ADGEX

Advanced Green Expertise

UPLINE

ADVANCED ELEVATED PIPELINE SYSTEM

UPLINE is an advanced elevated pipeline system, designed for transportation of liquids & gases and installation of any wiring systems over any terrain and distance.

UPLINE can be used in various climatic zones with environmentally sensitive atmosphere as it has minimal environmental impact during building and operation. The structure has no underlying surface so erection of the UPLINE system is carried out with minimal land disturbance.

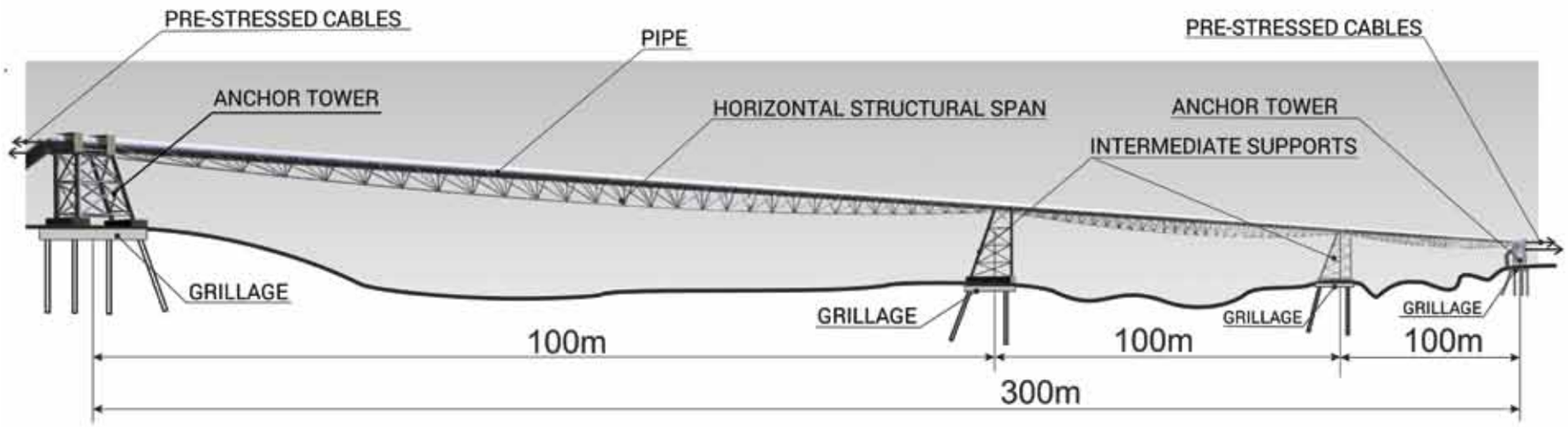
UPLINE can operate in remote areas including mountains, forests, rivers and canyons, go over various types of landscape. Construction of the UPLINE system does not require embankments, culverts, massive deforestation or any other disruptive works, therefore UPLINE makes landscape and existing ecosystem totally unharmed.

UPLINE is a great modern solution for all market participants!

TECHNICAL DESCRIPTION

The structure of an elevated pipeline is designed as a steel pre-stressed cable beam system with optimal spans between the intermediate supports in the range from 30m to 100m contingent on terrain features.

MAJOR STRUCTURAL ELEMENTS

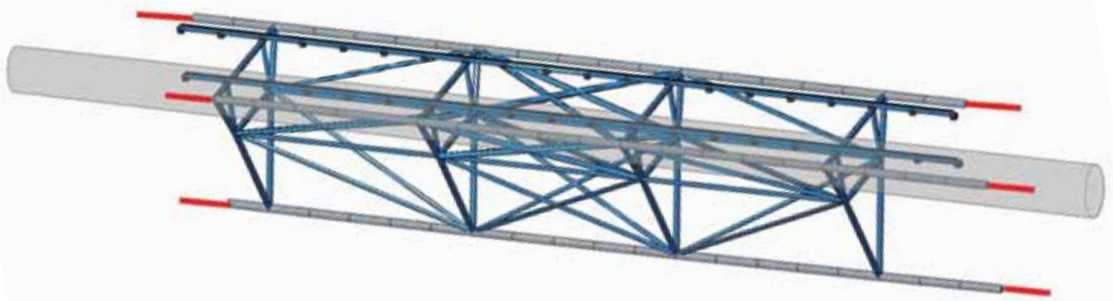


- **Piled foundation and grillage** with use of auger cast pre-stressed anchors and piles (bored or precast piles);
- **Anchor towers** are positioned in the spots where the pipeline trajectory is changed, as well as in the beginning and in the end of straight sections;
- **Anchor devices** on anchor towers;
- **Intermediate supports**;
- **Horizontal span** with 2 upper rail pipes and stiff bars, connecting stands of different structural sectors.

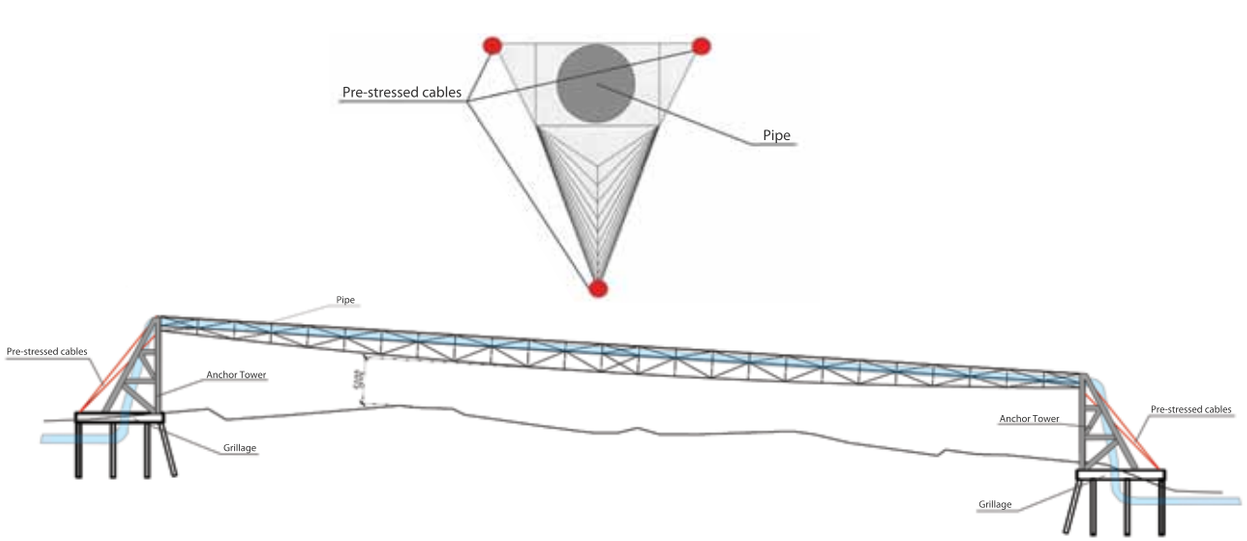
PIPELINE STRUCTURAL LAYOUT

HORIZONTAL STRUCTURAL SPAN

A span between supports represents a horizontal loadbearing structure of a triangular cross section, designed to support the major pipe of 219 – 720mm in diameter.



The core of horizontal structure is pipes from a corrosion-proof steel and special loadbearing cables, preliminary anchored with total force of up to 150 ton-force. Rail pipes are filled with special cement slurry & concreate modifiers.



RAIL PIPE

Rail pipes are horizontally prestressed and anchored. Loadbearing cables, running inside the rail pipes, are in the form of ordinary lay. Stiff bars between the rails are made from pipes. Such structure enables to use two rails as a trackbed for movement of a rolling stock if necessary (for pipeline maintenance or small goods haulage).

ANCHOR TOWERS

Anchor tower is a spatial structure, consisted of main stands, vertical, inclined, and horizontal longitudinal frames, transverse lattice frames and horizontal beams. Lattice elements are linked in a transverse direction to pipes with joints for attaching anchor devices.

Stands of anchor tower are telescopic to unify type & size and make it possible to adjust the length when mounting. The stands are equipped with saddles for attaching supporting cables.

INTERMEDIATE SUPPORTS

Intermediate supports represent a plane structure, consisted of vertical stands and lattice frames. The stands are telescopic (to unify type & size and make it possible to adjust the length when mounting) and equipped with saddles for attaching supporting cables.

The length of supports are based on the specific pipeline corridor and terrain features.

ANCHOR DEVICES

Anchor devices are designed based on the anchorage conditions (in accordance with horizontal and vertical cable layout) and transmission of prestressing to anchor towers.

LOADBEARING & SUPPORTING CABLES

Cables of double lay are positioned on special lodgements, that enables to make a smooth turn.

FOUNDATION FOR ANCHOR TOWERS

Foundation is designed on the basis of engineering, geological, and geophysical researches with reference to a specific location and to a possible technology of anchor devices and piles.

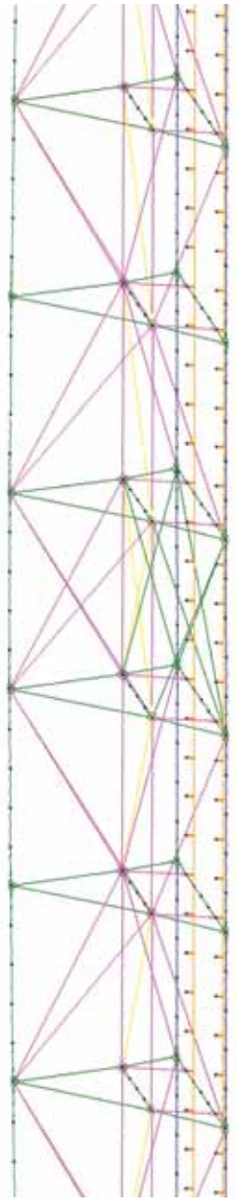
Foundation type is piled, combined with monolithic reinforced grillages or metal covers.

Piles represent augercast prestressed inclined anchors for tension pull, and bored inclined and vertical anchors for compression resistance.

Reinforced grillages and (or) metal covers are made to combine the piles and provide pile anchorage and attachment of embedded items for tower positioning.

UPLINE IS A HIGHLY-EFFECTIVE SUSTAINABLE SOLUTION FOR A WIDE RANGE OF INDUSTRIAL FIELDS!

UPLINE FEATURES



- **Low CAPEX & OPEX**

  ~ Cost cutting due to reduction of overall work scope (as compared to traditional pipeline construction)

- **Short design and construction time**

  ~ Elevated structure requires no excavation and earth-moving work to bury the pipeline, reducing building time.

- **Mobile and modular design**

  ~ All component parts are pre-manufactured and assembled directly on site without any special heavyweight equipment.

- **Low production and technological risks**

  ~ The construction method and all component parts are a tested and proven technology of a good standing.

- **Easy maintenance**

  ~ The rolling stock, travelling over the UPLINE System in an automatic mode, allows detecting faults and delivering repairers with tools & spare parts with no delay.

- **Ecological safety**

  ~ Neither building nor operation of UPLINE inflict damage to the environment.

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