneumatic and electric circuit check
- Grounding check on Pentane tank
- Powered start up of control system
- All pneumatically operated valves tested through control system
- Inspection of ventilation ducting and fan group
- Traverse powered up
- All hoods and enclosures inspected
- Operating test
- Service simulation test

The training of the ‘On-the-Job Activities’ was carried out with certain key personnel during the Commissioning phase in November 2007. This training consisted mostly of fault finding and explaining how the equipment worked.

Due to an insufficient amount of raw materials it was not possible to run the machine for a full production run.

**5. Final Stage**

After a delay of three (3) years’ as a result of protracted negotiations regarding the preparatory work, ancillary equipment and chemicals by the Counterpart, the Installation phase finally commenced in December 2006, with completion also taking place before the end of December 2006.

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**5. Final Stage (continued)**

November 2007 saw the commencement of the Commissioning phase. Despite problems encountered during this period, Completion and Final Acceptance of the equipment took place in November 2007.

For and on behalf of:  
CANNON VIKING LIMITED



NEIL HOLT  
Project Engineer

Viking House, Unit 1 Parkway Trading Estate  
Barton Dock Road, Stretford  
Manchester M32 0TL - United Kingdom  
Tel: +44 (0)161 866 9909 Fax: +44 (0)161 866 8808  
Email: services@cannonviking.com  
Web: www.cannonviking.com

**ACCEPTANCE PROTOCOL**

**COMMISSIONING OF MACHINERY**

**CUSTOMER:** PRVA ISKRA FIM, BARIC  
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**WORKS ORDER NO. :** UNIDO Contract, 2003/010/VC; PO 16000442 and 16000548  
 \_\_\_\_\_  
MP/YUG/01/229

**CONTRACT NO.:** \_\_\_\_\_

**EQUIPMENT DETAILS:** Pentane equipment and Traverse Unit

This document serves to record that the above equipment, supplied by Cannon Viking Limited to the order of the above mentioned contract, has been completely installed and commissioned to the Customer's satisfaction. Also, the equipment conforms to the under-lying Contract against which it was supplied, subject to Cannon Viking Limited Conditions of Sale. The Customer agrees that this Protocol facilitates the final payment as defined in the UNIDO Contract. Cannon Viking agrees to send the service of a technician within one year for one week upon request of the customer.

For and on behalf of -  
**CANNON VIKING LIMITED**  
Stretford, Manchester  
PAUL MASON

*Paul Mason*

Date : 9<sup>th</sup> NOVEMBER 2007

For and on behalf of -



Date : 9<sup>th</sup> NOVEMBER 2007

On acceptance, the Customer and the Viking Engineer will sign two copies of the Acceptance Protocol. One copy should be retained by the customer and the other copy returned to Cannon Viking Limited with the Engineer.