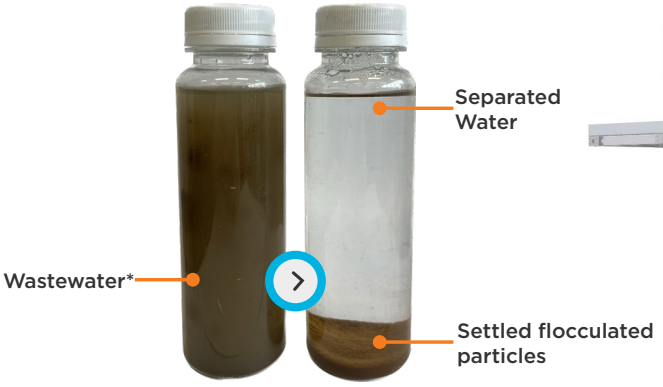
Stage Three Water Treatment

ElectroClear System

Advanced Chemical Free Water Treatment Technology for Sustainable Vegetable Packhouses.

Potato Washline • Carrot Washline • Other Root Vegetable Washlines • Fruit Washline • Industrial and more



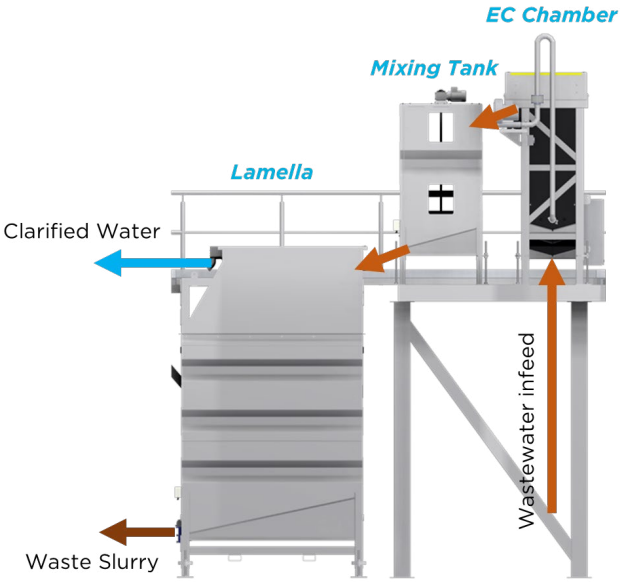
Before and After Water Treatment

**Wastewater has passed though the Micron Filter and Mud Tower, free of organic fibres, sand and heavy dirt particles.*

General information

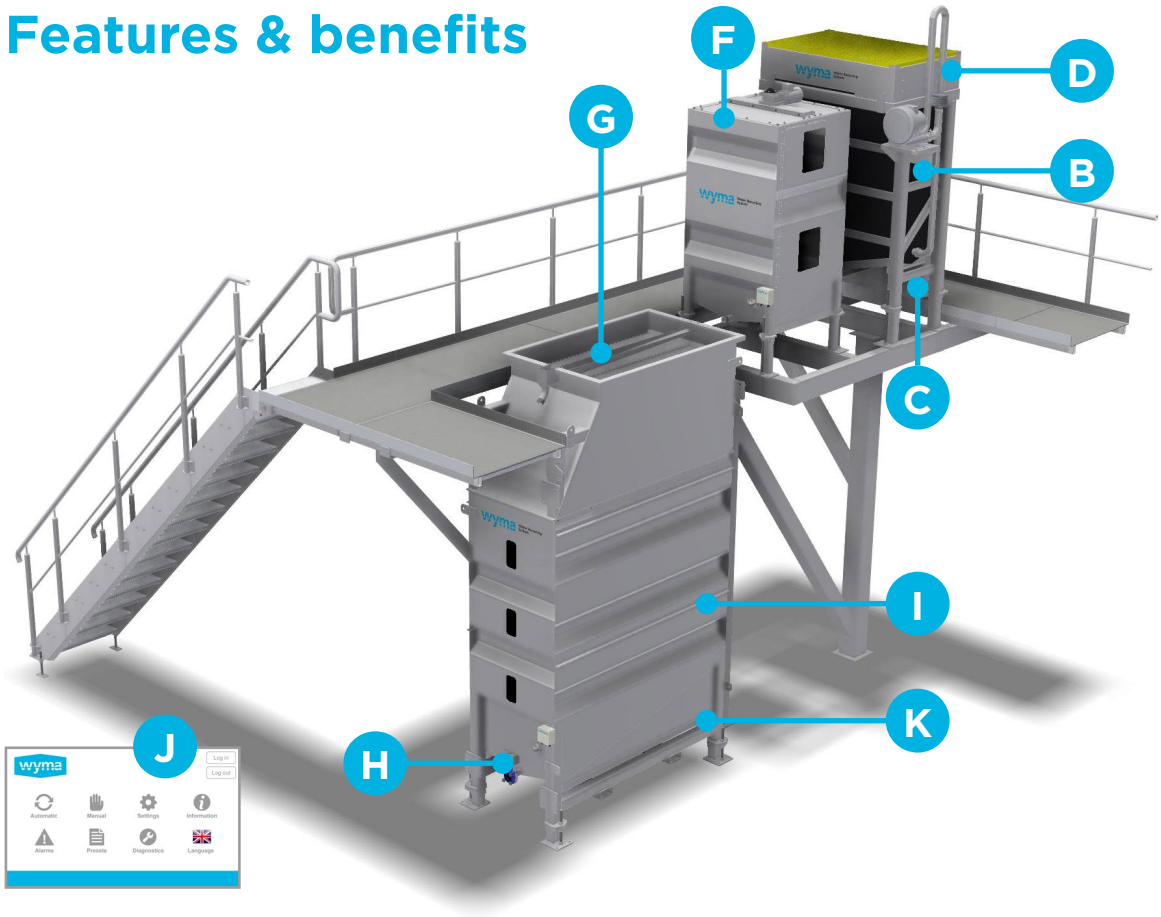
Our ElectroClear system is an advanced water treatment technology designed for removing fine particles from wastewater. It consists of an Electrocoagulation Chamber (EC Chamber), Mixing Tank and Lamella. The ElectroClear System is the third and final stage of Wyma's water treatment system, which comes after the water has been passed through a Micron Filter to remove organics and large sand particles and our Mud Tower to remove fine sands and silt.

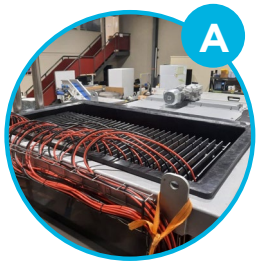
Electrocoagulation is a process which uses only electricity and sacrificial metal plates to treat wastewater. The EC chamber consists of steel electrodes which have a direct current applied to them. This creates an electrolysis reaction, releasing metal ions into the wastewater which then interact with the suspended particles, causing them to floc together, producing large particles which can then be easily separated. The separation of these flocs is achieved by mixing the treated wastewater and then allowing the heavy particles to settle out in the Lamella clarifier . The process is highly effective, removing the vast majority of suspended solids and greatly reducing other contaminants, such as E-Coli, Phosphorous, Nitrates, BOD and COD.

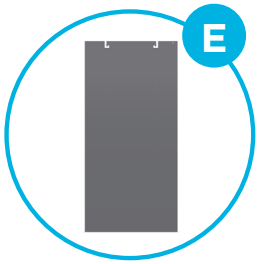


The ElectroClear System is a compact and robust piece of equipment, designed for easy installation and operation. It has low maintenance requirements, making it a cost-effective solution for wastewater treatment. The settings of the EC Chamber can be customized to suit the specific needs of different wastewater conditions, ensuring optimal performance in each case. By using this technology, customers can reduce their environmental impact and water usage while meeting regulatory standards for wastewater discharge.

Features & benefits







A	EC Plate Pack	Iron electrodes are used in the electrocoagulation process which are inexpensive and more sustainable.
B	Insulated Tank	A specially designed holding chamber which houses the EC plate pack and the water being treated.
C	Power Distribution	Robust power supply, delivering user specified current to achieve desired treatment level and providing even plate wear, maximising plate life.
D	Self-Cleaning	Automated cleaning system as standard to clean the plates during operation ensuring optimal performance and maximising plate life.
E	Single Electrode	Designed to maximise plate usage and in built lifting hooks for easy maintenance.
F	Variable Mixing	Paddle design and shaft speed can be customized, interchangeable and varied to suit mixing requirements.
G	Lamella Plate Pack	Designed to accelerate the settling process allowing higher flow rates through the settling tank with a smaller footprint.
H	Single Waste Removal Port	No separate foam or floating particle removal process/equipment required. All waste removed through one drain valve in Lamella.
I	Large Storage Capacity	Allowing for storage and thickening of waste slurry prior to our patent pending dewatering process.
J	Automation	A control panel for setting and monitoring the current, voltage and other water properties.
K	Durable Materials	All material used within the three pieces of equipment are tried and tested to ensure they are resistant to corrosion and require minimal maintenance for cost effective operation.
	Optional Inline Sensors	To monitor influent and treated water properties, allowing for educated decisions on EC operating parameters.
	Regulatory Compliance	Helps meet regulatory standards for wastewater discharge.
	Sustainability Benefits	Significantly reduces water usage and environmental impact.
	Advanced Technology	Advanced electrocoagulation technology for highly effective water treatment across a range of water properties.
	Cost Effective	Increases operational efficiency and cost savings in the long term.

Technical Information

		EC Chamber GNTE	Mixing Tank GNTM	Lamella GNTL
Dimensions (H x L x W)		2852 mm x 2066 mm x 1340 mm (112" x 81" x 53")	2207 mm x 1125 mm x 1151 mm (87" x 44" x 45")	4004 mm x 2304 mm x 1191 mm (158" x 91" x 47")
Weight		3676 kg empty, 4470 kg full (8104 lbs empty, 9855 lbs full)	298 kg empty, 1300 kg full (657 lbs empty, 2866 lbs full)	2158 kg empty, 8800 kg full (4758 lbs empty, 19400 lbs full)
Motor sizes		1.5 kW (air sparge) + 50 kW DC Power Supply (actual sizing site specific)	0.25 kW	N/A
Noise level		65 dB (approx.)	50 dB (approx.)	50 dB (approx.)
Capacity		3.6 m^3/hr (15.9 gpm) This is the capacity to treat the water to levels specified in the Lab Results table on the following page.		
Expected Total Suspended Solids (TSS) concentration		Typical concentrations 0.03 – 2 % (300g/m^3 – 20,000g/m^3) Can handle higher concentrations however, it may result in a slightly reduced flow rate.		
Expected Total Suspended Solids (TSS) removal.		95.4 – 99.9%* **subject to specific site conditions and incoming water concentrations*		
Solids discharge requirement		Waste slurry to discharge to dewatering system. Strongly recommended to use Wyma's System. Currently in patent process.		
Control system		• Automatic operation. No manual intervention required. • Individual motor control for motors with local disconnect. • Multiple systems can be linked with a common PLC control system.		
Control valves		Pneumatic ball valve	Proportional control valve	Pneumatic ball valve
Operating temperature range (process water)		5 – 99 deg C. Will not operate well in freezing temperatures.		
Construction	**Tank**	High Density Polyethylene (HDPE)	Stainless Steel or Mild Steel (Zinc arc spray & paint)	Stainless Steel or Mild Steel (Zinc arc spray & paint)
	Frame	Mild Steel (Zinc arc spray & paint)		
	Plate Pack	Mild Steel	N/A	Stainless Steel

Site Requirements

Installation equipment	5 ton forklift, telehandler, or crane									
Operator required?	No									
Power supply	Three-phase electrical supply is needed with neutral									
Air supply	6 bar air supply is needed for pneumatic dump valves.									
Supply requirements (approx.) *Excludes pumps to and from equipment*	**EC Chamber**			**Mixing Tank**			**Lamella**			
	400 V / 50 Hz	460 V / 60 Hz	230 V / 60 Hz	400 V / 50 Hz	460 V / 60 Hz	230 V / 60 Hz	400 V / 50 Hz	460 V / 60 Hz	230 V / 60 Hz	
	4.8 A	4.2 A	16.6 A	0.6 A	0.5 A	2.2 A	N/A			
	86 A	74 A	290 A							
	Actual power draw will be site specific. Require neutral line.									

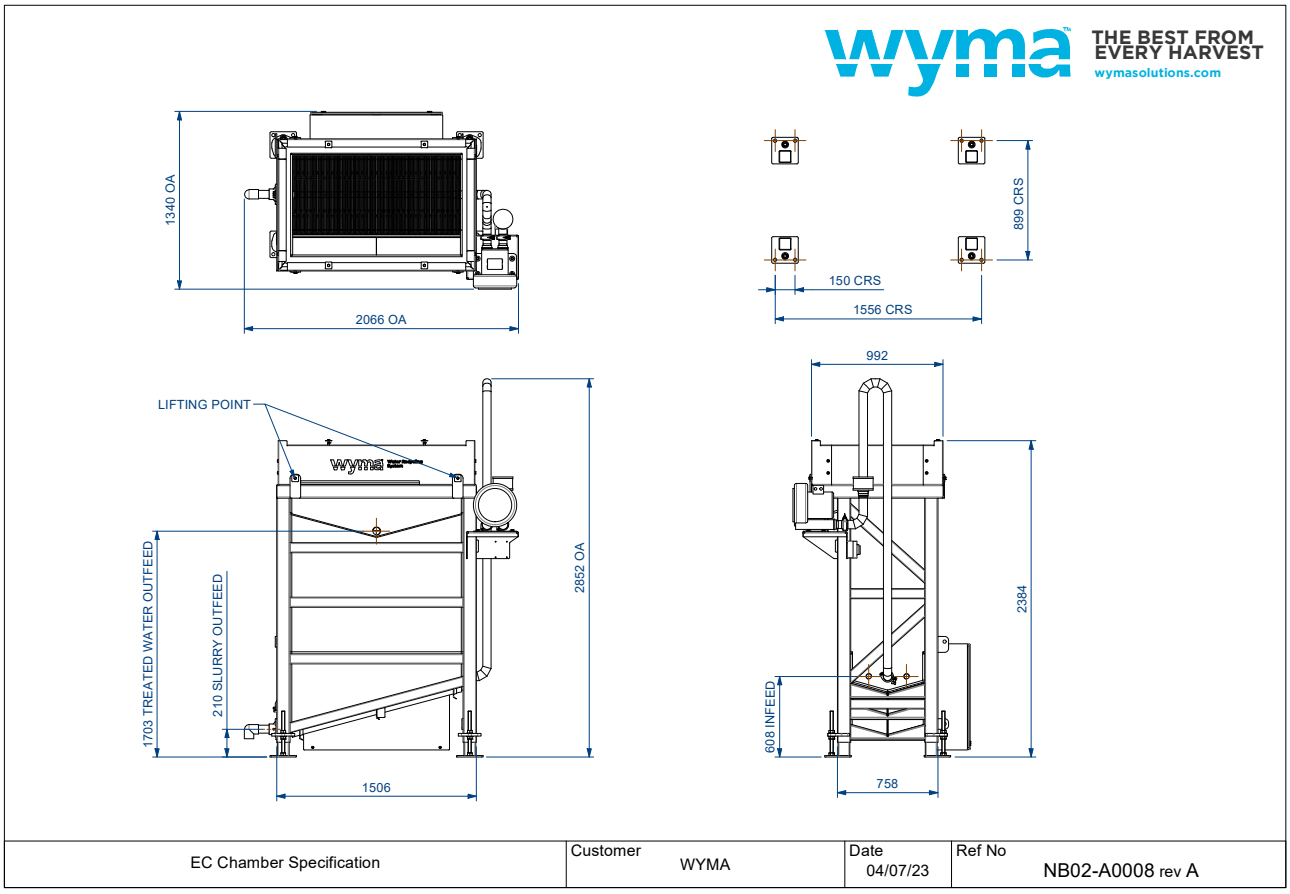
Lab Results

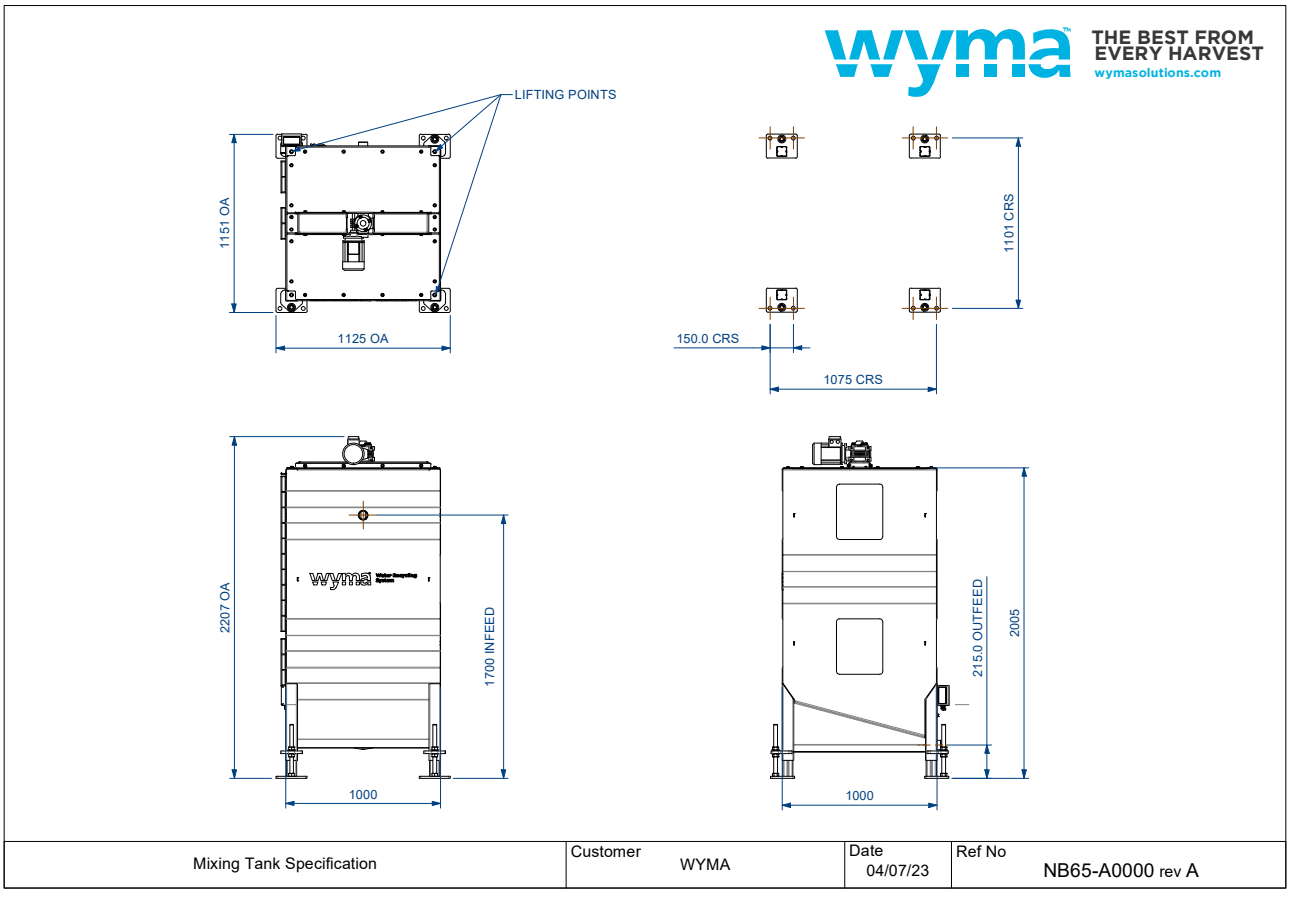
Wyma has conducted testing around the globe with existing customers to ensure our results are accurate and consistent in different environments.

		Auckland, New Zealand			Canterbury, New Zealand			Canterbury, New Zealand			Ontario, Canada			Adelaide, Australia		
		Potato Wash line			Carrot Wash Line			Carrot & Potato Wash Line (NZ Pilot Plant)			Carrot Wash Line			Potato Wash Line		
	Units	*Raw*	*Treated*	*Reduction*	*Raw*	*Treated*	*Reduction*	*Raw*	*Treated*	*Reduction*	*Raw*	*Treated*	*Reduction*	*Raw*	*Treated*	*Reduction*
Total Suspended Solids	g/m³	8100	4	**99.95%**	16400	17	**99.90%**	810	11	**98.64%**	360	< 3.0	**99.17%**	480	22	**95.42%**
Turbidity	NTU	11900	5.6	**99.95%**	9300	11.2	**99.88%**	4000	11.9	**99.70%**				500	16	**96.80%**
Volatile Suspended Solids	g/m³	1160	N/A		1860	< 3	**99.84%**							26	15	**42.31%**
Nitrate-N + Nitrite-N	g/m³	< 0.10	< 0.10	**N/A**	< 0.10	< 0.10	**N/A**	0.73	0.173	**76.30%**	20.2	0.319	**98.42%**			
Total Phosphorus	g/m³	17.7	< 0.10	**99.44%**	9.1	< 0.10	**98.90%**	1.75	0.025	**98.57%**	3.92	0.146	**96.28%**	3.3	< 0.1	**96.97%**
Total Biochemical Oxygen Demand (TBOD5)	g O_2 /m³	121	15	**87.60%**	194	73	**62.37%**	< 2	< 2	**N/A**				21	< 5	**76.19%**
Chemical Oxygen Demand (COD)	g O_2 /m³	1920	100	**94.79%**	1790	122	**93.18%**	152	< 6	**96.05%**	439	134	**69.48%**	57	< 25	**56.14%**
Escherichia coli	MPN / 100mL	3080	16	**99.48%**	51	< 10	**80.39%**									

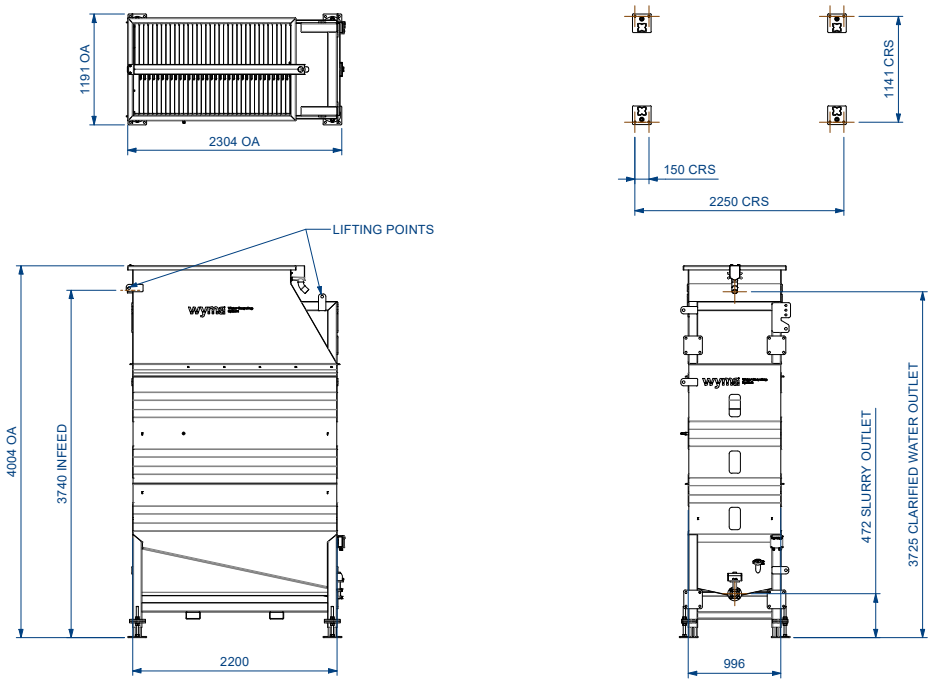
Dimensions

	EC Chamber	Mixing Tank	Lamella
Length	2066 mm (81”)	1125 mm (44”)	2304 mm (91”)
Width	1340 mm (53”)	1151 mm (45”)	1191 mm (47”)
Height	2852 mm (112”)	2207 mm (87”)	4004 mm (158”)





Dimensions (continued)



Lamella Specification	Customer WYMA	Date 04/07/23	Ref No NB04-A0000 rev A

ElectroClear Extras

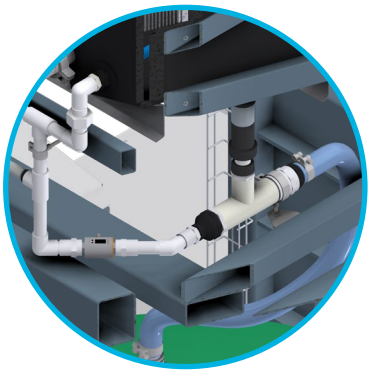
We offer a range of extras for the ElectroClear system that provides flexibility of applications.

Custom support structure and platforms

To suit customer site and allow for easy access and maintenance of system.

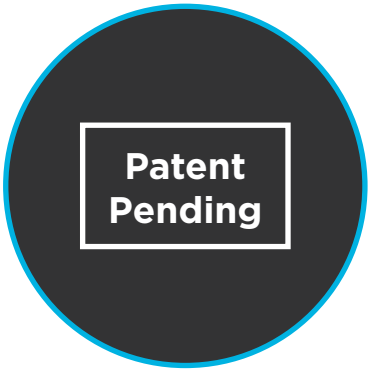
Waste slurry detection sensor

Sensors to detect waste slurry level in lamella, ensuring the lamella plate pack remains above the slurry level and therefore won't impair extraction efficiency.



Water quality sensors

Range of inline water sensors available to monitor water quality and flow on both the infeed and outfeed of the system. These include but are not limited to; turbidity, TSS, pH, conductivity, temperature, and flow.



Waste slurry dewatering

A patent pending system which transports and dewaters the waste slurry without the need of any additional capital equipment.