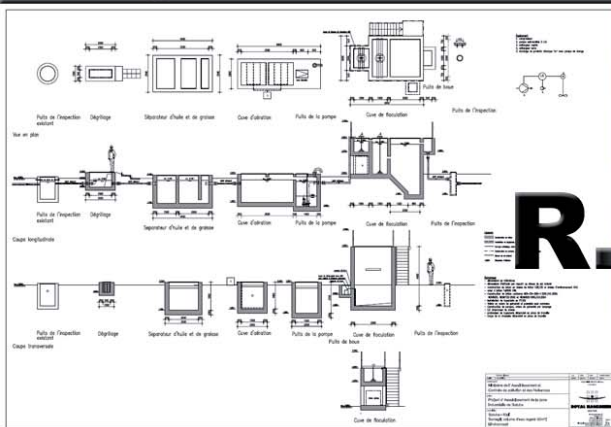


Royal Haskoning



Gets the Job Done

Your partner for industrial water

Royal Haskoning takes the pressure off its clients. We conduct feasibility studies and make designs. We also manage the complete pathway up to and including implementation and follow-up. Royal Haskoning is also prepared to undertake risk-bearing projects. Take, for example, new types of contract like UAVgc (uniform administrative conditions for integrated forms of contracts) or other types of project-based collaboration.

Some recent examples of such projects are described below.

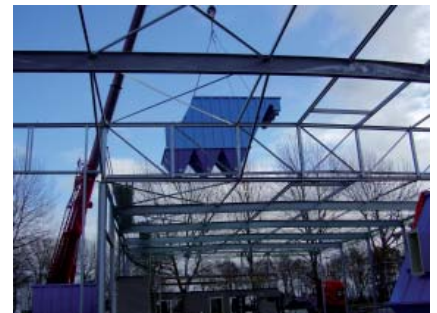
Kisuma Chemicals

Since 1998 this company's process water has come from a water facility that was built originally by Waterbedrijf Groningen (now North Water bv). The process water plant uses surface water.

Chemicals company Kisuma is doubling its output and therefore needs much more process water (demiwater). Royal Haskoning was asked to prepare specifications for the desired expansion of the current process water plant.

The project team used a systems engineering approach to establish the plant's system requirements. The subsequent general specifications were used for contracting. Currently the construction of the expansion is in the final phase, in which Royal Haskoning is providing project management and civil engineering support.

The plant – consisting of a flocculator, a lamella separator, ultra-filtration, reverse osmosis, a stripping column and a sludge processing unit – can upgrade approximately 200 cubic metres an hour of canal water to process water (demiwater).





After the design Royal Haskoning supervised the tendering and execution phase. In collaboration with Logisticon and RWB the sand filters were installed and the whole system was prepared for the new situation. Royal Haskoning took a large burden off the shoulders of the steel companies by taking care of the entire trajectory from design to supervision of implementation, including policy issues and a legionella risk analysis.

Organik

During the construction of a new location for the production of semi-manufactures for the coatings industry, a solution for the waste water treatment was created. The waste water contains relatively high concentrations of acrylates, which results in a high COD and therefore high discharge costs per m³. The best system was selected and then an outline design was made even before the new location had produced

Ovako/Nedstaal

Steel companies Ovako and Nedstaal have adjoining sites. A huge quantity of surface water is taken from the river and used for cooling molten and/or red hot steel (1000 °C). After being used for cooling and passing through the complex system, the heated and slightly contaminated water is discharged back into the river.

This situation, known as once-through cooling, was not the best available technology according to the IPPC guidelines. The Directorate-General for Public Works and Water Management therefore made the companies change things.

After it had conducted a study, Royal Haskoning produced a design for a situation in which the cooling water is kept in a semi-closed loop. The cooling water is purified in the loop by means of sedimentation and sand filtration. The closed loop is topped up using water from the river, into which filtrate is also discharged. Water is taken from the river in order to control the water temperature.



Jacomij

Jacomij collects and processes non-ferrous metals. In 2007 it asked Royal Haskoning to help with a planned expansion. A new facility for collecting, storing and processing the metals was to be built.

The metal items are stored in (semi) open sheds and therefore rainwater causes the discharge of heavy metals such as cadmium, copper and nickel. Royal Haskoning produced a design for the entire site sewage system and the associated waste water treatment. The waste water treatment consists of a physical / chemical process in which the metals are removed down to a level that complies with the permit for discharge to sewers.

Because the client does not possess water purification expertise it asked Royal Haskoning to take on the implementation.



any waste water. The results of laboratory tests were used in the selection and design of the waste water purification system. Comparable waste water from the industry was used for the laboratory tests, which were conducted in this phase (samples of a Turkish subsidiary). After a pre-selection procedure contractors were selected for the implementation of the system.



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