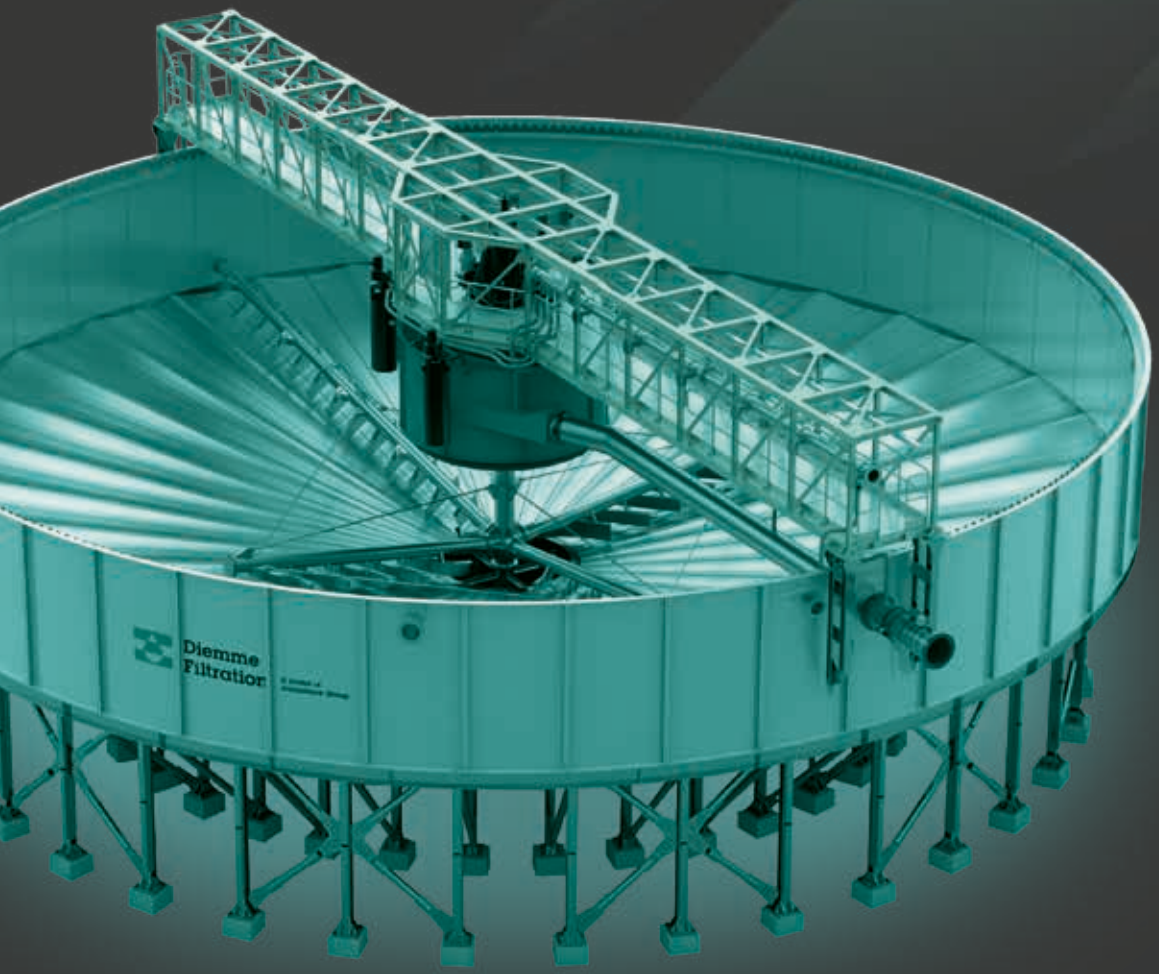
Diemme Filtration

Trust Never Ends.

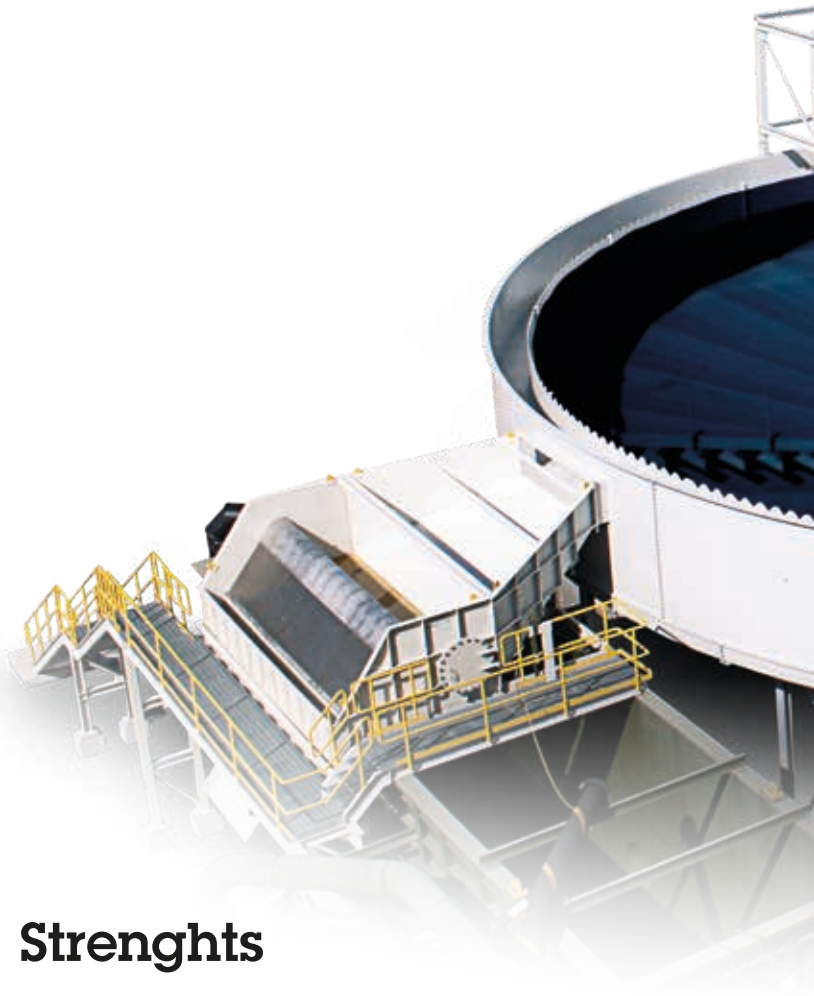


Diemme® Filtration High Rate Thickeners & Clarifiers

Solid-liquid separation technology for industrial processes

A brand of
Aqseptence Group

Diemme® Filtration Thickeners range



Introduction

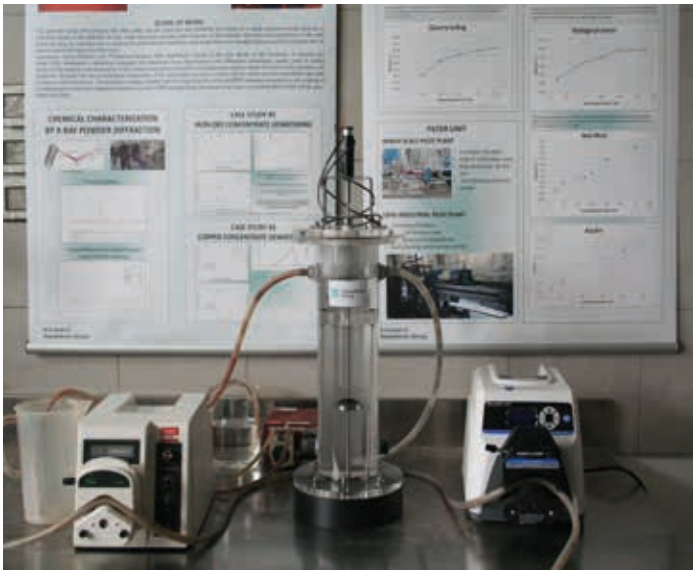
Diemme® Filtration's High Rate thickeners are an advanced product derived from our extensive experience in solid/liquid separation applications, such as mining, chemical, wastewater and more, coupled with our technical research to continuously improve and optimize sedimentation in filtration plants.
A deep understanding of both the process and the downstream filtration requirements and performances are necessary to precisely define the system.

Global markets are becoming more challenging and competitive. Consequently, we have heavily invested in efforts to reduce the CAPEX and OPEX of our product offering without compromising the integrity of the products. Our thickeners are designed in Europe with top-brand components resulting in a heavy-duty product, that is reliable and provides consistent performance.

Strenghts

Clients are used to relying on Diemme® Filtration as a trusted technical partner capable of:

- Complete LAB & SITE testing (flocculants type and dosage selection, static and dynamic test, rheology test, sensitivity analysis),
- Mechanical design of drive heads,
- Structural design of engineered tanks aimed at weight reduction (static and dynamic F.E.M. analysis, seismic assessment),
- Instrumentation & Control aimed at process optimization and OPEX reduction,
- Customized vendor list,
- Global after sales service.

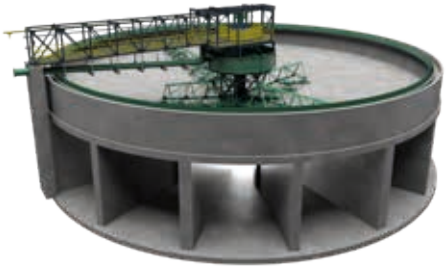


Types

Diemme® Filtration's High Rate thickeners cover a wide range of productivity and compliment the performance of Diemme®'s filter-presses, from our smallest to the largest unit.
Thickeners are available in "**Full-Span-Bridge-Supported**" design or "**Center-Column-Supported**" design (above 40m diameter).
Furthermore, according to specific requirements of the project, tanks are available in "**Free-Standing steel tank**" design or "**On-Ground concrete tank**" design.

Bridge Supported (full span)

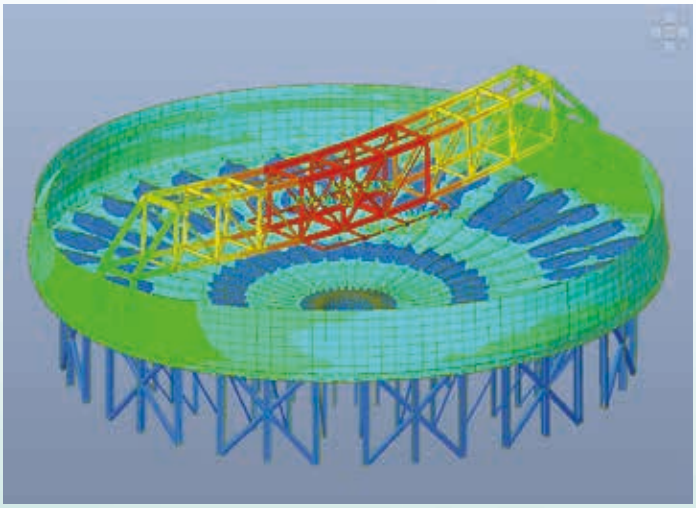
Column Supported (center column)

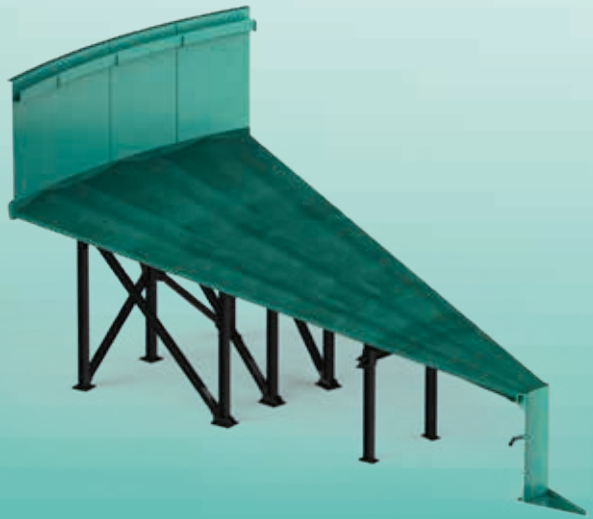


Tanks and Feedwell

Tanks

Process-wise, tanks do not directly affect the performance of thickeners. However, the fabrication requires skill and demanding control quality which becomes a critical cost parameter that must be managed.
For this reason, Diemme® Filtration's tanks are engineered for optimized weight and simple fabrication processes. Structural components are designed with F.E.M. (finite element method) for static and dynamic loads, including seismic assessments, where required.





Special care is allocated for bolted-tank modular design, core of our traditional thickening equipment, today optimized for mining industry.
Compared with the on-site welded tank, the bolted design allows:

- significant reduction of installation time
- fewer on-site issues (weather, materials, tools, painting)
- improved workshop quality control
- improved safety on-site

Although slightly higher material cost, the bolted-design dramatically reduces the installation cost and improves the final quality resulting in a better value.

Feedwell

The process performance of a thickener is defined by the way the equipment is able to:

- optimize the dosage of flocculants (coagulants)
- optimize the dilution water
- thoroughly mix and adsorb chemicals onto the solids for proper agglomeration
- dissipate energy of the slurry stream to reduce turbulence
- evenly distribute the slurry into the tank

These functions are achievable with use of Diemme® Filtration's Feedwell for High Rate thickeners, available with auto and forced dilution (the latter for high water dilution rates and/or better dilution control).

The Feedwell has been designed with CFD simulations and validated in real operating conditions with outstanding performance in term of cost and operation.

The results are low flocculant consumption, remarkable overflow clarity and consistent underflow density.

Rake Drives

Diemme® Filtration's rake drives are specifically designed for severe duties and are available in single and multi-pinion design covering a wide range of torque (standard drive up to 2,000,000 Nm).
Multi-pinion drive heads are engineered in two-size casings, with up to four planetary motor gear-boxes responding to any possible process requirement.
The major application parameters are:

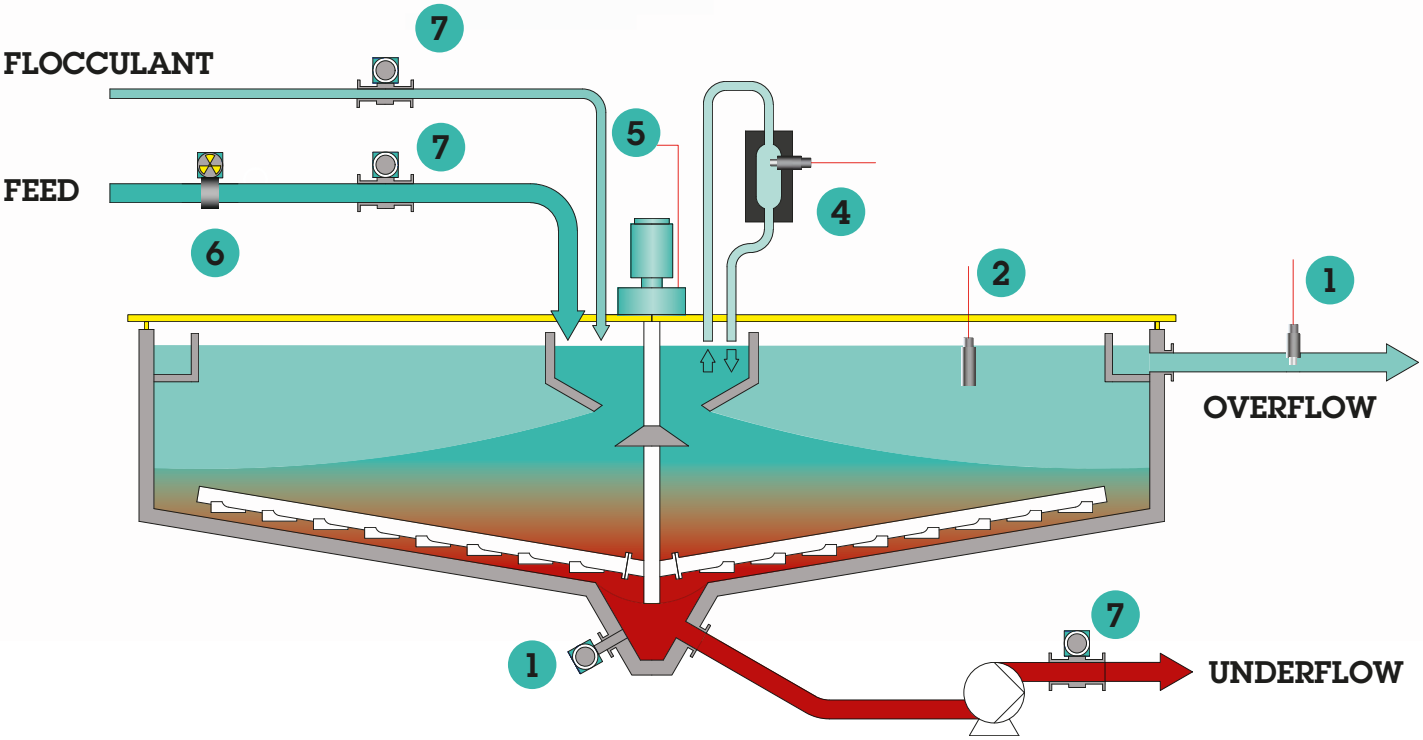
- torque demand (K-factor)
- raking mechanism design
- lifting system
- electric/hydraulic drive.

Bridge supported rake drives	Nominal Torque (kNm)	Cut-Out Torque (kNm)
slewing bearing + one planetary gearbox	150	225
slewing bearing + two planetary gearboxes	200-350	300-525
slewing bearing + three planetary gearboxes	400-500	600-750

Column supported rake drives	Nominal Torque (kNm)	Cut-Out Torque (kNm)
slewing bearing + two planetary gearboxes	1000	1500
slewing bearing + four planetary gearboxes	2000	3000

Top brand components (ring gear/bearing, motor gearboxes, instrumentation) and European manufacturing ensure the highest level of performance, reliability and worldwide availability for spares.

Automation and Control



Control philosophy and instrumentation can be optionally provided for different levels of control responding to the client's needs. Typical controls involve flocculant consumption, overflow clarity and consistent underflow density.

With that aim, several type of instruments are available (refer to the picture above):

1 - Bed-mass with retractable probe,
2 - Bed-level,
3 - Overflow clarity probe,
4 - Flocculation dosage active control,
5 - Torque load cells,
6 - Density meter,
7 - Flow meter.

The extensive experience of Diemme® Filtration with the management of complex filtration and thickening plants results in the enhancement of working time and profit increasing.

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