Oil grit treatment with HUBER technology in Daqing, China

The oil fields of Daqing are the biggest oil production facilities in the People's Republic of China. They were discovered in 1959 at the time of the Great Leap Foreward and extend between the rivers Songhua Jiang and Nen Jiang. Oil production at Daqing began in 1963, one million barrel per day have been produced during the past 30 years. The Daqing fields produce about one third of the total Chinese oil production.

Even if, at first glance, one would not expect it because no direct wastewater is generated, the well-proven HUBER technology systems are demanded on this oil field. This is due to the fact that Chinese industry is increasingly faced with international environmental constraints and forced to react. The contaminations generated by oil production on these fields have been a continuous environmental problem for years already.

Our joint venture China supplied and installed the mechanical pre-treatment systems and coarse material and grit separation systems for a treatment plant built to clean oil-contaminated soil and grit from the vicinity of boreholes.

The soil and grit to be treated comes from several different spots from where it is transported to the treatment plant. The soil material from two nearby boreholes shows an oil content of approx. 1030 %. Also sediments from storage tank cleaning are treated. These have an oil content of approx. 30 %. In addition, contaminated sand bags from oil stops are delivered, which have an oil content of up to 50 %.

Mechanical treatment takes place in two lines and two stages. The material is collected in an intermediate storage tank (type RoSF7 size 2), from where approx. 5 t/h soil material is delivered into the HUBER ROTAMAT® Wash Drum RoSF9 size 1 and washed with approx. 80 °C hot water. Coarse material bigger than 10 mm is washed, transported by a screw conveyor and discharged into a container. The oil/water/sludge mix < 10 mm flows into the aerated HUBER ROTAMAT® Grit Trap Ro6.

To meet the effective grit separation of > 2 mm the mix must be kept at a temperature of at least 45 °C by means of a heat exchanger integrated within the Ro6 unit. In this way, the high viscosity of the crude oil is reduced and a certain pre-clarification of the oil sludge achieved. The grit discharged from the Ro6 shows the requested maximum oil content of approx. 5 %.

These treatment steps are necessary to ensure blocking within the subsequent tricanter that may be caused by coarse material is prevented and wear minimized.

The customer, Beijing Oil HBP Science & Technology Co. Ltd., who started the 400,000 Euro project in cooperation with HUBER and the joint venture in July 2008 followed by start-up in May 2009, is highly satisfied with the equipment supplied by HUBER SE and the operating results achieved. Other plants of the same kind are in the planning stage and some have been ordered already.

Ying Gao
Business Unit International Sales
Thomas Nagler
Business Unit Industry

Oil grit treatment solution in Daqing, China