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Mono ethylene glycol (MEG) is often injected in gas transport lines to prevent the formation of hydrates. In addition to natural gas, transported fluids may also contain condensates, water – either condensed or coming from the formation -, and salts - either dissolved or already precipitated.

Axens' robust and versatile reclamation technology, AdvaMEG®, uses a vacuum distillation and purification system protected by several patents, which allows the removal of water from the rich MEG (aqueous MEG stream recovered after gas and condensate separation step) but also all types of salts originating from the formation water and from the flow assurance loop.

After entering in a low pressure separator resulting in the removal of hydrocarbons and acid gases, the rich-MEG stream enters the Reclaimer Flash Separator, which is the core of the reclamation unit. This equipment is operated at low pressure (approximately 200-600 mbar) and a relatively high temperature (110 – 150 °C). There, most of the water and MEG are evaporated while salts tend to accumulate and precipitate at the bottom of the reclaimer flash separator. Although most of dissolved acid gases are flashed from the rich MEG stream, residual acidity may persist in the reclaiming loop. In addition, since several steps are operated under vacuum, air ingress could occur. Therefore, MEG streams in the reclaiming loop could contain corrosive compounds. To overcome corrosion problems, chemicals such as caustic soda or sodium carbonate are injected in the reclaiming loop to increase the pH and limit the risks of corrosion. pH control also enhances the precipitation of certain dissolved salts, thereby improving the efficiency of the purification process. Several technology providers request to use corrosion resistant alloys such as duplex stainless steels. However, it is the goal of this paper to evaluate the compatibility of carbon steel in those conditions.

In this communication, we will describe an integrated MEG-reclaiming process using carbon steels metallurgy for most of the lines and vessels that handle slurry solutions (MEG solution saturated with salts and containing suspended solids). Results of corrosion tests in MEG solutions at various pH levels from acid (close to pH 4) to alkaline (pH above 10) values at a temperature of 120 °C will be presented to demonstrate that carbon steel could be used in reclaiming application operating under certain conditions. A comparison between NaOH and Na_2CO_3 for pH control will be presented, as well as the impact of oxygen contaminations on corrosion rates.