

## Gas pipeline installation (route: B8 field - Wladyslawowo: CHP Energobaltic)

### 1. Preliminary description

The object of the procurement is a gas pipeline installation, including detail engineering and ZAP-LOK technology as a method of coated (HDPP) Coiled Line Pipe connection. The gas pipeline (CLP) with diameter of 4,5" (OD) will transmit natural gas from Petrobaltic platform (B8 field) to CHP Wladyslawowo. The planned pipeline route length is approximately 80 km with maximum 87m sea depth. After installation pipeline will be covered with concrete mattresses for stabilization.

From Energobaltic area the HDD drilling operation has been conducted with a length of over 1,400 m to the coastal zone. Drilling ceased at the sea depth of 7 m. On this distance in the borehole gas pipeline -coiled line pipe, was installed and secured on the seabed respectively.

From the end of HDD point the pipeline installation engineering should start. Coiled Line Pipe will end at the seabed (area of B8 field) with the flange connected flexible pipe (dynamic riser) that will be hanged and connected to the "Petrobaltic" rig. Dynamic riser installation engineering and design are on LPB side.

### 2. Description of the subject of the contract

#### a. Task 1

Gas pipeline installation, including detail engineering (analysis and modelling) not limited to:

- Pipeline installation procedure,
- Delivery (hire) all equipment required for gas pipeline offshore installation from powered reel on PSV SYLUR (powered reel provided by Customer ),
- Ensure all personnel needed for offshore installation for delivered equipment, as well supervisor,
- Test performing and final installation analysis for pipe passage from reel to the sea bed (Pipe lay tensions and loadings), Initiation (start-up of installation from HDD, with utilization of ZAP-LOK connection, and following laydown, abandonment of the pipeline thru the stinger and installation on the seabed, as well recovery of abandoned pipeline sea end thru the stinger,
- Perform a full dynamic analysis based on the actual vessel proposed and final stinger design, confirming the pipe loadings and limiting sea states for installation
- Installation supervision of delivered equipment
- conceptual arrangement of equipment on board all necessary equipment and possible platforms in the field of equipment for pipeline installation
- the fulfillment of the requirements for subsea pipeline laying by DNV-GL (Marine Warranty Sureyor - MWS) - Guidelines for the installation of submarine pipeline, due to the current edition,
- cooperation with Lenders Technical Advisor (LTA)

#### b. Task 2

- Offshore installation procedure,
- All calculations and analyses for connection pipeline sections (CLP) with the use of ZAP-LOK technology,
- PRS (Polish Register of Shipping) ZAP-LOK technology and installation procedure approval and providing of some trials will be required,
- Delivery (hire) all equipment required for ZAP-LOK technology for pipeline connection and utilization of pup-up pieces for eliminating of CTP roundness,
- Ensure all personnel needed for offshore installation for delivered equipment, as well supervisor,
- Installation supervision of delivered equipment
- conceptual arrangement on board all the necessary equipment and possible platforms in the terms of the application of ZAP-LOK technology,
- cooperation with LTA and MWS.

Please find attached: "B8 GAS PIPELINE INSTALLATION ENGINEERING" as a base for documentation which will be performed in SoW.

**Additional requirements for the contractor:**

- 5 years of experience in similar analyses,
- Experience in ZAP-LOK connection technology for CLP (Coiled Line Pipe).

**During offshore installation LPB will provide the following:**

- CLP pipeline on transport powered reels (CLP and reel specification in the attachment, installation powered reel is suitable to keep 8-10km of CTP line length),
- Suitable vessel based on requirements provided in gas pipeline installation engineering package,
- isolation pipeline repair technology, materials and personnel required on board,
- all information about concrete mattress,
- bathymetry and geotechnical survey,
- metocean data,

Out of scope of work are:

- HDD engineering and execution,
- Engineering and offshore connection to the production center (Dynamic Riser),
- Concrete mattress analysis and their offshore installation.

Coiled Line Pipe – basic data:

- outer diameter OD = 4,5" (114,3mm),
- inner diameter ID = 4" (101,6mm),
- wall thickness WT = 0,25" (6,35mm), tolerance (+/- 10 %),
- grade = X65C,
- minimal thickness of 3-layer HDPP coating = 0,072" (1,83mm).
- all data in attached files: "Calculated Data for 4.5 in X65" and „Coiled Pipe Line Technical Data”:

**3. Annexes** describing the technical operations prepared at the concept stage, which constitute "B8 GAS PIPELINE INSTALLATION ENGINEERING" - documentation package prepared by Cortez Subsea Ltd. in accordance with the assumptions described in points 1 and 2 above:

- Z12\_112996-ENG-RPT-00001\_R02\_IFC Pipeline Design Premise Report
- Z12\_112996-ENG-RPT-00002\_R02\_IFC Pipeline Mechanical Design Report
- Z12\_112996-ENG-RPT-00003\_R02\_IFC Pipeline Installation Analysis
- Z12\_112996-ENG-RPT-00004\_02\_IFC Pipeline Feasibility Assessment
- Z12\_112996-ENG-RPT-00005\_R02\_IFC Pipeline Installation Methodology