The Nord Stream Project

Daniela Zenobi
Saipem S.p.a.
Fano (PU), Italy

Walter Cimbali
Saipem S.p.a.
Fano (PU), Italy

Werner Rott, Trond Gjedrem
Nord Stream AG
Zug, Switzerland

ABSTRACT

The importance of natural gas in the European Countries has grown significantly since the first years of Millennium 2000. The increasing popularity of this fuel source is mainly related to relevant low emissions to the environment and its flexibility in energy production. In order to meet this demand, the most efficient transport system is recognised to be high capacity pipelines, importing natural gas from the big gas reserves in Russia. As part of this scenario, a dedicated large diameter offshore pipeline system called Nord Stream Project (NSP), has been designed and installed in the Baltic Sea.

The NSP export system is defined as the two 48” pipelines which will export gas from Portovaya Bay, near Vyborg, North of St. Petersburg (in Russia), crossing the Gulf of Finland and the Baltic Sea, up to a landfall area at Greifswald in Germany.

A dedicated Company, the Nord Stream AG, has been established for the planning, construction and subsequent operation of the NSP pipelines, which is an international joint venture of OAO Gazprom, BASF/Wintershall Holding AG, E.ON Ruhrgas, GDF SUEZ S.A. and N.V. Nederlandse Gasunie.

The two pipelines run almost parallel along the Baltic Sea, where the offshore section has a total length of approximately 1222 km each. The following two dry parts of the offshore pipeline system are also included, approximately 0.5km in Germany, up to the Greifswald pig receiving facilities, and approximately 1.5km in Russia, up to the pig launching facilities down stream the Portovaya Bay compression station.

In addition to Russia and Germany, the pipeline route crosses three European countries Territorial Waters (TW) and/or as Exclusive Economic Zones (EEZ) which include Finland, Sweden and Denmark.

The total capacity of the two pipelines will be 55 BCM/year at reference conditions of 20°C and 1atm.

The technical concept is by means of a Segmented Pressure system, with design pressures of 220/200/177 barg (three pressure segments). The system design life is 50years. Max water depth is 210m approx.

This paper gives an overall description and highlights some of the characteristics of this giant project.

KEY WORDS: NORD Stream, NSP, pipeline, natural gas, Baltic Sea, Gulf of Finland

NOMENCLATURE

AWTI Above Water Tie-In
CWA Chemical Warfare Agents
EEZ Exclusive Economic Zones
EIA Environmental Impact Assessment
FEED Front End Engineering and Design
HTI Hyperbaric Tie-In
MAIP Maximum Allowable Incidental Pressure
ND Nominal Diameter
NSP Nord Stream Project
PHF Pipe Handling Frame
PSS Pressure Safety System
ROW Right of Way
SDV Shut-Down Valve
SPF Saipem Engineering Group of Offshore Pipelines in Fano
TW Territorial Waters
WD Water Depth

INTRODUCTION

Nord Stream is a natural gas pipeline across the Baltic Sea. It will link the Russian gas transmission system to the gas network of the European Union.

With an annual capacity of up to 55 billion cubic metres, Nord Stream may be an important factor in European energy security.

The European Union strategy is to anticipate the future challenges with several projects. One of these projects is the Trans European Network initiative TEN. Within this scope all kind of grid like infrastructures can be found and therefore also natural gas. The initiative is aiming at supporting the development of transeuropean infrastructure by e.g. funding case studies, setting priorities. Among other issues, the important element of this initiative is to force individual member states to support such projects when they become reality, especially with regards to licensing and regional planning of land use. The aims of the initiative can be summarised as the following: