

PRODUCT DATASHEET

Tough-to-Treat Process Water and Wastewater Packages

Four complementary process families | clarification, nutrient removal and tertiary polishing

DATASHEET NO.

DS-YS-WTPP-R03

ENGINEERING BASIS

HRC

HIGH-RATE CLARIFICATION

Chemical conditioning and lamella separation for compact turbidity and phosphorus-removal duties.

MC

MAGNETIC COAGULATION

Magnetic seed accelerates separation where the confirmed water matrix supports recovery and reuse.

DF

DENITRIFICATION FILTRATION

Anoxic biofilm and filtration combine nitrate removal with suspended-solids polishing.

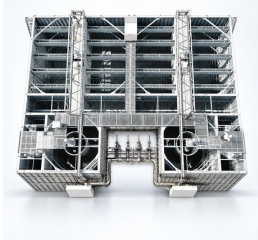
SC

SOLIDS-CONTACT CLARIFICATION

Flocculation, clarification and sludge contact are integrated for variable solids-loading duties.

CATEGORY OVERVIEW

YORA tough-to-treat process-water and wastewater packages provide a focused route from feed characterization to a compact, integrated treatment stage. The four families below can be applied individually or combined within a wider treatment train for industrial process water, difficult wastewater, municipal polishing and plant upgrades. This overview supports preliminary technology screening; final sizing and performance guarantees are established from confirmed design flows, water analysis, temperature, chemicals, solids characteristics and required outlet quality.



HIGH-RATE CLARIFIER

Lamella separation with concentrated sludge recycle



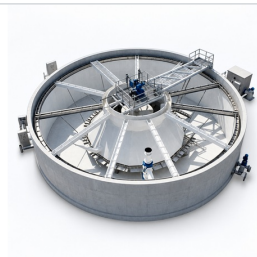
MAGNETIC COAGULATION

Magnetic ballast recovery and high-rate solids separation



DENITRIFICATION FILTER

Biological nitrogen removal combined with deep-bed filtration



SOLIDS-CONTACT CLARIFIER

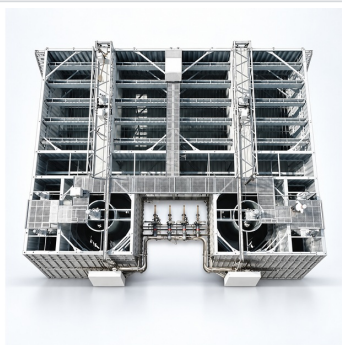
Mixing, flocculation and clarification in one basin

Illustrative, unbranded equipment arrangements. Final geometry, finish, connections and access provisions are project specific.

PRODUCT DATASHEET

Product Family Overview

Basic technology, selection range and typical applications



HRC

High-Rate Clarifier

PROCESS

Chemical conditioning, mechanical flocculation, concentrated sludge recycle and inclined plate/tube separation produce dense floc and compact clarification.

INDICATIVE SELECTION

1,000-20,000 m³/d standard sizes; 6-13 m³/(m².h) surface loading. Indicative effluent: SS 5 mg/L, turbidity <1 NTU and phosphorus removal >90%.

TYPICAL APPLICATIONS

Municipal and industrial wastewater, surface-water clarification and tertiary phosphorus removal.



MC

Magnetic Coagulation

PROCESS

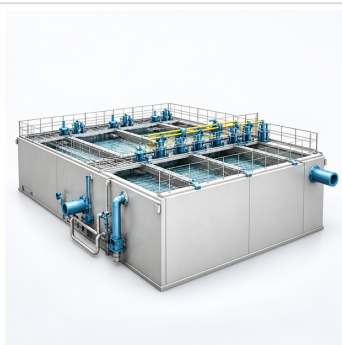
Recoverable magnetic powder attaches to floc, increases its apparent density and accelerates separation; the magnetic material is recovered for reuse.

INDICATIVE SELECTION

500-20,000 m³/d standard sizes; surface loading <=25 m/h. Indicative effluent: turbidity <=5 NTU, SS <=10 mg/L and TP <=0.5 mg/L within the stated feed envelope.

TYPICAL APPLICATIONS

Plant upgrades, industrial wastewater, surface-water restoration, stormwater response and potable-water pretreatment.



DF

Denitrification Filter

PROCESS

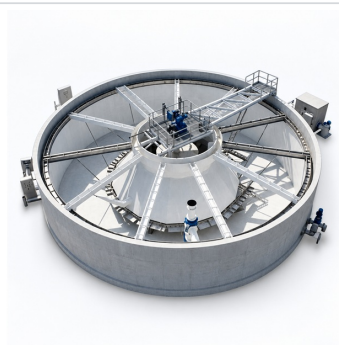
Anoxic biofilm on deep-bed media converts nitrate from already nitrified effluent to nitrogen gas while the same media retains suspended solids; periodic air/water backwashing restores capacity.

INDICATIVE SELECTION

1,000-30,000 m³/d standard sizes; parallel modules available. Indicative effluent: TN <10 mg/L, with <5 mg/L achievable for stringent duty, and SS <10 mg/L, subject to the required nitrified feed and process conditions.

TYPICAL APPLICATIONS

Municipal and industrial tertiary treatment, total-nitrogen polishing, eutrophication control and water reuse.



SC

Solids-Contact Clarifier

PROCESS

Rapid mixing with returned sludge, two-stage reaction, guided flow and gravity separation are integrated in one circular basin with optional mechanical sludge scraping.

INDICATIVE SELECTION

200-1,800 m³/h standard sizes; 0.8-1.5 m³/(m².h) surface loading; 1.5-2.5 h hydraulic retention; listed return / circulation basis typically 3-5 times influent flow, finalized by duty.

TYPICAL APPLICATIONS

Drinking-water and industrial-water clarification, especially where feed solids vary or higher solids loading must be managed.

All stated capacities and treatment results are preliminary selection values, not stand-alone guarantees. Additional sizes are available on request.

PRODUCT DATASHEET

Technology Selection & Performance Basis

Side-by-side preliminary comparison

INDICATIVE SELECTION MATRIX

SELECTION POINT	HRC	MC	DF	SC
Primary duty	High-rate clarification	Ultra-high-rate clarification	TN and SS polishing	Contact clarification
Core mechanism	Sludge recycle + lamella	Magnetic ballast + recovery	Anoxic biofilm + filtration	Returned-solids contact
Standard capacity	1,000-20,000 m ³ /d	500-20,000 m ³ /d	1,000-30,000 m ³ /d	200-1,800 m ³ /h
Hydraulic basis	6-13 m ³ /(m ² .h)	<=25 m/h	Media / loading selected by duty	0.8-1.5 m ³ /(m ² .h)
Separation aid	Coagulant / flocculant	Magnetic powder + chemicals	Carbon source as required	Coagulant + returned sludge
Cleaning / sludge	External thickening and recycle	Magnetic recovery and sludge discharge	Air and water backwash	Scraper optional by solids duty
Engineering distinction	Compact, low-turbidity clarification	Fast settling and very compact footprint for suitable duties	Two processes in one filter	Robust response to feed variation

REPRESENTATIVE PERFORMANCE ENVELOPES

FAMILY	REPRESENTATIVE DESIGN / OUTLET BASIS	IMPORTANT QUALIFIER
High-Rate Clarifier	Listed effluent SS 5 mg/L; turbidity <1 NTU; phosphorus removal >90%; listed 50-70% footprint reduction versus the referenced conventional arrangement	Subject to coagulation testing, feed solids, phosphorus form, temperature, hydraulic loading and confirmed comparison basis
Magnetic Coagulation	Listed feed up to 2,000 NTU, 2,500 mg/L SS and 10 mg/L TP; outlet <=5 NTU, <=10 mg/L SS and <=0.5 mg/L TP	Applicable only within the confirmed feed envelope and subject to treatability testing, chemical optimization, solids flux and magnetic-media recovery
Denitrification Filter	TN <10 mg/L and SS <10 mg/L; TN <5 mg/L can be targeted for stringent applications	Requires nitrified feed; depends on nitrate / organic-N loading, low DO, carbon, temperature, alkalinity, filtration rate and backwash strategy
Solids-Contact Clarifier	Without scraper: feed SS generally <=1,000 mg/L; with scraper: typically 1,000-5,000 mg/L; higher short-duration peaks may be assessed	Confirm solids settleability, sludge return, mixer duty and scraper requirement

HOW TO CHOOSE

START WITH THE PROCESS OBJECTIVE	THEN CONFIRM THE DESIGN ENVELOPE
› Compact turbidity / phosphorus polishing: High-Rate Clarifier › Maximum clarification rate and minimal footprint: Magnetic Coagulation › Total-nitrogen reduction with simultaneous solids polishing: Denitrification Filter › Robust raw-water clarification with solids contact: Solids-Contact Clarifier	› Average, peak and instantaneous hydraulic flow › TSS, turbidity, particle size, nutrients and water chemistry › Temperature, alkalinity, salinity and biological treatability › Required outlet quality, redundancy and downstream process sensitivity

PRODUCT DATASHEET

Configuration, Scope & Final Selection

Project-specific engineering and supply options

TYPICAL CONFIGURATION

ITEM	AVAILABLE PROJECT CONFIGURATION
Process vessel / basin	Rectangular modular, skid-mounted or circular arrangement according to selected family and capacity
Materials of construction	Selected for water chemistry and corrosion environment; options may include SS304, SS316, coated carbon steel and suitable non-metallic wetted components
Hydraulics	Inlet distribution, outlet launders / headers, isolation, overflow, drain, sludge and backwash connections as applicable
Chemical systems	Coagulant, flocculant, pH correction, carbon source and magnetic-media handling according to process duty
Mechanical equipment	Mixers, flocculators, sludge pumps / scraper, magnetic recovery, air scour and backwash equipment as applicable
Access and safety	Platforms, walkways, handrails, ladders, guards, lifting points and safe maintenance clearances
Electrical and control	Local control panel, PLC/HMI, motor protection, interlocks, alarms and remote communication options
Instrumentation	Flow, level, turbidity, suspended solids, nitrate, phosphorus or other online monitoring as required

STANDARD SUPPLY SCOPE	EXTRA OPTIONS
› Selected process equipment and internal assemblies › Drive units, process piping connections and supports › Local electrical controls for supplied equipment › General arrangement and equipment documentation › Factory inspection and quality documentation	› Chemical preparation, dosing and storage packages › Feed, recycle, sludge and backwash pump packages › Online analyzers, SCADA and remote monitoring › Walkways, platforms, enclosure and thermal insulation › Installation supervision, commissioning and operator training

TYPICAL APPLICATIONS

MUNICIPAL & ENVIRONMENTAL	INDUSTRIAL & EMERGENCY
› Drinking-water and surface-water clarification › Wastewater plant upgrading and tertiary polishing › Phosphorus and total-nitrogen reduction › Reclaimed-water reuse and receiving-water protection	› Industrial process-water and wastewater treatment › Pretreatment before membranes or advanced polishing › River, lake, landscape-water and stormwater treatment › Temporary, expansion and constrained-footprint projects

INFORMATION REQUIRED FOR FINAL SELECTION

1 DESIGN FLOW	2 WATER ANALYSIS	3 OUTLET TARGET	4 SITE BASIS
Average, peak, minimum and operating schedule	TSS, turbidity, COD, nutrients, pH, temperature and relevant chemistry	Required limits, reuse class and downstream treatment sensitivity	Footprint, hydraulic profile, utilities, redundancy and material requirements

Published process claims and capacity ranges form the preliminary selection basis. Final family, number of units, dimensions, hydraulic and solids loading, chemicals, recycle / circulation definition, power demand, sludge production, accessories, applicable standards and guaranteed outlet quality are confirmed by project-specific treatability/design work and client technical specifications. Non-standard additions are identified as Extra Options.