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Case Study on the Recovery of Salt from Produced Water coming from Shale Gas Applications

Kerstin Hirsch; MChemEng., SEP Salt & Evaporation Plants Ltd.

Abstract

The recovery of shale gas has undergone a fast and impressive development in the past years. Especially in the formations of Marcellus and Utica in the north east of the USA, new sources have been opened up and changed the gas market significantly.

The technology of fracking which is utilized for the recovery of shale gas brought along side effects with environmental impacts, which are causing lots of attention not only in the US but worldwide. In particular the creation of waste water which is the water that is put into the drilling hole and partially comes back to the surface, so called back flow and produced water, raises challenges to the operators of drilling sites. The cost of disposal reflect as a part of the economic evaluation of such projects.

Aside of disposal solutions such as deep well injection, the treatment of this produced water has meanwhile become a standard for the handling of the waste water.

Recently, an important step has been realized in the field of the waste water treatment by recovering a valuable product from the waste water.

In Pennsylvania, USA, a crystallization plant has been successfully put into operation which takes over the produced water after chemical pre-treatment and performs a concentration of the waste water and selective crystallization of dissolved salt. The recovery of clean condensate that fulfils the specifications for municipal water discharge and the production of salt for de-icing applications are the outgoing products, while the volume of purge for disposal is reduced to a fraction of the fed material.

While the first plant has proven the economic and environmental feasibility of thermal waste water treatment in the field of shale gas applications, SEP has developed the further steps to recover more valuable products.

Key words: Shale Gas Recovery, Produced Water Disposal, Salt Processing, Evaporated Salt, Pennsylvania