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ROMGAZ Internship Report

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A gas compression station is a facility which helps the transportation process of natural gas from one location to another since pressure will be reduced when moving through the pipelines due to friction and elevation differences. Natural gas, while being transported through a gas pipeline, needs to be constantly pressurized at constant intervals. Compressor stations are an integral part of the natural gas pipeline network that moves natural gas from individual producing well sites to end users. Compression station is also a storage place to handle the market needs for gas.

Two processes can be noted depending on the season: injection and extraction.

During summer, gas has lower consumption and lower prices. Production wells are enough to supply the consumers. This is why injection takes places during summer. The produced gas is stored in the storage reservoirs.

During winter, gas consumption increases. Injection is stopped and extraction process starts.

Three main stages are described in both processes:

- Compression station
- Well group
- Well

I Injection

Gas enters the compression station and is transported through the pipes to a horizontal separator to remove any liquids or solids from it. After cleaning the gas, the stream is sent to the compressors. Compression is needed to maximize the pressure and minimize the volume in order to store gas as much as possible.

At the aspiration part, the pressure is 15-20 bars. A two-stage compression was used. The pressure was first increased to 50 bars and then to maximum 125 bars. It should be noted that the pressure to which gas should be compressed depends on the volume of gas already stored. For every 5 million cubic meters of injected gas, they increase the pressure by 1 bar. It is maximum 125 bars.



Figure 1 - Separator with total and individual lines (in the group)

After separation and compression, the stream is sent to a group. In the group, an extra separation is used to remove certain leftovers of oil. Two types of lines are present: one for each well and one for all the wells. From the total line, the total flow can be measured and parameters of the group are determined. From the individual lines, the measurements can be done for each well.



Figure 2 - Gas sent from a group to several wells

From the group, gas comes under ground to the well where it will be injected. Each group has several wells (10 in the visited group).



Figure 3 - Injection/Extraction Well

The injection well has a christmas tree with the two important valves.

Gas passes through the christmas tree and the well to the layers. A control valve is used to close the well when needed.

This well has an open hole completion. Sand control is done by gravel packing.

II Extraction

During winter gas takes the same process as injection but in the opposite direction. First gas is extracted from the same well it was injected in (figure 3). It is then heated in the heaters located in the group. It should be noted that the heater wasn't used during summer.



Figure 4 - Heater

It is then directed to a separator. After separation, dehydration takes place to remove any water residual. Then, it is sent to a fiscal measurement panel that uses gas chromatography before sending it to the national transport system.