

Treatment and Recycling of Water from the GRP Cutting Lines

A huge amount of water is consumed at the cutting phase of GRP pipes. Water is a valuable resource and reusing it will save the environment as well as money to the company. Dermak Proses has successfully managed to separate the solid particles and the water in the sludge from the GRP cutting lines so that the water can be recycled to the cutting machines.



Sludge from the GRP cutting line (left) and water exiting the machine (right)

Benefits

- The filtered solid contain less than 30% moisture and is drip-free. Therefore it can be disposed or transported easily; saving waste removal costs as well as reducing environmental impact.
- Typically, 97% of the water is recycled back to the cutting lines at each cycle saving thousands of m³ of water each year depending on production. (Based on 2-3% solids content in the sludge).

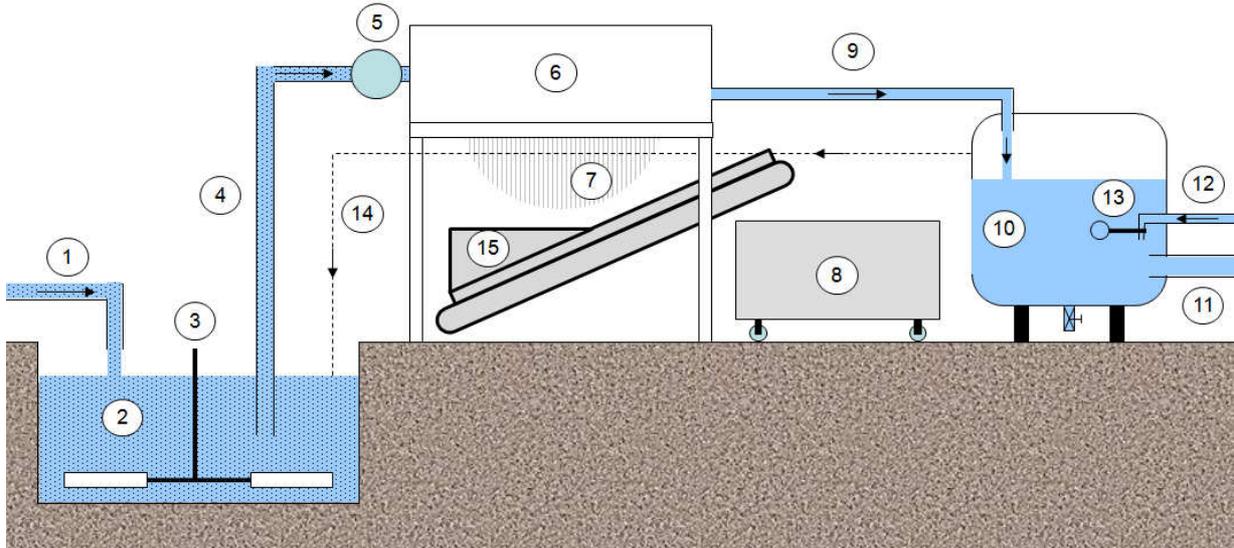
Models and Capacities

Our installations at different production sites for GRP Sludge Treatment utilize 2 models:

	Sludge treatment capacity	Solids capacity
DFP0800	5 - 10 m ³ /charge	150 - 300 liter/charge
DFP1000	8 - 16 m ³ /charge	250 - 500 liter/charge
DFP1200	12 - 24 m ³ /charge	350 - 700 liter/charge

Typically, the sludge in this application contains 2 to 3 % solids and the suitable model is selected depending on the total amount of waste water generated by the cutting lines per day (m³/day).

Process Flow



- 1) Sludge feed to the collection tank.
- 2) A collection tank where the sludge from all cutting lines is collected.
- 3) The slurry stirrer is used for preventing the solids to settle at the bottom of the tank and ensuring a homogeneous feed to the machine.
- 4) Sludge suction pipe.
- 5) Air Diaphragm Pump.
- 6) A sludge treatment machine for separation of the solids and the water, which is equipped with an automatic system to discharge the filtered solids at the end of each cycle.
- 7) Automatic solids discharge.
- 8) Solids collection bin. This can be a big bag or a container depending on preference and available equipment at the plant. Another option is to leave this space empty and remove the solids using a loader as they accumulate.
- 9) Clean water line to the buffer tank.
- 10) A clean water collection tank is used for buffering the clean water, before recycling to the cutting lines.
- 11) Clean water line to the GRP cutting machines.
- 12) Fresh water line.
- 13) Fresh water is added to the tank automatically using a float valve, as much as needed. The float valve adds water to the tank only if the water level is doped below a desired level.
- 14) Fresh water overflow stream
- 15) Automatic solids transfer conveyor. (Synchronized to operate during solids discharge only)

The solid particles contained in the sludge from GRP cutting lines are very sticky and small in size. Therefore a special filtering media is used. As a result of the sticky nature of the filtered material, the filtering media requires cleaning with high pressure water after a few charges. (Once or twice a week)

Operation of the Machine

The sludge is fed to the machine by a diaphragm pump, which requires no power but supply air. This pump is cost efficient and the maintenance requirements are minimal. Another advantage is that this type of pump can handle relatively big particles without getting damaged.

The water treatment machine is intended for operation without human interference but due to the very sticky nature of the filtered material, sometimes the filtered solids may not be discharged totally by the automatic solids discharge system and for that reason we have modified the operation logic so that after each loop of operation, the machine waits for a one-button start by the operator. This logic can be easily changed back to full automatic if needed using a button on the control panel.



DFP0800 - During PLC programming



DFP1000 - Clean water discharge



Control Panel with LCD Touch-screen



DFP1000 – Before Installation