Opal-Nel Pipelines

SYMPHONY OF FORCE

Bonatti
BUSINESS UNIT PIPELINE

Foreword

The idea behind this photographic book is, to try to document Bonatti's contribution to the OPAL and NEL Pipelines with images able to represent the extraordinary effort in terms of resources, personnel and equipment necessary for the construction activities of this highly strategic project, which will considerably strengthen the European gas pipeline network

The photographs illustrate the major construction phases of the Pipelines with a special chapter dedicated to our "Men at work". We believe that the expertise, efficiency and passion of our international and local workforce, represents the key factor in a successful performance. Bonatti would like to thank the entire staff and personnel involved for their team effort, from the essential planning stages to the challenging construction operations.

Special thanks go to WINGAS for giving Bonatti the opportunity to be part of this very important projects.

The photographs included in this volume were taken during 2010-2011-2012 at Bonatti's construction lots 7, 8, 9 and 10 of the Opal Pipeline, in the east and south east areas of Berlin & Brandenburg (Germany), lots 6,7 of the NEL Pipeline, in the south east area of Hamburg (Germany), and lots 8 and 9 of the NEL Pipeline in the south east area of Bremen (Germany).

Oliviero Corvi

Business Unit Director

Pipelines & Multiutility Networks

Opal Project, Pipeline

The OPAL Pipeline is one of the largest infrastructure projects for energy conveyance in Germany and in Europe.

The OPAL Pipeline connects the Baltic Sea Pipeline "NORTH STREAM" to the European long-distance gas grid network.

The 56-inch pipeline, designed for a transport capacity of around 35 billion cubic meters of gas yearly, runs from Lubmin near Greifswald to Olbernhau near the German-Czech border.

The gas grid network is directly connected to the main transit lines from Russia, and the main customer & consumer lines in west & central Europe.

The OPAL pipeline is an essential contribution to secure Europe's supply with gas.

Nel Project, Pipeline

The NEL (Norddeutsche Erdgas-Leitung, Northern German Gas Link) is one of the two pipelines realized in Germany for accommodating downstream flows from the Nord Stream pipeline which is going to bring additional volumes of Russian natural gas through the Baltic Sea to Europe.

NEL pipeline offers enough capacity to transport approximately 20 billion cubic meters of natural gas.

The NEL pipeline runs from the Nord Stream, landfall point in Lubmin near Greifswald to Rehden in Lower Saxony, stretching over 440 kilometers past Schwerin and Hamburg. It connects Nord Stream with the European gas network, just as the OPAL natural gas pipeline does to the Czech Republic. Natural gas from the major reserves in Russia can thus be transported directly to Germany and other Member States of the European Union, in particular to Belgium, the Netherlands, France and the UK.

The Opal Pipeline Project Data

The Route:	Lubmin - Olbernhau
Total length:	470 km
Lots:	14
Pipe diameter:	1.400 mm (56")
Altitude difference:	700 m appr.
Length of each pipe:	18 m.
Weight:	appr. 15 tons
Pipe wall thickness:	appr. 22 mm
Pipe insulation:	Polyethylene
Operating pressure:	up to 100 bar
Capacity:	over 35 billion cubic meters a year
Construction Period:	
Start construction works:	2009
Planned completion:	August 2011

Construction scheme

	SPREAD 1	SPREAD 2
Lots:	7 & 8	9 & 10
Total Length:	65 km	72.5 km
Construction Time:		
Start:	February 2010	April 2010
Planned completion:	June 2011	August 2011
Activities like right of way, stringing, bending, front end welding completed on:	August 2010	October 2010

Main equipment used for construction works:
60 Pipe layers (90 tons, 30 Pipe layers per spread)
36 Pay welders for manual welding (18 per spread)
20 Automatic welding machines (10 per spread)
3 Pipe bending machines 56" in total (1 per spread +1 STB)
4 Excavators (70 tons, 2 per spread)
6 Excavators (45 tons, 3 per spread)
46 Excavators (35/30/20 tons, 23 per spread)

BONATTI's contribution & scope of work on OPAL project

The OPAL Pipeline Project was divided into 14 lots and 7 construction sites.

Bonatti has been awarded sections 7, 8, 9 & 10 in the east and south east areas of Berlin & Brandenburg with a total length of 137.5 kms (30% of entire pipeline).

Bonatti has decided to approach the project with two construction spreads, dividing the four above mentioned lots in two separate construction sites. One site office located at Hoppegarten (east of Berlin) is in charge of the construction activities of lots 7& 8, and the other site office located at Freiwalde (south-east of Berlin) is in charge of construction activities of lots 9 &10.

The OPAL pipeline project scope includes also tree special crossings for total 2205 m length performed by HDD and Microtunnelling methods as follows:
Lots 7 & 8 :
- Dahme (HDD): 922 m.
- Oder Spree (HDD): 766 m.
- Locknitz (Microtunnel): 517 m.

Up to 550 people worked for Bonatti on this project.

The Nel Pipeline Project Data

The Route:	Lubmin - Rehden
Total length:	440 km
Lots:	12
Pipe diameter:	1.400 mm (56")
Altitude difference:	700 m appr.
Length of each pipe:	18 m.
Weight:	appr. 15 tons
Pipe wall thickness:	appr. 22 mm
Pipe insulation:	Polyethylene
Operating pressure:	up to 100 bar
Capacity:	over 20 billion cubic meters a year
Construction Period:	
Start construction works:	2011
Planned completion:	August 2012

Construction scheme

	SPREAD 1	SPREAD 2
Lots:	6 & 7	8 & 9
Total Length:	68.2 km	66.7 km
Construction Time:		
Start:	March 2011	April 2011
Planned completion:	June 2012	August 2012
Activities like right of way, stringing, bending, front end welding completed on:	April 2012	June 2012

Main equipment used for construction works:
60 Pipe layers (90 tons, 30 Pipe layers per spread)
36 Pay welders for manual welding (18 per spread)
20 Automatic welding machines (10 per spread)
3 Pipe bending machines 56" in total (1 per spread +1 STB)
4 Excavators (70 tons, 2 per spread)
6 Excavators (45 tons, 3 per spread)
46 Excavators (35/30/20 tons, 23 per spread)

BONATTI's contribution & scope of work on NEL project

The NEL Pipeline Project was divided into 12 lots and 6 construction sites.

Bonatti has been awarded sections 6, 7 (length 68.2 km) in the south east area of Hamburg (Germany) and sections 8-9 (length 66.70 km) in the south east area of Bremen (Germany) with a total length of 134.9 km (30% of entire pipeline).
The NEL pipeline project scope includes also four special crossings for total 3297 m length to be performed by HDD method as follows:
Lots 6 & 7 :
Schaale (HDD): 720 m.
Boize (HDD): 684 m.
Elba (HDD): 1173 m.
Lots 8 & 9 :
Weser (HDD): 720 m.

Bonatti has decided to approach the project with two construction spreads, dividing the four above mentioned lots in two separate construction sites. One site office located at Schwerin (east of Hamburg, Germany) is in charge of the construction activities of lots 6 & 7, and the other site office located at Bremen (Germany) is in charge of construction activities of lots 8 & 9.

Up to 550 people worked for Bonatti on this project.

Stringing

Bending


Bonatti


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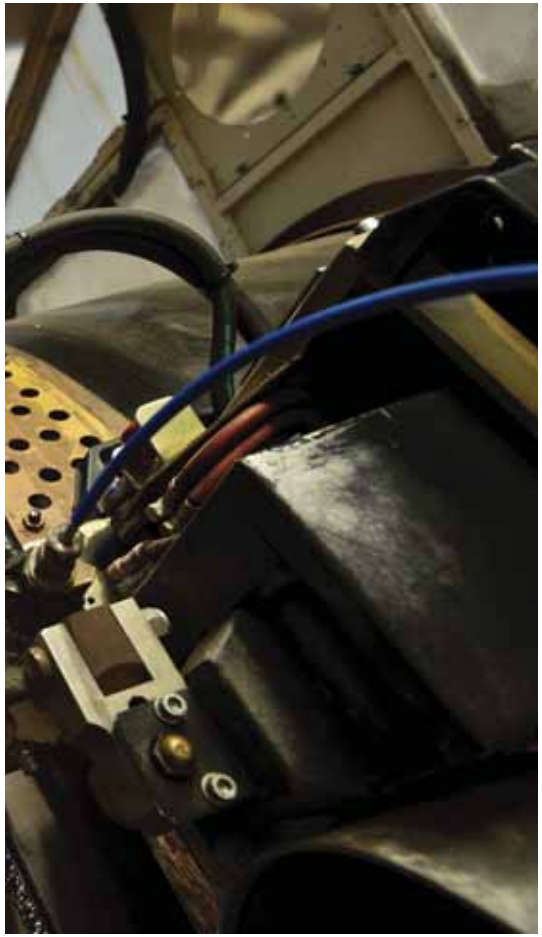
Lining-up



Automatic Welding

Trenching




Lowering in

property of Open-Grid-Europe

Tie-Ins Welding


S. 17
21.06.20
S.18

Padding, Cable Laying
and Backfilling


LIEBHERR

Auger Bore Crossings

Bonatti

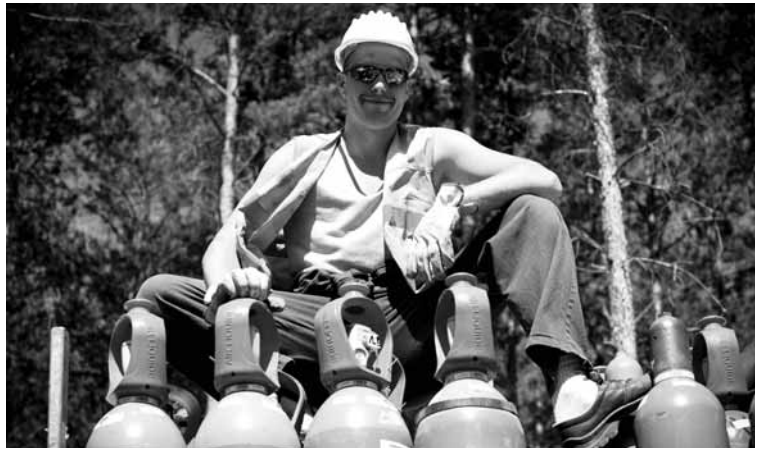
Visser & Smit Hanab

HDD Crossings


Bonatti




Men at Work

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to be continued...

Special thanks to:

OPAL-NEL
Energy for Europe

WINGAS

Bonatti

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