



FJELL FRS WASTEWATER TREATMENT SYSTEMS

Technology
for value circle

FJELL FRS WASTEWATER TREATMENT SYSTEMS

A complete solution for high capture rate & low emissions



Fjell offers complete solutions for the treatment of wastewater from fish processing plants, land-based fish farms and fish farming facilities in the sea.

The key to achieving a consistently high capture rate is the correct pre-treatment of the wastewater before it enters the process plant, combined with a high degree of automation and the best technology in the market.

- Fjell Polymer Performance System.
- Fjell Thickening Solutions.
- Fjell Dewatering Solutions.
- Fjell Drying Solutions.

The sources of wastewater

It all starts with taking control of the various sources of wastewater. The fish farmer must together with suppliers ensure optimal operation of mechanical filters so that the capture rate is as high as possible. If there are several different process steps that give rise to wastewater, it must be ensured that variations in quality, flow, and solids content are homogenized to the greatest extent possible before the wastewater enters the wastewater treatment system. The homogenization takes place in a properly sized and designed level-controlled buffer tank with controlled agitation.



Low DM wastewater – strong flocs.



High DM wastewater – strong flocs.

Fjell Polymer Performance System

In order to achieve the cleanest possible discharge to the recipient, an optimal structure must first be built in the wastewater. To build this structure, a combination of coagulants and polymer, or only polymer, is used. The aim is to achieve strong and large flocs (larger aggregates made out of suspended solids in the wastewater) that can be effectively filtered out of the water. The Fjell Polymer Performance System is a fully automated system that ensures the maximum quality of all steps in the process:

- Choice of optimal polymer.
- Storage of polymer.
- Maturation of polymer.
- Dosing of polymer.
- The reaction time of the polymer.

Thickening

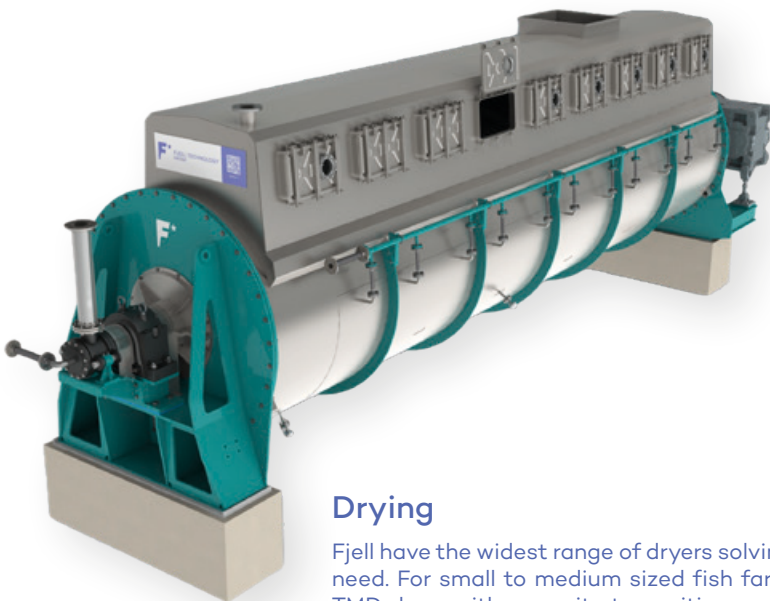
The first separation step is known as thickening of the wastewater and is often considered as the process step where the purification of the wastewater takes place.

Fjell uses belt thickeners in this process step. Our belt thickeners are recognized for their high operational stability, long-lasting durability, high performance and wide range of capacities. Fjell offers a model range consisting of 15 different models with treatment capacity for a single unit spanning from 1m³/hour to the largest model which can treat up to 220 m³/hour. Larger capacity needs are solved by using several units in parallel.



Dewatering

The belt thickeners will lift the concentration of dry matter (DM) in the wastewater from 0,05% DM up to 5-10% DM. The thickened sludge will be pumped to a holding tank with level sensor and agitator that works as a feeding tank to the dewatering process step, a decanter centrifuge (decanter). The decanter will dewater the thickened sludge up to 20-25% DM. Centrifugation is a very energy-efficient method for mechanical dewatering, and the decanter have long-lasting durability and high operational stability.



Drying

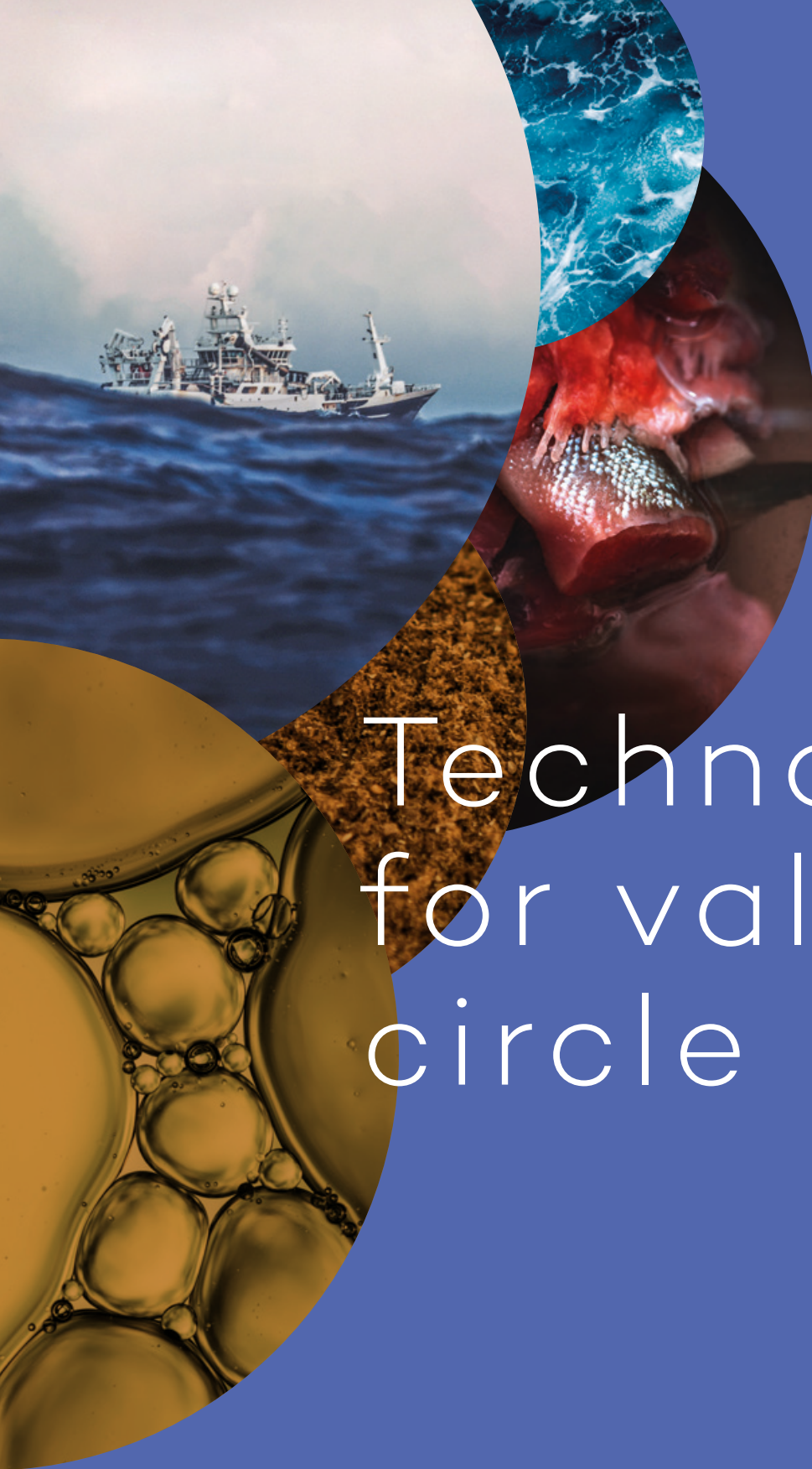
Fjell have the widest range of dryers solving any capacity need. For small to medium sized fish farms, we use the TMD dryer with capacity to sanitize and fully dry up to 600 kg/hour of 25% DM sludge per hour. The Fjell FRS TMD dryer makes difficult drying become easy.

For larger capacities we use the Fjell TD dryer. This type of dryer opens for a record low energy consumption. Fjell has patented several energy saving process optimizations, and has even developed a process where more than 90% of the energy can be saved. Fjell can dry any capacity need with their range of energy efficient drying solutions.



Why choose a wastewater treatment system from Fjell?

- Fjell Polymer Performance System.
- Fully automated system.
- Disposal solutions for dried sludge.
- Rental agreement possible.
- Service and maintenance for the full lifetime of the equipment.
- Expertise, technology, and solutions that enable our customers to meet the BAT-AEL requirements.
- Widest capacity range for thickening stage.
- Proven solutions for dewatering.
- Largest selection and widest capacity range of the best drying technology.
- Solutions for creating value from dried sludge under development from Fjell.
- Patented solutions for energy saving.
- Fjell's solutions meets any capacity demand.
- We don't just deliver well working solutions; we deliver complete customer satisfaction!



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