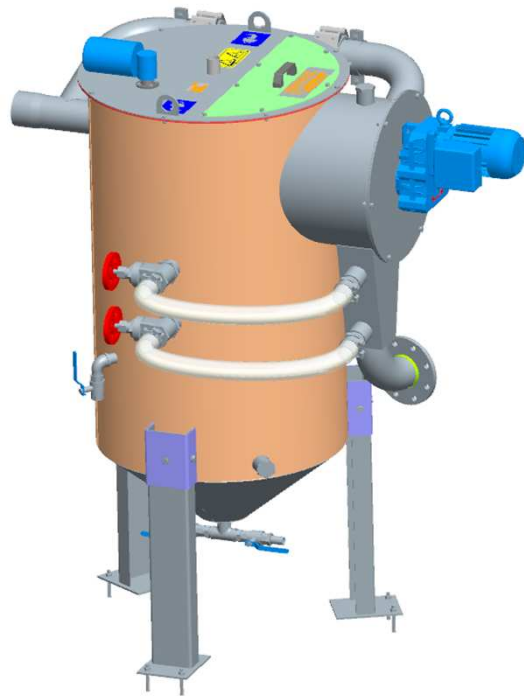


HUBER Brown Water Treatment



HUBER SE

Industriepark Erasbach A1

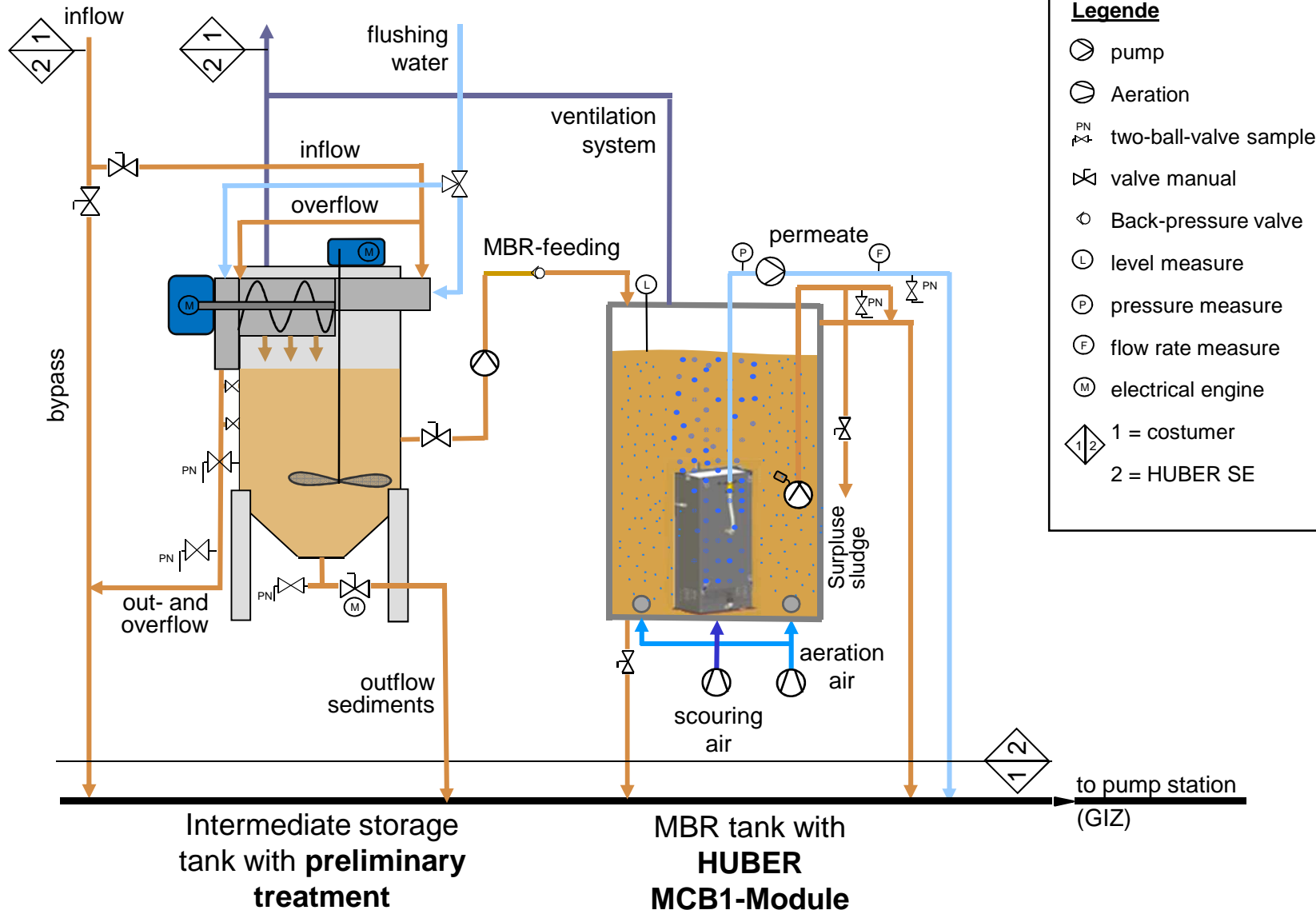
D-92334 Berching

February 2011

Content:

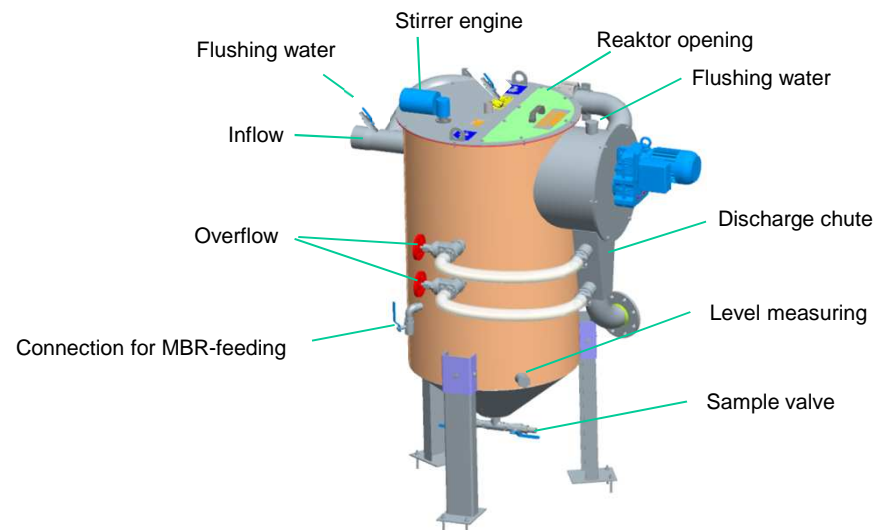
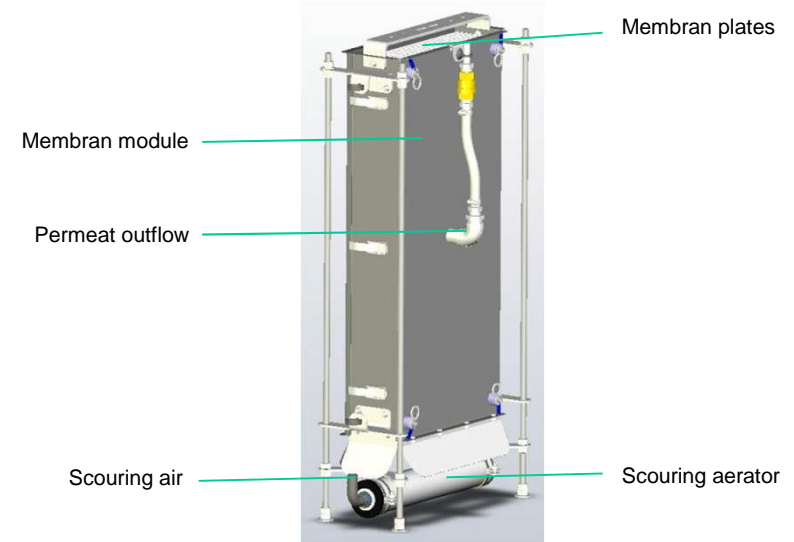
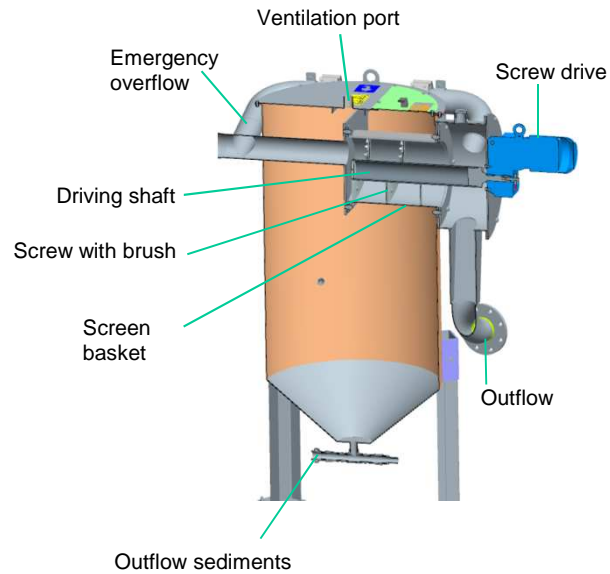
- Detailed Flow Chart
- Definition of Design
- Description of Setup and Function

Detailed flow chart



Definition of design

Fig. 2, 3 and 4 define the individual plant parts.



Description of setup and function

Setup

The brown water treatment system includes one stainless steel tank and one synthetic tank, both tanks are closed. It is made up of three main components:

1. Stainless steel cylinder as hydraulic buffer for the feed to the MBR tank, with integrated brown water pre-treatment for solids removal
2. Membrane bioreactor (MBR) with submerged HUBER ultrafiltration module **MembranClearBox®** in a synthetic tank (MCB1 → pore diameter ~ 38 nm, filter surface ~ 3,5 m²)
3. Electric measuring and automatic control devices including remote data transmission and fault indication via SMS and telecontrol

Function:

The brown water treatment unit consists of a stainless steel cylinder with integrated brown water pre-treatment. The storage volume amounts 400 litres. The filtrate (~ 200 l/d) flows through the 3 mm perforated plate of the screen basket into the stainless steel cylinder, which serves as a hydraulic buffer and ensures continuous feeding of the MBR tank. The cylinder is equipped with a stirrer to prevent sedimentation in the conical part of the tank.

The solids are discharge by a screw with brush that is mounted in the screen basket. The solids are discharged through a chute and via a connected pipeline passed on to a pump station.

With a vacuum the braun water is sucked through the membrane with 38 nm nominal pore size within the MBR tank. Due to the small membrane pore size all particles including bacteria and the majority of viruses are retained. Continuous introduction of scouring air below the membrane modules prevents clogging of the membrane surface and ensures continuous mixing within the MBR tank.

Sufficient oxygen supply for the biological processes is ensured by the installation of two additional aerators on the tank bottom. Due to the high quality of the permeate, it could be used for agricultural irrigation. Within the SANIRESCH-Project, actually are no use planned. The complete plant is odour-tight.