



University of Balamand
Faculty of Engineering
Department of Chemical Engineering

Depogaz Training
Erasmus+ GOPELC

Submitted to: Prof. Catalin Popescu
Submitted by: Lama Debs

Done on: July 13,2018

TABLE OF CONTENTS

TABLE OF CONTENTS	ii
LIST OF FIGURES	1
CHAPTER 1	2
Natural Gas	2
1.1 Depogaz	2
2.1 Urziceni-Romania	2

LIST OF FIGURES

Figure 1: Total lines and heaters

4

Figure 2: Eruption Head

4

CHAPTER 1

Natural Gas

1.1 Depogaz

Depogaz is a modern company that is very well experienced in natural gas storage. It is an important storage operator in Romania. Depogaz storages satisfy consumer needs and demands, recover functional parameters of transport, and provide control in severe situations. Depogaz has warehouses in 6 different regions in Romania which are Bilciurești, Urziceni, Bălăceanca, Sarmasel, Ghercești, and Balta Fortress. Each underground natural gas storage depots has different active, extraction and injection capacities. The current national legislation mandates that there should be a level of minimum stock formed underground in order to ensure security of supply.

1.2 Urziceni-Romania

A visit to Urziceni in Romania was scheduled to take place on July 13, 2018. This visit aimed to explain the process of natural gas storage. It was a visit to a natural gas compression station of Depogaz. Injection and extraction are two processes that are opposite to each other and cannot occur simultaneously. Extraction is a continuous process done during the whole year where heating, separating and drying the gas are required before transporting it to the national station. Gas dehydration, when performing the extraction process, is essential because certain parameters need to be met before going into the national system. During winter there is high gas consumption and high process, hence gas from deposits is needed because extraction on its own

is not enough. Dehydration is done using triethylene glycol because glycol has the property of being hygroscopic, absorb water. It is also liquid and transparent. During summer, prices are low and so is the gas consumption, thus the gas produced is enough and in many cases is in excess of demand. Hence, for economic and technical reasons storage for injection is done during summer. As a result, part of it will be sent to the storage station. In order to have deposit for storage maximum depth needs to be noted and impermeable rocks need to be present in order to prevent the gas from flowing out. During injection or in other words storage, the gas undergoes separation, compression, extra separation for oil vapors removal and then proper injection. The gas is compressed from 15-20 bars, low pressure initially, up to 125 bars gradually, step by step, over the 6 months period. The compression process aims to maximize the pressure and thus decrease the volume. Smaller volume results in a higher storage capacity and space. High pressure is needed to push the gas underground. There are different flow and pressure because not every well has the same capacity. After the gas is compressed, it goes to a total line, groups, where it can be delivered to different wells. The pressure in the total line was 100 bars, during the visit. From the group the gas goes underground to the entry point of injection to the eruption head and all the way down. The gas is stored above 1000m underground. In winter, after you stop the injection process in a week or two the pressure is allowed to equalize for extraction to start taking place. The gas is taken from the layers and it reaches earth at a 125 bars pressure, theoretically. Moreover, they made in this compression station a system so that all the water in the soil meet certain parameters and is not allowed to flood. No water should be present next to electrical systems and it should be maintained low.



Figure 1: Total lines and heaters



Figure 2: Eruption Head

CHAPTER 2

Conclusion

2.1 Conclusion

Although it was only for one day, yet the visit to the compression station in Depogaz was an experience to remember. It was beneficial to understand how processes of natural gas storage work and how smooth the operations are. We were able to recognize that strategies do change along the year depending on the weather. For instance, it was important to learn that consumption of gas in the summer is lower thus the need for storage. Additionally, learning the storage methods using different pressure levels was of great value. In summary, it was a great one day visit that will help me once I am in the field next time.