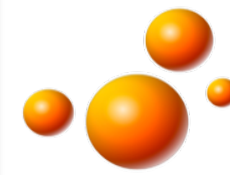


WASTEWATER TREATMENT SYSTEMS

LAMELLA CLARIFIER SYSTEM



United International
HYDRO ENGINEERING TECHNOLOGIES



GENERAL DESCRIPTION

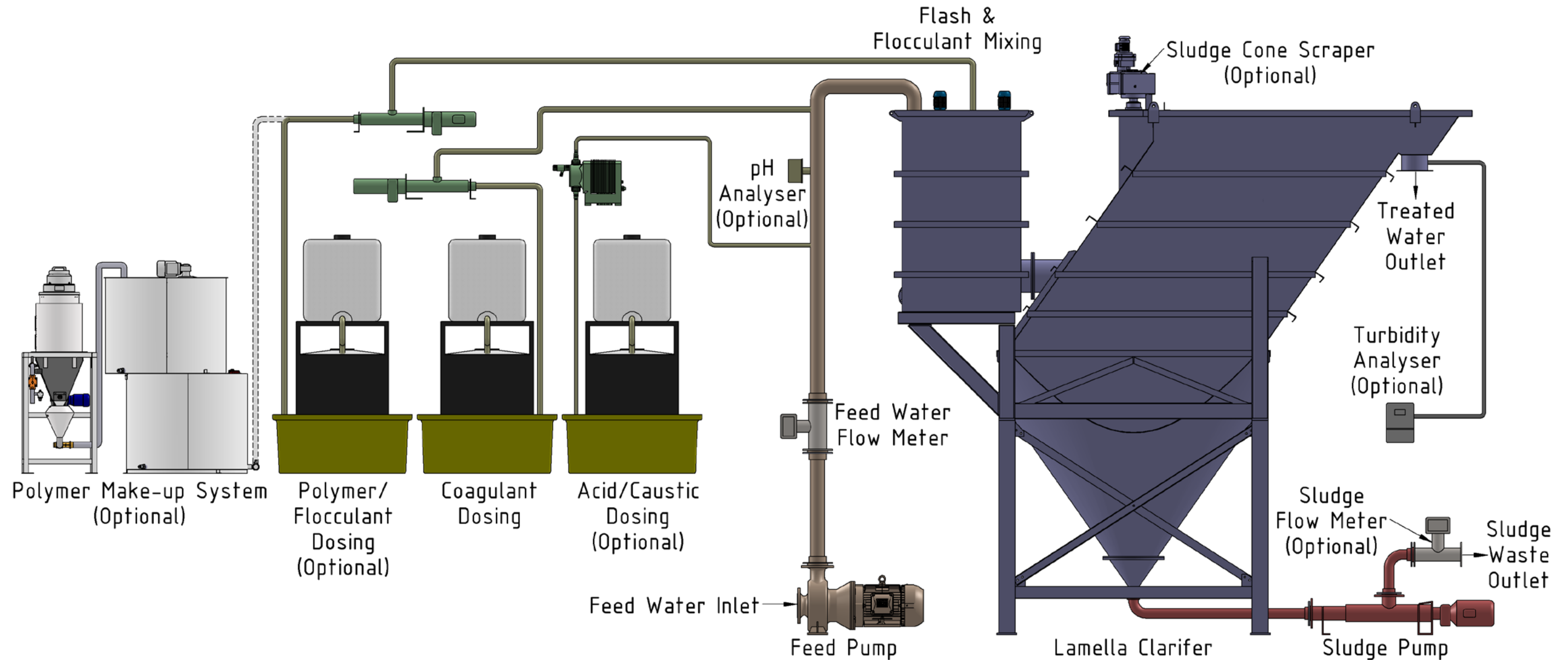
Lamella Clarifier by **United International Hydro Engineering Technologies (UIHET)** are designed to remove high concentrations of suspended solids from water, where the solids have a specific gravity >1.0 . They are ideal for applications where the solids loading is >30 mg/L, particle sizing is fine, or for removal of dissolved metals via hydroxide precipitation. The standard treatment process includes coagulant dosing and mixing, followed by solids separation with automated sludge wasting. Additional treatment steps, such as pH correction for precipitation of heavy metals, and various optional equipment is available to suit project specific requirements. **UIHET** Lamella Clarifiers can be integrated into a treatment process, or supplied as a stand-alone system.

WORKING PRINCIPLE

The principle of shallow depth sedimentation has been extended to the design of a parallel plate system. The standard treatment process starts with coagulant dosing with flash mixing, followed by Flocculant dosing with a Flocculator. This chemical dosing and mixing process converts the suspended solids into larger clusters and flocks, which results in easier sedimentation and improved settling process. Lamella Clarifier separates settleable solids (particles) from liquids and is used for instance in the treatment of process water and waste water. Basically all solids that sediment in a given time, can be separated easily and economically with the lamella separator. The wastewater enters the Lamella Clarifier from the inlet pipe, and the water flows between lamella plates to the top of tank, where it overflows the v-notch weirs into clarified water collection flumes. The solids fall to the plate surface, where they slide by gravity down to sludge collection hopper.



SYSTEM COMPONENTS



Lamella Clarifier is a compact and inclined plate type of clarifier which is used to clarify the water & waste water which has higher suspended & colloidal particles. Lamella clarifier performance can be improved by the addition of flocculants and coagulants as shown in the figure above. These chemicals optimize the settling process and cause a higher purity of overflow water by ensuring all smaller solids are settled into the sludge underflow. The Lamella Clarifier main body material of construction (MOC) can be Carbon Steel - Epoxy or polyurethane Coating, Fibre-reinforced polymer (FRP), or Stainless Steel (Super Duplex).

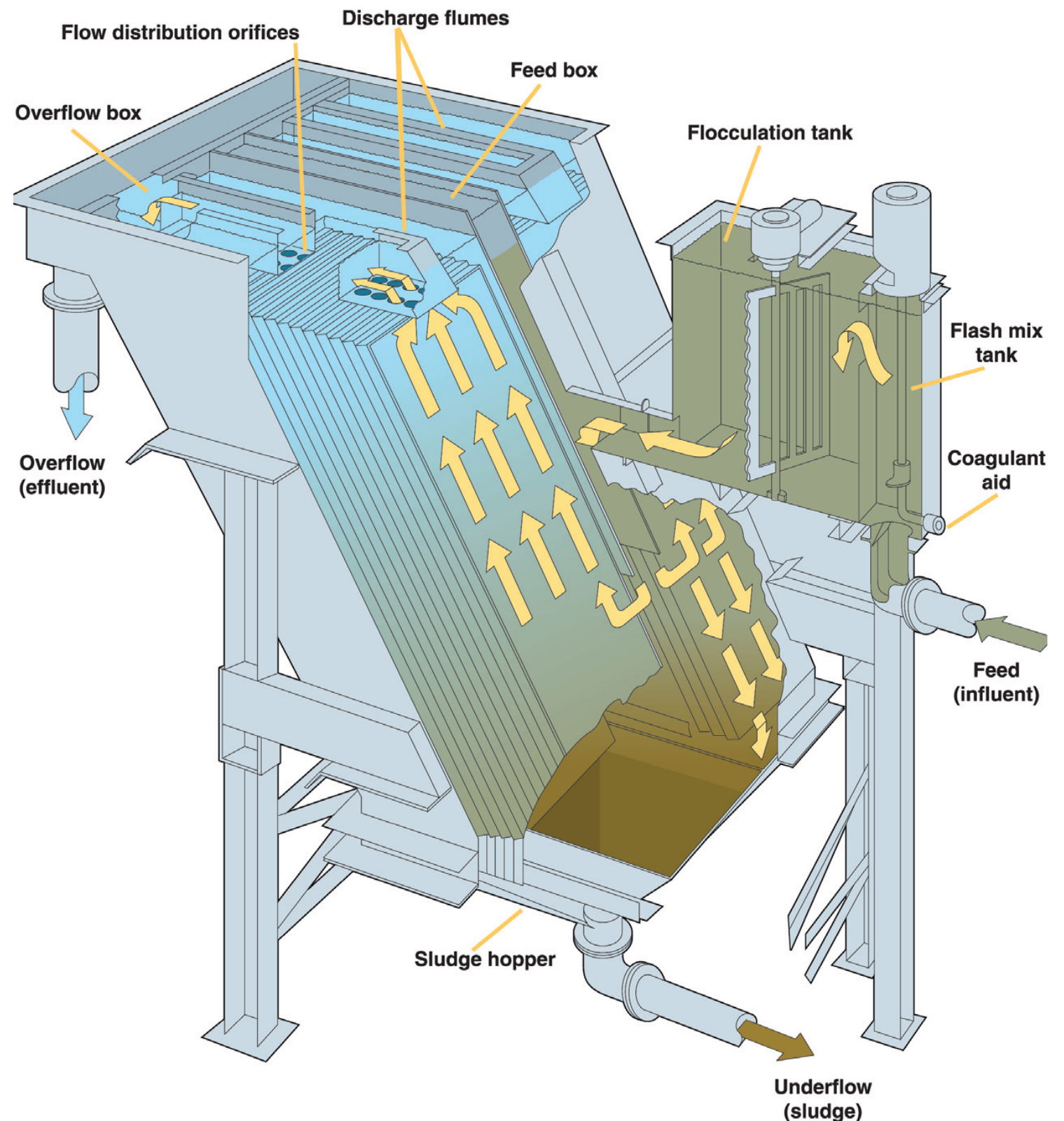
CLARIFIER COMPONENTS

A further advantage of the lamella clarifier is its distinct absence of mechanical, moving parts. The system therefore requires no energy input except for the influent pump and has a much lower propensity for mechanical failure than other clarifiers. This advantage extends to safety considerations when operating the plant. The absence of mechanical results in a safer working environment, with less possibility for injury. The wastewater will enter the clarifier from the middle after the flocculation mixing in the flocculation tank, and treated water will flow-out of the clarifier from the top, while the sludge will accumulate in the bottom (Sludge Hopper) as shown in the figure.

The main advantage of lamella clarifiers over other clarifying systems is the large effective settling area caused by the use of inclined plates, which improves the operating conditions of the clarifiers in a number of ways. The unit is more compact usually requiring only 65-80 % of the area of clarifiers operating without inclined plates. Therefore, where site footprint constraints are of concern a lamella clarifier system is preferred.

Plate Material of Construction Options

- Carbon Steel - Epoxy or polyurethane Coating
- Stainless Steel - 316
- Stainless Steel - Super Duplex
- Fibre-reinforced polymer (FRP)

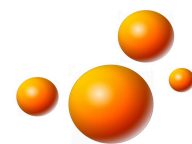


STANDARD SPECIFICATIONS

Parameter	Units	LC-040	LC-060	LC-090	LC-120	LC-150	LC-250	LC-300
Projected effective setting area (50mm plate spacing)	m ²	40	60	90	120	150	250	300
Feed water flow rate (0.5 ~ 1.0 m/hr settling rate)	m ³ /hr	20 ~ 40	30 ~ 60	45 ~ 90	60 ~ 120	75 ~ 150	125 ~ 250	150 ~ 300
Typical sludge flow rate (solids settling volume <10%)	m ³ /hr	0.4 ~ 4	0.6 ~ 6	0.9 ~ 9	1.2 ~ 12	1.5 ~ 15	2.5 ~ 25	3 ~ 30
Treated water recovery rate (solids settling volume <10%)	%	90 ~ 98 (varies according to feed water quality / solids settling volume)						
Treated water turbidity	NTU	1 ~ 10 (varies according to feed water quality / system design)						
Typical coagulant dose rate (0.05~0.2 mL/L dose rate)	L/hr	1~8	1.5~12	2.3~18	3~24	3.8~30	6.3~50	7.5~60
Polymer make-up system capacity (0.50% solution and 60 minutes maturing time - Optional)	kg/hr	0.97 / 1.75 / 3.93 / 5.05 / 7.53 / 9.68 / 12.7 / 15.4						
Power supply	-	AC 380~415 V, 3 Phase, 50/60Hz						
Power consumption	Flash mixer	kW	0.37	0.37	0.37	0.37	0.37	0.37
	Flocc mixer	kW	0.37	0.37	0.37	0.37	0.37	0.37
	Coagulant dosing	kW	0.024	0.024	0.024	0.024	0.024	0.024
	Feed pump (Optional)	kW	2.2	4	5.5	7.5	7.5	10.22
	Sludge pump (Optional)	kW	1.5	2.2	3	3	5.5	7.5
	Sludge scraper (Optional)	kW	0.37	0.37	0.37	0.18	0.18	0.18
	Polymer make-up & dosing system (Optional)	kW	2.4 / 2.4 / 2.98 / 2.98 / 3.33 / 4.08 / 4.08 / 4.08					

WHY CHOOSE UNITED ENGINEERING LAMELLA SETTLERS SYSTEM?

- Smaller foot print than conventional settling clarifiers
- Stainless tank delivered in one piece to reduce site construction time
- Can be supplied with flocculation tank & mixer
- Reliable and cost-effective
- Easy Access for Inspections & Replacement
- Customizable dimension and nozzles sizes/ numbers to suit the client specific needs
- The system requires no energy input except for the influent pump and has a much lower propensity for mechanical failure than other clarifiers



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www.uihydro.com eng@uihydro.com