01 / CHOOSE THE DUTY

Separate the water. Handle the sludge.

A practical guide for industry and engineering companies. Compare the required outcome before selecting equipment.

Objective	DAF	Oval discs	Screw press
Primary duty	Clarify and separate floatable material.	Screen, thicken or dewater according to configuration.	Drain and compress conditioned sludge.
Select against	Flow, loading, area and available air.	Duty, solids structure, flow and loading.	kg DS/h, m³/h, net hours and drainage.
Check outlets	Clarified water, float and bottom solids.	Separated liquid and retained solids.	Filtrate, cake and solids capture.

A treatment line may need more than one technology

DAF clarifies, oval discs provide mechanical separation and a screw press removes water from sludge. Define the destinations of both separated liquid and residue.

02 / DAF

Define the water and the float destination.

Assess outlet quality on the actual stream; dissolved COD and salts require their own evaluation.

Design basis

- Average and peak flow
- Suspended solids and grease
- Total and filtered COD
- pH and temperature
- Hours and cleaning events
- Target quality



01 Test

Distinguish jar testing from flotation testing. Agree sample, loading and acceptance criteria.

02 Integrate

Include saturation, recycle, extraction, storage and filtrate return.

03 Compare

Measure quality, consumptions and sludge production within the same supply boundary.

Complete pathway: DAF guides

03 / SCREW PRESS / BALANCE

Size the load. Calculate the cake.

Illustrative example, not predicted performance: 100 m³/d, 10 g/L, 8 h/d and assumed capture of 95%.

Quantity	Calculation	Result
Feed dry mass	100 × 10	1,000 kg DS/d
Operating feed flow	100 / 8	12.5 m³/h
Selection dry-solids loading	1,000 / 8	125 kg DS/h
Captured dry mass	1,000 × 0.95	950 kg DS/d
Cake at 20% dry solids	950 / 0.20 / 1,000	4.75 t/d
Uncaptured dry mass	1,000 - 950	50 kg DS/d

g/L = kg/m³. Converting mass % to kg/m³ requires density. The example excludes conditioner-added solids and does not calculate filtrate volume.

EQUAL CAPTURE

Cake at 15%

6.33 t/d

Cake at 20%

4.75 t/d

25% less wet mass when changing from 15% to 20% cake solids, with equal captured dry mass.

04 / OVAL DISCS / WAVE SEPARATOR

Choose the duty. Check three outcomes.

An oval-disc separator is distinct from a disc-stack centrifuge. Configuration defines the duty.

Duty	Objective	What to check
Screen	Remove the retainable fraction.	Fibre or particle capture, flow and discharge.
Thicken	Increase concentration while allowing transfer.	Concentration, kg DS/h, pumpability and separated liquid.
Dewater	Remove additional water with a compression configuration.	Capture, cake solids, continuity and cake handling.

Gap alone does not define capture

A 1 mm reference opening is geometry. Fines, floc and drainage need testing; some streams require polymer.

Throughput, capture and dryness

Change one variable at a time within the equipment manual. Drier cake does not establish better separation if filtrate solids increase.

Guides to comparing and testing oval discs

05 / SCOPE / ACCEPTANCE

Compare the complete treatment line.

Mark each item as included, optional or supplied by the customer. Agree testing before supply.

Supply block	Items to define
Feed and conditioning	Pumping, storage, mixing, pH, preparation and dosing.
Separation	Equipment, materials, condition-specific capacity and sampling points.
Outlets and utilities	Float, filtrate, cake, wash water, air, electricity and connections.
Integration and delivery	Controls, signals, transport, unloading, installation, startup and training.

PROCESS ACCEPTANCE

Representative feed + stable operation + simultaneous balances. Record loading, capture, quality, cake solids and consumptions. A functional FAT does not replace actual-sludge testing.

REFERENCE DOCUMENTATION

SUEZ Water Handbook - Microbubble flotation

US EPA - Dewatering Municipal Wastewater Sludges (1987)

Kendensha - KDS Separator, technology principles

Neptuno selection framework and calculations. Sources support principles, not transferred guarantees, references or certifications.

06 / PROJECT DATA SHEET

Prepare your technical enquiry.

Editable data sheet. Save the completed PDF and email it with analysis, photographs or drawings to comercial@neptunoes.com.

Company and contact

Email and telephone

Water or sludge origin

Average / peak flow / daily volume

TSS or TS, units and variation

Net hours / operating days

pH, temperature, grease and COD

Separation and quality objectives

Chemicals and available trial results

Liquid and solid destinations

Available utilities and controls

Space, access and required timeframe

This form does not send information automatically. Avoid unnecessary personal data. Scope, materials, performance and delivery are confirmed in a project-specific proposal.