

Solution mining in the ancient China

Hans-Guenter Haddenhorst

Abstract

As early as two thousand years ago in China brine was used as a source of salt. The brine was initially produced from shaft wells (from 3rd century BC to 11th century AD), while in more recent times drilled wells have been used. The vaporisation of the brine was initially carried out by wood burning, with coal and natural gas being used subsequently (!).

In pre Christian times reports of so-called "fire wells" were heard of in China. It is however not absolutely clear whether these were already oil and gas producing wells or whether they were some natural phenomena (e.g. the eternal fires in Iraq at Kirkuk).

It is however undeniable that natural gas has been produced from deeper wells since the 16th century, the gas being used to vaporise the brine produced.

The sinking of shaft wells (more than 2000 years ago), deep drilling (from 11th century) and production of brine are described: the shaft wells were sunk by laborious hand digging. In later deep drilled wells the conductor pipe was made of specially cut stones. The casing of the wells was achieved using bamboo material. The drilling of the well was carried out using cable tool percussion drilling. The cable (rope) was made of natural fibres. When the wells encountered brine the brine was produced using bailers.

In 1835 a well was drilled in China (Sichuan) to a depth of 3300 feet. At the time it was the deepest well in the world. The rig was also still made of bamboo trunks.