PIPELINE VALVE TYPES AND CLASSIFICATION

OVERVIEW

- Valve classification
- Valve types
- Valve usage
- Block valves/ shut-down valves/ shut-off valves

VALVE ITSELF

VALVE

can stand for various

Russian terms

арматура, задвижки, клапаны

Valve is an integral component used for controlling & regulating flow of liquids or gases to maintain the process parameters such as flow, pressure etc.

VALVE CLASSIFICATION

Valves can be classified in different ways:

1. the function or purpose of application

2. the closure member or mechanical motion

VALVE CLASSIFICATION

1. by function or purpose:

- To start and stop flow of fluids
- To regulate, throttle and control fluid flow or pressure
- To prevent back-flow
- To relieve excess pressure / vacuum

Thus, the following types are distinguished:

- Shut-off Valves (Block valves/ shut-down)
- Non-return Valves (back-pressure valve)
- Control Valves
- Safety Valves (pressure-relief valve, pressure safety valve, pressure/vacuum-relief valve, emergency relief valve)

VALVE CLASSIFICATION

2. by closure member or mechanical motion

- Linear Motion Valves. The Valves in which the closure member, as in gate, globe, diaphragm, pinch,, moves in a straight line to allow, stop, or throttle the flow.
- Rotary Motion Valves. When the Valve-closure member travels along an angular or circular path, as in butterfly, ball, plug, eccentric- and Swing Check Valves, the Valves are called rotary motion Valves.
- Quarter Turn Valves. Some rotary motion Valves require approximately a quarter turn, 0 through 90°, motion of the stem to go to fully open from a fully closed position or vice versa.

VALVE USAGE

Obligatory valve placement:
Pipeline itself
Pump and compressor stations
Pressure regulator stations
Meter runs
Launcher and receiver stations
Breakout tankage
Distribution manifolds

VALVE USAGE

Block valve requirements:

- Full port gate valve
- Block-and-bleed design (to insure leak-tight performance)
- Can be equipped with motor operator valve.

Branch or lateral valve:

- Leak tight
- Block-and-bleed design
- Full-port design is not necessary

VALVE USAGE

Breakout tank valves:

- Assurance of each tank isolation by inlet and outlet valves.

Pump station valves:

- Suction sides of the station and discharge side to the pipeline, so there are suction valves and discharge valves.

Pipeline control valves:

- Work in concert with centrifugal pumps
- Usually vee-ball design
- Controller presence

BLOCK VALVES/ SHUT-DOWN VALVES/ SHUT-OFF VALVES

Requirements:

every 30-40 km installation.

Besides, block valves should be installed :

- on both banks of the river crossing in a case of two or three lines;
- in river crossing in a case of a line, however, in this very case the place of block valve installation is defined depending on the type of landscape close to the crossing;
- on both banks of the III type-bog which expends more than 500 m;
- at the beginning of every pipeline branch at a distance not less than 15 m;

VALVE SPECIFICATIONS

- Durability/ strength
- Tightness
- Reliability
- Explosion safety
- Corrosion resistance