

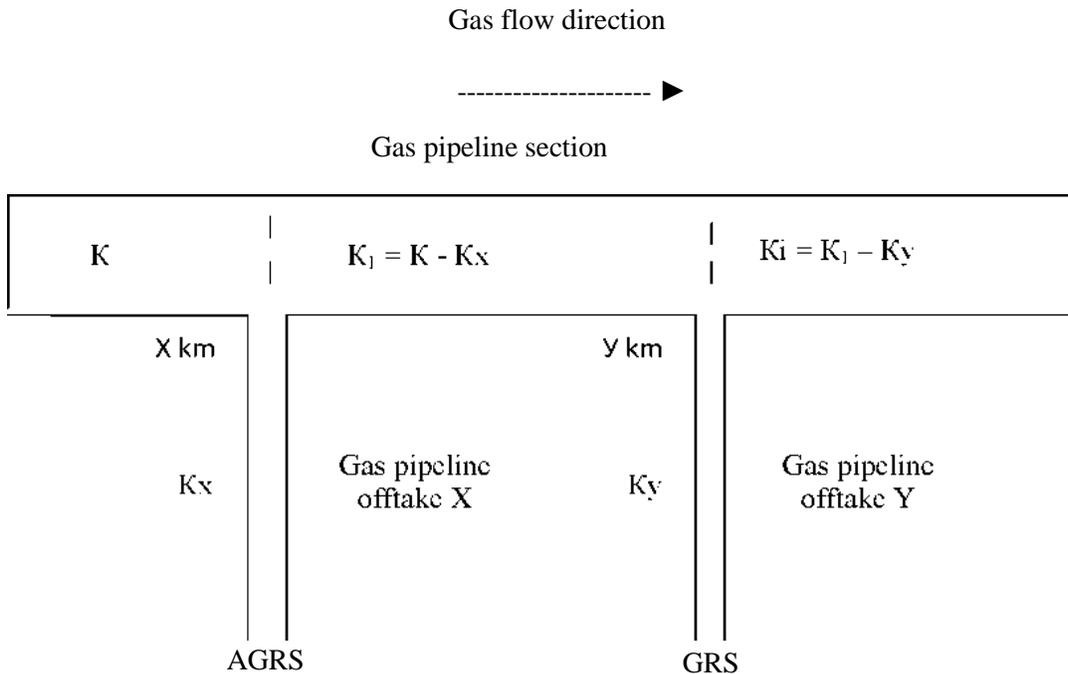
TECHNICAL CAPACITY OF THE GAS TRANSMISSION NETWORK CALCULATION METHODOLOGY

Technical capacity means the maximum possible capacity that a transmission system operator can offer to network users, taking into account the reliability and operational requirements of the transmission system.

Technical capacity at entry or exit point of the gas transmission network shall be calculated under the following criteria:

- Technical limitations at entry or exit point – the maximum capacity of entry and exit gas pipeline for which calculations shall be taken into account the maximum daily flow from all entry points of the system, under boundary conditions for entry pressure from cross-border interconnection points and local production points, and the required (delivery) pressure to the respective system exits - cross-border points to neighbouring countries - Turkey, Greece, North Macedonia, Romania, Serbia and the exit points: GRS, GMS and AGRS on the territory of Bulgaria.
- Limitations calculated by specialized hydraulic software simulation, taking into account the entry-exit model of the entire gas transmission network, based on:
 - flow chart of the network and boundary conditions for pressure at the entry and exit points;
 - operational limitations and gas transmission network condition, CS optimal operation and the necessary fuel gas for natural gas transportation;
 - optimal and safe operation of UGS Chiren during withdrawal/injection;
 - indicators for natural gas quality and parameters, flow rate, exit pressure, load factor, primer temperature, natural gas temperature, etc.
 - minimum and maximum linepack levels in view of the optimal, safe operation and maintaining network integrity.

Calculation of the technical capacity of a section of the gas transmission network and gas pipeline offtake:



K - entry point capacity

K_i - capacity of a section between two offtakes i , whereas $i = 1 \div 100$

K_x - capacity of gas pipeline offtake x , whereas $x = 1 \div 100$

The gas pipeline capacity is calculated based on the maximum quantity entering at the entry points of the gas transmission system, pressure and the technical parameters of the gas pipeline. In order to calculate the capacity per kilometer X in gas flow direction from the entry point, the technical capacity calculated for the offtakes preceding kilometer X shall be taken into account.

1. Technical capacity at entry point - K (capacity) and P (pressure)
2. Pressure drop per kilometer X - to be calculated
3. Offtake at kilometer X - the capacity of the offtake shall be calculated
4. Pressure drop per kilometer Y - to be calculated whereas the initial capacity decreases with the offtake capacity X .
5. Offtake at kilometer Y - the offtake capacity shall be calculated
6. Pressure drop per kilometer

The technical capacity shall be calculated under reference conditions for natural gas metering at 1.01325 bar pressure and 20° C temperature, conditions for determining gross calorific value 25° C/20° C.