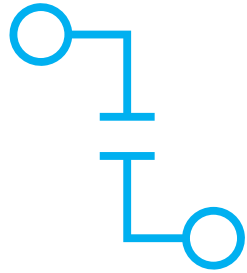
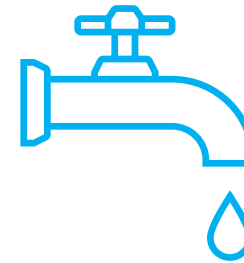


Continuous Dewatering System

Continuous Dewatering System: Goals



Separate any kind of suspended solid particles from liquid

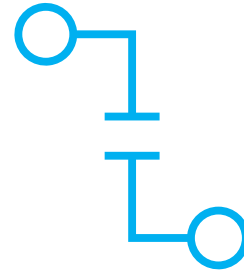


Regardless of dilution, less than 2% solid up to 80% solid

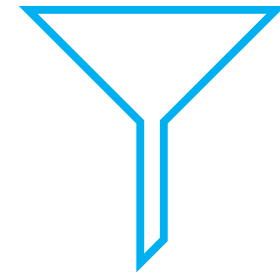
Applications



Wastewater cleaning
in first step



Mineral processing to
separate product from
water



Mineral processing to
separate water from
tailing water

State of the art in mineral processing

- **Step 1:** Use thickener to separate water from slurry with 20% solid content
 - Gain up to 50% solid and recycle 20% of water
- **Step 2:** Transport the 50% slurry to tailing dam to give time and separate water from solids (0 to 40 microns)
- **Step 3:** Second recycling stage for the water in the tailing dam



Thickener used in Mineral Processing



Heavy pumping system for tailing slurry



Tailing dam

Problems & disadvantages of the current systems

- Tailing dams are harmful to the environment
 - risks of land sliding
- Cycling time too high → months to recycle the water
- Extremely expensive thickeners
- High maintenance for the thickeners
- High erosion in the slurry pumps
 - Replacement of internal parts every 20 days
- Similar level of erosion in the pipes

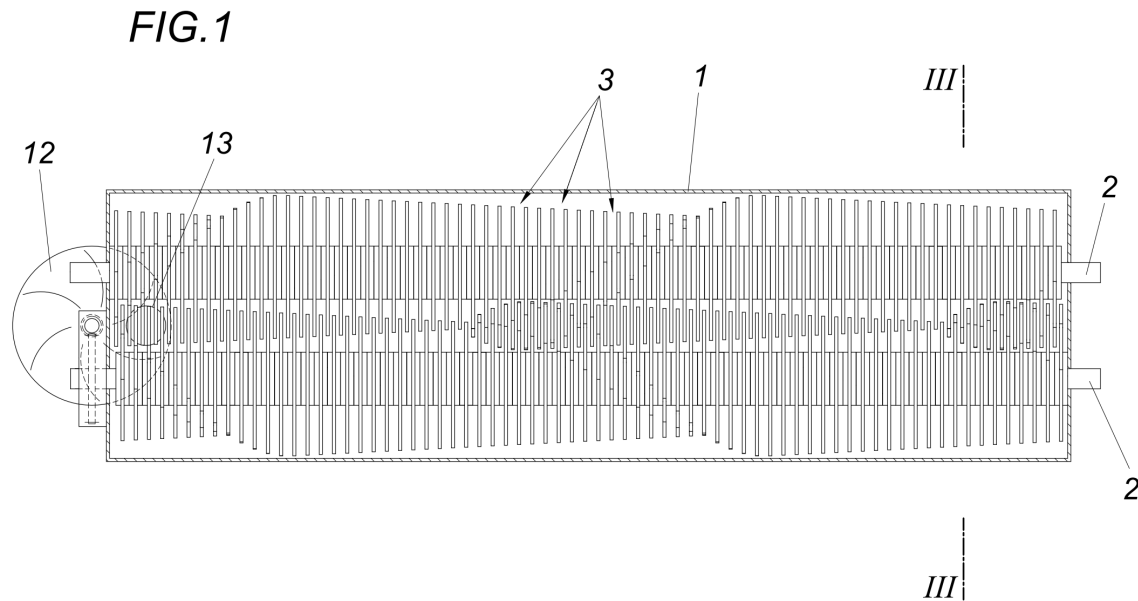


Tailing dam failure leading to landslides



High erosion inside the pumps

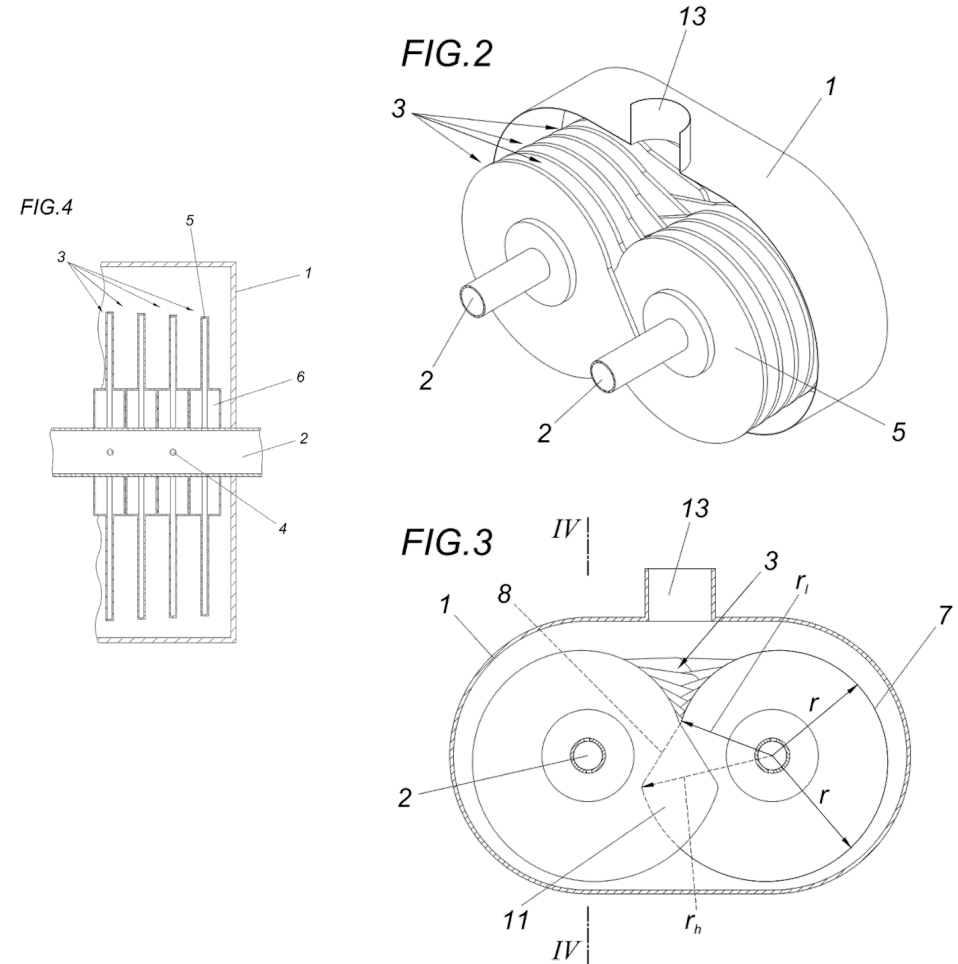
Continuous Dewatering System



- Each module is 6-12 meter
- Casing plus two rotary screws
- Each screw is a stacking of ceramic porous disks
- Disks are hollow, shafts are hollow and disks are connected to the hollow shafts through holes

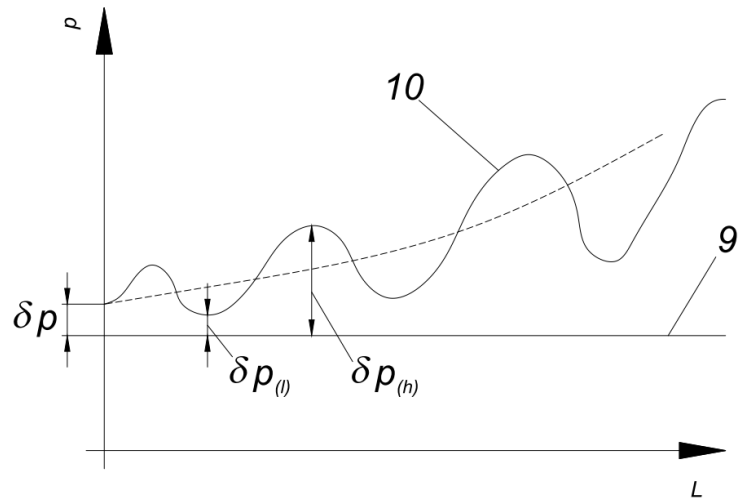
Continuous Dewatering System

- Slurry enters through no.13
- Due to the high and low pressure waves, the water is get squeezed through ceramic to the hollow shafts
- Water is collected through the shafts
- The slurry moves forward with the help of rotation of screw



In depth workings of the disks

FIG.5

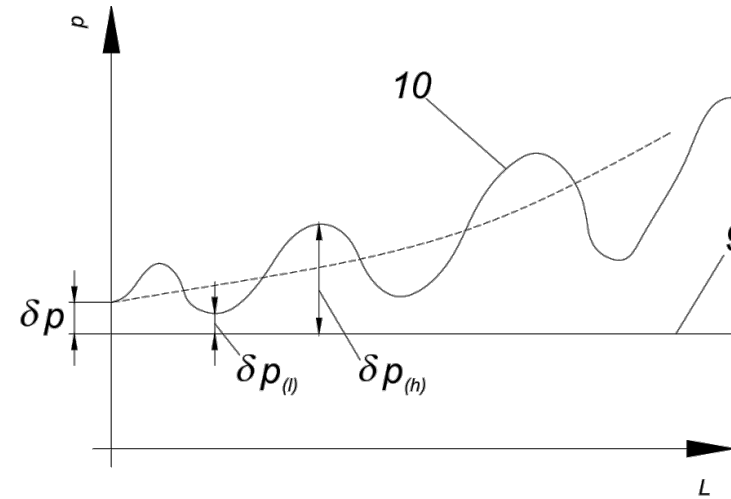


- Intermittent or sinusoidal waves because of non-symmetric geometry of the disks
- Line 9 shows the pressure on the water side inside the hollow shaft
- L shows the distance along the module

In depth workings of the disks

- Sinusoidal increase in pressure difference between slurry and water sides
- Sinusoidal wave on slurry side is needed to separate the cake from the surface of the ceramic disks
- The cake would stick and harden on the disks and the module will stall

FIG.5





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