SCAE®

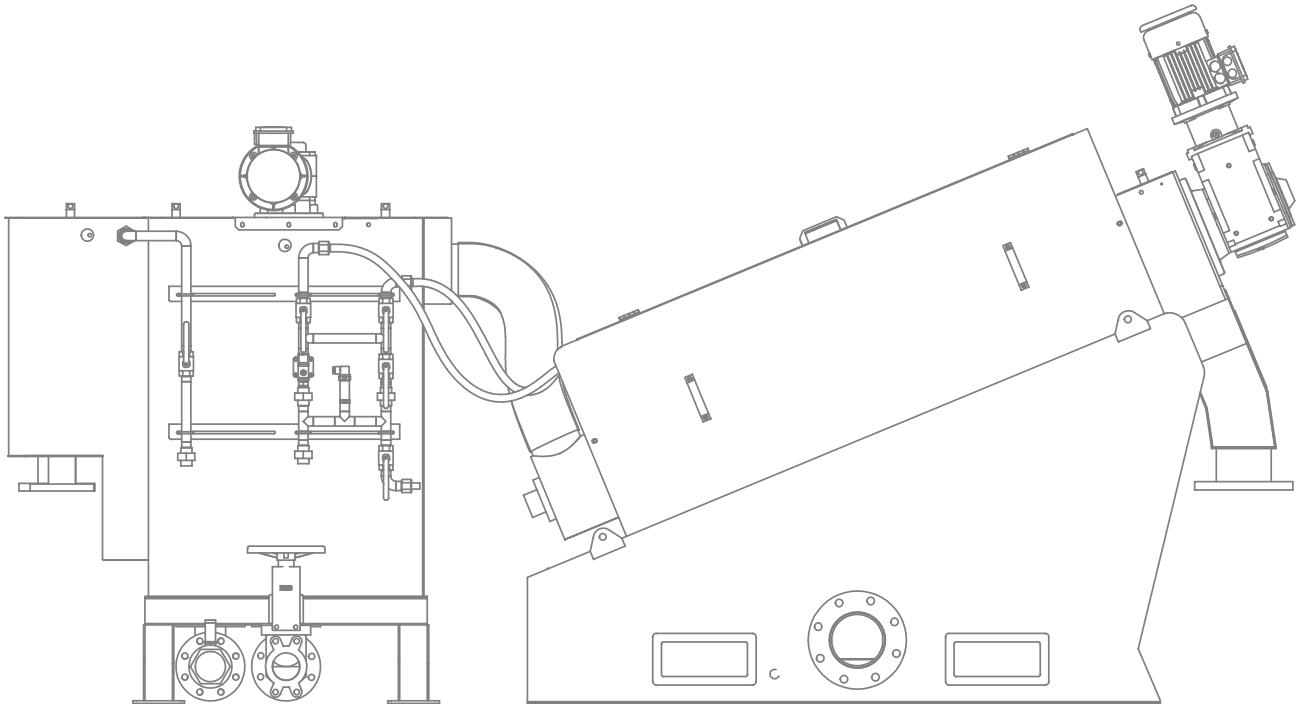
ECO-green solving attitude



Dynamic Sludge Thickener

THE GREEN WAY

SCAE®
ECO-green solving attitude



ZEUS®
dynamic thickener

ZEUS Dynamic Thickener is a compact, automated solution for sludge thickening, designed to achieve the desired concentration level through flexible management of the main process parameters.

402ID ÷ 808ID

DYNAMIC SLUDGE THICKENING UNIT

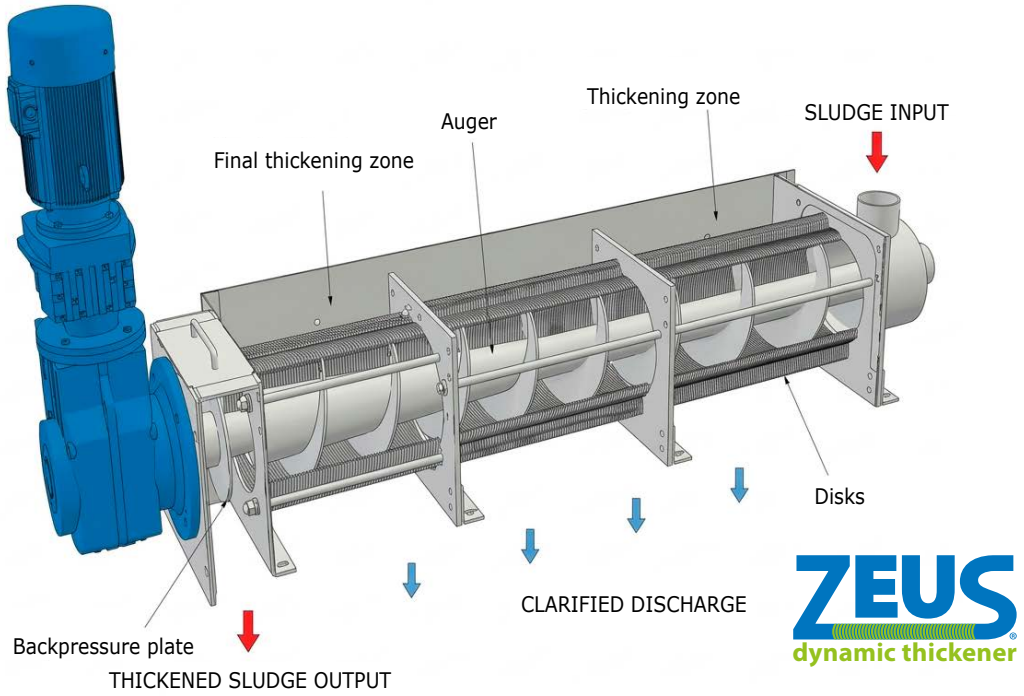
ZEUS Dynamic Thickener uses disc-thickening technology, designed to progressively separate the liquid phase from the sludge through the combined movement of screw augers and discs.



Description

The main section of the **ZEUS Dynamic Thickener** consists of one or more screw augers (up to 4), available in different diameters depending on the machine size (**200, 300, 350 and 400 mm**). Each auger runs inside a channel made up of alternating fixed and moving discs.

The sludge is first conditioned in the **reactor cylinder integrated into the machine**, where it is mixed with polyelectrolyte and flocs are formed. It is then fed into the thickening section, where the screw auger progressively drains the water.
Water is separated through the gaps between the fixed and moving discs, while their relative movement keeps the surfaces clean and limits the risk of clogging.



Operation

The thickening process takes place in several stages:

01. Condizionamento
The sludge is fed into the reactor cylinder and mixed with the polyelectrolyte solution.

02. Pre-thickening
The honeycomb assembly, consisting of a column of discs with adjustable gaps, provides an initial pre-thickening stage inside the reactor.

03. Thickening
The sludge enters the machine's main section, where the screw auger conveys it forward and progressively separates the water.

04. Adjustment
The thickening level is managed by adjusting various process parameters, adapting machine operation to the plant's requirements.







Advantages

- **Compact design** with a small footprint.
- **No risk of clogging** thanks to the relative movement of the discs.
- **No backwash water required thanks** to the self-cleaning disc system.
- **Four degrees of freedom** for controlling the thickening level.
- **High level of automation** with an electrical control panel for the thickening section (optional: control of the thickened sludge transfer pump via inverter).
- **Pre-thickening is integrated** directly into the reactor cylinder by means of a dedicated device known as the "honeycomb" (a column of discs with adjustable gaps), enabling optimal operation even with very low inlet sludge concentrations.
- **No separate sludge/polyelectrolyte mixer** is required thanks to the integrated reactor.

THICKENING LEVEL CONTROL

ZEUS Dynamic Thickener allows the thickening level to be adjusted using four main process parameters:

HONEYCOMB OPENING
Adjusting the disc gaps
in the reactor cylinder makes it possible
to control the pre-thickening stage.

SCREW AUGER SPEED
The screw auger feed speed
determines the retention time and helps
control the thickening process

BACKPRESSURE PLATE
Adjusting the plate opening
makes it possible to regulate
the backpressure inside the machine.

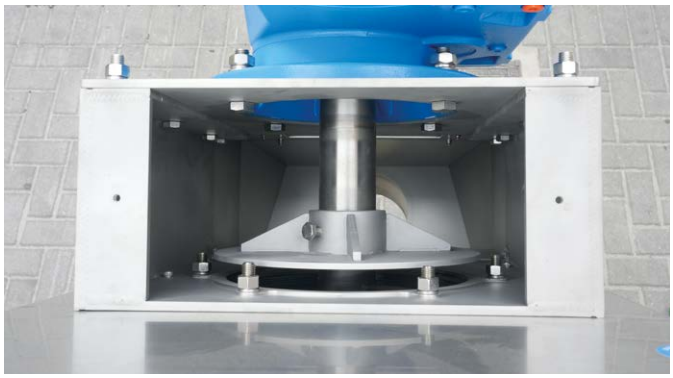
DOSAGE AND FLOCCULATION
Polyelectrolyte dosage
and the degree of flocculation
complete the process adjustment.

This combination of parameters makes it possible **to adapt machine operation** to the type and characteristics of the sludge being treated.
The achievable thickening level depends on the sludge type and quality, process conditions and machine settings, using a suitable polyelectrolyte.

Estimated average polyelectrolyte consumption: 2-4 kg/t TSS

Adjustable thickening range: 3% → 12% *

(*) indicative value based on operating plants, test campaigns, sludge type and quality (SVI, SSV/TSS, etc.), and the specific requirements of the process.





INTEGRATED FLOCCULATION REACTOR

One of the distinctive features of the ZEUS Dynamic Thickener is its integrated reactor cylinder, designed to mix the sludge directly with the polyelectrolyte solution.





The reactor is equipped with an **agitator with inverter-controlled variable speed** and specially designed blades to promote mixing and floc formation. Thanks to the integrated reactor, **a dynamic mixer is not required**, eliminating the need for a separate mixing system.

Inside the reactor cylinder is a special device called the **"honeycomb"**, consisting of a column of discs with adjustable gaps. It provides an initial pre-thickening stage inside the reactor, allowing the process to be controlled before the sludge enters the main thickening section. This configuration enables the machine to operate effectively even when **inlet sludge concentrations are particularly low**.

Visual flocculation monitoring

An inspection hatch allows the degree of flocculation and the consistency of the flocs formed inside the reactor to be observed directly. This makes it possible **to visually check the process** during the sludge-conditioning stage.

The **thickened sludge outlet is flanged** to facilitate connection to an optional thickened sludge transfer pump. The outlet is fitted with a sight glass for visual monitoring of the flow and process, as well as a pressure transducer to ensure correct operation of the thickened sludge transfer system.





Application

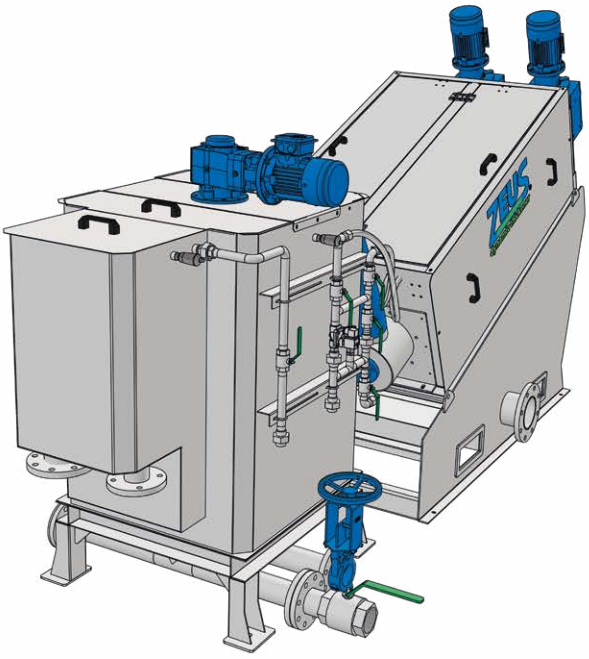
ZEUS Dynamic Thickener is designed for sludge handling and thickening as part of treatment processes, adapting to different sludge characteristics and specific plant requirements. It is particularly suitable for municipal, agri-food, food and beverage, and industrial sectors, where optimising sludge concentration helps improve subsequent treatment stages and reduce the volumes to be handled.

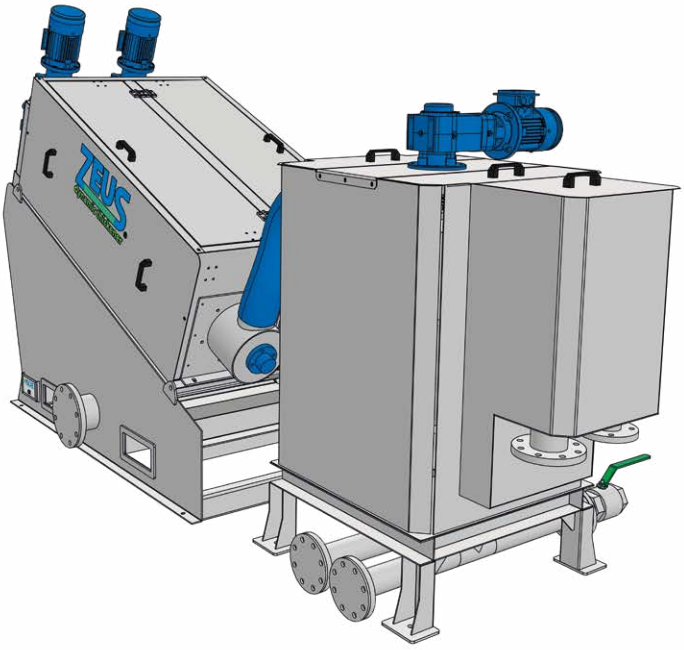
MAIN TECHNICAL FEATURES

Serie	Model	Capacity (mc/h)	Dimension (mm)			Weight (kg)		Flow-rate (lt/h) at 2 bar	Installed power (kW)
		concentration 0,8%	Lenght	Lenght	Height	Dry	In process		
SMALL	ZEUS 402ID	≈8 mc/h	2465	585	1535	400	650	50	0,92
600	ZEUS 602ID	≈25 mc/h	3330	725	1890	860	1250	50	1,65
	ZEUS 604ID	≈50 mc/h	3530	1115	1875	1300	1900	100	2,75
700	ZEUS 704ID	≈80 mc/h	3920	1375	2180	3100	4700	140	5,5
	ZEUS 706ID	≈120 mc/h	4120	1915	2180	3920	5430	210	8,1
	ZEUS 708ID	≈160 mc/h	4685	2755	2180	5700	7710	280	11
800	ZEUS 804ID	≈100 mc/h	3920	1375	2180	3300	4900	160	5,5
	ZEUS 806ID	≈150 mc/h	4120	1915	2180	4350	6750	240	8,1
	ZEUS 808ID	≈200 mc/h	4685	2755	2180	6100	8960	320	11

Note

- The flow rates calculated above are indicative, as they may vary depending on the characteristics of the sludge.
- There is no specific maximum limit for the inlet sludge concentration, provided the sludge remains fluid and pumpable.
- The data provided are indicative and non-binding. They must be verified with our Technical Department for each specific process application.







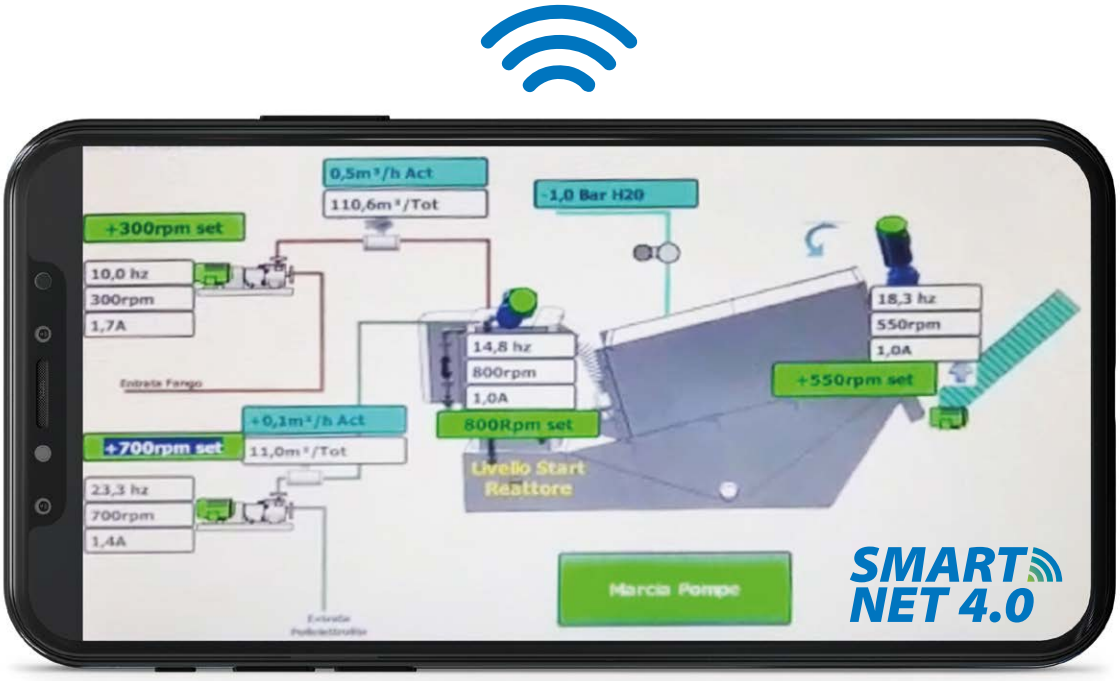
SCAE®
ECO-green solving attitude

REMOTE CONTROL (OPTIONAL)

SCAE Smart Net 4.0

The Smart Net 4.0 Remote Control System has been specially developed by SCAE to take advantage of the legal benefits of Industry 4.0. With this service, the mechanical and electrical functionality of the dynamic thickener is **monitored 24/7**.
The customer can check anywhere and at any time the correct operation of the machinery by receiving real-time maintenance notifications and those of any anomalies. In addition, thanks to Telecontrol, **SCAE Service** can make preventive diagnoses remotely, can provide telephone assistance quickly with a greater degree of effectiveness as well as propose process optimizations for the benefit of the customer.
Telecontrol is a guarantee of long press life, maintenance cost savings and reduced downtime.

App



Benefits

1. Remote viewing of operating parameters.
2. Optimization of preventive component replacements, performed only when strictly necessary.
3. Ability to diagnose (and in many cases solve) problems remotely with SCAE Service, without the need of direct intervention in the field.
4. Notifications of maintenance and any anomalies via e-mail and/or via App.
5. Ability to archive operating data and configuration parameters of the dynamic thickener.

Functioning



SCAE Smart Net 4.0

(1) The system consists of a **router built into the ZEUS switchboard** that via wired LAN or wifi connection or a data SIM transmits in real time - with high standards of security and reliability - to the SCAE Cloud which in turn stores all the data acquired.

(2) The **SCAE Service** can interact with the system remotely to provide assistance, diagnose anomalies and propose the most suitable maintenance and optimizations.

(3) The Customer, through dedicated account, can access the cloud to **view real-time values of the system**, using any device connected to the internet (PC, laptop, tablet, smartphone) and receive alarm and maintenance notifications via e-mail and notices on App.

SCAE reserves the right to include updated drawings or changes to the materials shown without prior notice or obligation. Design features, construction materials and dimensional data are given for "informational" purposes only and may be ratified in writing by SCAE if required. Please contact your local agents for product availability. For more information, please visit scae.eco



SCAE s.r.l.
Via Mattei 7/B
36031 Dueville (VI) I Italy
T. +39 0444 360533
info@scae.eco

Azienda con sistema di gestione per la qualità, l'ambiente, la sicurezza e la salute dei lavoratori, certificato da TÜV Italia S.r.l. secondo le rispettive norme ISO 9001, ISO 14001 e ISO 45001.

www.scae.eco