



Grossglockner

Fully dismountable
Cost-effective
Environmental friendly

Specifications

Lenght	52 metre
Breadth	10,3 metre
Depth	1,83 metre
Draught	1 metre
Suction pipe	Ø 200 millimetre
Maximum dredging depth	50 metre
Discharge pipe	Ø 200 millimetre
Dredgepump	625 kw
Jetpump	3 x 92 kw
Software	pds 2000



BAGGERBEDRIJF DE BOER - DUTCH DREDGING



In the coming 10-15 years 50% of the dams become obsolete due to siltation. Siltation largely determines the lifetime of a hydropower or water resource project. Reduced capacity overtopping, flooding, induced seismicity and environmental concerns are among the problems caused by siltation. Dutch Dredging is specialized in dredging power dams. This brochure explains a field example.

Situation

Lake Margaritze (2000 m) is located at the end of the Glacier on the highest peak in the Austrian Alps, the Grossglockner. The meltwater of the glacier gives sedimentation that causes 2 main problems. Primary the lake fills up with sediment and secondly the sand and gravel eventually damages the turbines.

Grossglockner

In order to solve these problems Dutch Dredging developed a dredger, the Grossglockner. The Grossglockner is a dredger containing two DOP pumps from De Groot Nijkerk Dredging Equipment. A DOP (dipping underwater pump) pump is a dredging pump in a special design for underwater dredging. On the Grossglockner two DOP pumps are installed, one on the suction side and one on the delivery pipeline. They are both driven by a hydraulic system as this is already installed for other purposes. At the end of the suction pipe a DOP-pump of 109 KW is installed with a diameter of 200 mm. On the pontoon an extra pump is installed of 100 KW. The suction pipe can be prolonged by 6 meter pieces, up to 60 meters length (50 meters depth).

Optimizing production

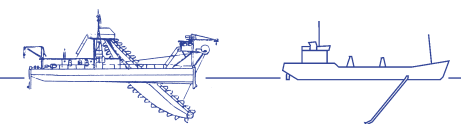
The pipe is lifted and brought down into the material by a hoisting installation. To prevent trees, wood, roots and other debris to enter the pump a special suction head with a strainer is developed. At the end of the suction head a cone is installed to push possible debris aside, With this the production losses are minimized and the suction inlet can enter deeper into the material.

Another advantage of the vertical pipe is that the dredgehead can follow the soil even in fast changing waterlevels and thus optimizing production. but not least it can without damage easily be pulled out of material fallen on the pipe in case of slides.

Jetpumps

The suction inlet is protected with a grid and contains jetwater nozzles to fluidise the soil in order to improve hydraulic transport. The total power is 400 m³ per hour with a pressure of 8 bar. Big waterflow and pressure is needed to penetrate the soil.

Second advantage is that it fluidizes the silt which makes it better to transport. Because of the stiff construction the pump always stays at the spot that needs to be dredged. The DOP-pump brings the material up through a flexible pipeline and deposits the mixture through a strainer in an open tank on the starboard quarterdeck. This tank contains the other DOP-pump which transports the mixture to the delivery pipeline (towards a boosterstation or dump).



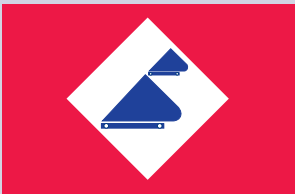
Movement and transport

The nautical movement of the Grossglockner is done by winches. Together with the vertical suction pipe this makes it possible to dredge very close to the dam or turbines. The Grossglockner is made up of fully dismountable pontoons and containers which makes it possible to work in every possible place. Currently the Grossglockner is working at the end of the Grossglockner Glacier in a powerdam on 2000 meters height. All relevant data are processed in a modern system. Positioning is done by centimeter-precise DGPS. The pontoon has an oilboom. Water flow is measured by an electromagnetic flow meter and the sediment concentration by density meters. Echo sounding is used to measure changes in the bed levels.

Conclusion

Grossglockner is efficient in dredging sediments at great depths. Dredging is carried out with careful monitoring and manoeuvring of the suction head, therewith having complete control of the dredging process. The suctionhead is lowered into the material, This means it does not only dredge the top layer but also the material which is deeper and more compact. When the soil is harder, a cutter head can even be attached to loosen the material.

When slides appear that block the suction inlet, the suction head can easily be pulled out. Jetting is very efficient in disintegrating cohesive material. All this makes it a very cost-effective solution for dredging. Light and easy transportable equipment (fully dismountable) makes it a good solution for even the smallest lake. A continuous high production is coupled to an environmental friendly and time-friendly solution. The dam can continue its work during the dredging and the high production means less time necessary for the operation.



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50 years of experience in the field has made Dutch Dredging a reliable and professional partner for solving your dredging problems. Our size guarantees short and clear communication lines, quality and flexibility.