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Significance

The Dzhubga – Lazarevskoye – Sochi gas pipeline is being commissioned according to Item 105 of the Russian Government approved Program for Construction of Olympic Venues and Development of Sochi as a Mountain Climate Resort.

At present, the consumers in Sochi and the Sochi District are supplied with fuel through the Maikop – Samurskaya – Sochi gas pipeline. The Olympic venues construction and active development of the regional infrastructure boosted the demand for extra volumes of fuel. Once commissioned, the Dzhubga – Lazarevskoye – Sochi gas pipeline will help meet this challenge.

The Dzhubga – Lazarevskoye – Sochi gas pipeline will secure reliable and uninterrupted gas supplies to Sochi and the recreation area of the Black Sea coast. Gasification of Sochi and the Tuapse District will make it possible to further develop the resort business, particularly make the Black Sea coast health resorts operational all the year round, facilitating the growth of large business entities as well as small and medium ones.

Almost the entire route of the Dzhubga – Lazarevskoye – Sochi gas pipeline runs on the bottom of the Black Sea where millions of tourists go on vocation every year.

Offshore gas pipeline construction

The use of natural gas particularly for heat and power generation (including Adler CHPS) will improve the environmental footprint in the region and satisfy the national and international organizations demanding that energy is supplied to sports and tourist infrastructure facilities with no increase in greenhouse gas emissions.

Gas pipeline layout

Specifications

Up to 3.78 billion cubic meters of gas will be conveyed a year.

Estimated service life – 50 years.

Total length – 171.6 kilometers.

The offshore part of the gas pipeline accounts for some 90 per cent of the whole route length.

The route runs some 4.5 kilometers off the coast where the sea depth reaches 80 meters.

Preparations at C-Master pipelaying barge

Linepipe diameter – 530 millimeters; wall thickness – 15 millimeters for the offshore and 11.3 millimeters for the onshore part of the gas pipeline.

Material – high strength steel.

The gas pipeline landfalls are located near the Dzhubga, Novomikhailovsky, Tuapse and Kudepsta population centers where it will be connected to automated gas distribution stations (AGDS).

Gas pipeline laying on Black Sea bottom

Construction Stages

September 2009 – construction launch.

From March 2010 to June 2010 – offshore gas pipeline construction using two pipelaying barges: C-Master (operating in medium depth waters) and Bigfoot I (laying pipes in shallow waters).

C-Master pipelaying barge

From December 2010 to May 2011 – construction of the linepipe with the use of directional drilling technology.

May 2011 – connection of the offshore and onshore gas pipeline parts.

In 2010 two AGDSs were constructed in Dzhubga and in 2011 – another two AGDSs in Novomikhailovsky and Tuapse.

Pipelaying process control

Consumers

The gas pipeline will:

- ensure reliable energy supply to the Winter Olympic Games host city and gas deliveries to the Olympic venues;
- promote gas penetration in Sochi and the Tuapse District;
- increase the natural gas vehicle fleet.

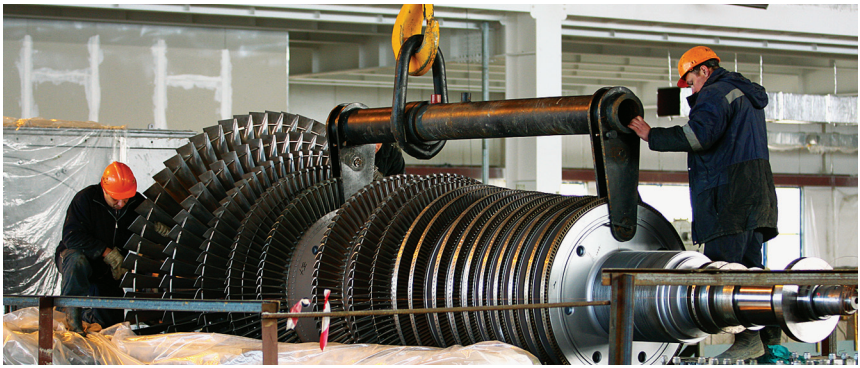
Adler CHPS (3D model)

Adler CHPS will become a key gas consumer. The Krasnodar Krai is currently among the Russian regions experiencing energy shortages. Sochi and its suburbs desperately need new power generating capacities as well. At present, electricity demand is largely met through power systems of the neighboring regions. In 2014 Adler CHPS will enable to satisfy over one-third of the projected peak demand in the region of Sochi.

Adler CHPS is built on the basis of two combined cycle gas turbine units.

Aggregate capacity – over 360 MW (heat capacity – 227 Gcal/h).

Mounting first steam turbine rotor at Adler CHPS

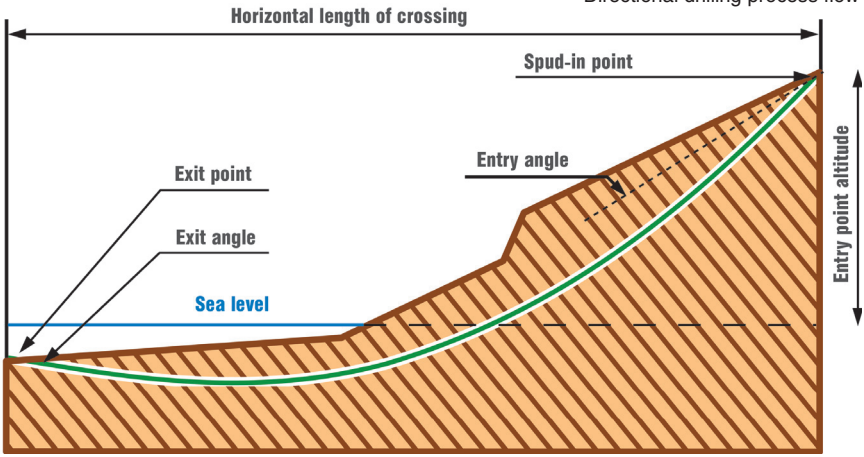


Environmental Protection

Gas Pipeline

A directional drilling technique has been used instead of the traditional trenching method to construct six parts of the gas pipeline (total length – 5.6 kilometers). The technique helped preserve the coastline and considerably reduce interference with the habitats of the coastal flora and fauna.

Directional drilling process flow



The process safety of the pipeline is ensured through:

- electrolytic protection by means of cathodic polarization preventing corrosion damages of hard-to-reach elements including offshore parts;
- engineering solutions increasing seismic resistance. The gas pipeline is able to survive magnitude 9 earthquakes;
- a 100 meter broad zone cleared off foreign objects and unexploded ordnances all along the offshore gas pipeline route.

Directional drilling rig operator

Adler CHPS

The power station cooling system represents a closed-loop water supply system with dry mechanical-draft cooling towers (cooled water circulates in a closed loop). Such a system does not lead to higher air humidity and environmental pollution.

The state-of-the-art combined cycle gas turbine technology features high efficiency (52 per cent), low fuel consumption and produces fewer (by around 30 per cent) air emissions.

Compensatory measures
implemented by Gazprom involve conservation
of rare animals and plants