

PRODUCT DATA SHEET

Single-Step Chemical Treatment System for Complex Industrial Wastewater

water | wastewater | sewage



OVERVIEW

The Single-Step Chemical Treatment System for Complex Industrial Wastewater (BCU) manufactured by Baldwin Industrial Systems, is a specialised wastewater treatment system designed to remove emulsified oils, heavy metals, phosphates, and suspended solids from contaminated wastewater.

Utilising Baldwin's custom RM-10 bentonite clay based powder chemical blend, the BCU system enables treatment through a single, highly efficient, automated process.

Conventional wastewater systems typically require multiple chemicals and reaction vessels; the BCU uses one chemical application and one reaction vessel.

The RM-10 chemical is a dry powder composed of carefully selected and precisely blended minerals, acids, bases, and polymers. These components are formulated so that each becomes active at precisely the required stage of the treatment process. The complete reaction takes place within seconds and combines flocculation, precipitation, and pH adjustment into a unified process.



STANDARD SPECIFICATIONS

Parameter	Units	BCU-100	BCU-200	BCU-400	BCU-600	BCU-800	BCU-1000	
Treatment Capacity	L/h	1,000	2,000	4,000	6,000	8,000	10,000	
Influent (range)	Oil	mg/L	50 to 20,000					
	Suspended Solids	mg/L	50 to 60,000					
	Phosphate	mg/L	5 to 1,000					
	Aluminium	mg/L	10 to 1,000					
	Cadmium	mg/L	20 to 5,000					
	Iron	mg/L	50 to 20,000					
	Lead	mg/L	5 to 500					
	Mercury	mg/L	0.5 to 50					
	Zinc	mg/L	5 to 1,000					
Removal (range)	Free Oil	%	95 to 100 (application dependent)					
	Emulsified Oil	%	95 to 100 (application dependent)					
	Suspended Solids	%	95 to 100 (application dependent)					
	Phosphate	%	95 to 100 (application dependent)					
	Aluminium	%	95 to 100 (application dependent)					
	Cadmium	%	95 to 100 (application dependent)					
	Iron	%	95 to 100 (application dependent)					
	Lead	%	95 to 100 (application dependent)					
	Mercury	%	95 to 100 (application dependent)					
Zinc	%	95 to 100 (application dependent)						
Power Consumption	kW	5	7	9	10	12	15	
Footprint (approx.)	m x m	2.9 x 1.7	3.7 x 2.1	4.7 x 4.2	5.4 x 4.7	6.4 x 5	7.5 x 5	
Overall Height (approx.)	m	3.1	3.1	4.1	4.3	4.7	4.7	

The treatment mechanism proceeds through the following sequential process steps:

1. Emulsion Breaking
2. Oil and Phosphate Attraction
3. Metal Precipitation
4. Ion Exchange and Adsorption
5. Encapsulation and Clarification

The BCU system is available as a standalone system, or with customised pre-treatment and post-treatment options for a complete treatment process. Pre-treatment typically includes removal and collection of free oil from the wastewater, as well as pH adjustment where required, while post-treatment typically includes filtration and disinfection.

APPLICATIONS

- Emulsified oily water treatment
- Gas processing facilities
- Paint and Adhesive manufacturing wash water
- Industrial wastewater treatment facilities
- Heavy equipment service & workshops
- Rail provisioning centres
- Equipment and parts wash water
- Diecasting and plating
- Metal working coolants
- Personal care production facilities

STANDARD INCLUSIONS + OPTIONS

Equipment		BCU-100	BCU-200	BCU-400	BCU-600	BCU-800	BCU-1000
Bentonite Clay Unit Treatment System	Dry chemical hopper with screw feeder	✓	✓	✓	✓	✓	✓
	Dry chemical elevator	-	✓	✓	✓	✓	✓
	Reaction tank with mixer	✓	✓	✓	✓	✓	✓
	Bandfilter	✓	✓	✓	✓	✓	✓
	Filtrate tank or catch tray	✓	✓	✓	✓	✓	✓
	Sludge bin	✓	✓	✓	✓	✓	✓
	Filtrate transfer pump	o	o	o	o	o	o
	Compressor	o	o	o	o	o	o
	Bund sump pump	o	o	o	o	o	o
	Loose supply of components for installation onsite	✓	✓	✓	✓	✓	✓
	Skid mounted plant & equipment	o	o	o	o	o	o
	Access steps & platform	o	✓	✓	✓	✓	✓
Pre BCU treatment	Waste water collection tank	o	o	o	o	o	o
	Oil skimmer	o	o	o	o	o	o
	Recovered oil tank	o	o	o	o	o	o
	Oily water retention tank	o	o	o	o	o	o
	BCU feed pump	o	o	o	o	o	o
	Access steps & platform	o	o	o	o	o	o
	pH adjustment system	o	o	o	o	o	o
	Mixer for waste water collection tank	o	o	o	o	o	o
Post BCU treatment	Cartridge/bag filter(s)	o	o	o	o	o	o
	Disinfection (hypo/UV)	o	o	o	o	o	o
	Treated effluent storage tank	o	o	o	o	o	o
	Access steps & platform	o	o	o	o	o	o
	Treated effluent transfer pump	o	o	o	o	o	o
Materials of construction	304SS	✓	✓	✓	✓	✓	✓
	316SS	o	o	o	o	o	o

✓ = Standard supply o = Optional supply

Instrumentation & Controls	BCU-100	BCU-200	BCU-400	BCU-600	BCU-800	BCU-1000
Semi-automatic operation: Control panel, built to AS3000 w/ FRP enclosure suitable for outdoor installation, including PLC & HMI, c/w all field wiring between equipment & instruments located on the unit	✓	o	o	o	o	o
Fully automatic operation: Control panel, built to AS3000 w/ 316SS enclosure suitable for outdoor installation, including PLC & HMI, c/w all field wiring between equipment & instruments located on skid	o	✓	✓	✓	✓	✓
Dry chemical hopper level sensor	o	✓	✓	✓	✓	✓
Reaction tank - filtrate air actuated valve	-	✓	✓	✓	✓	✓
Reaction tank - sludge air actuated valve	-	✓	✓	✓	✓	✓
Combined filtrate / sludge valve (& position)	✓	-	-	-	-	-
Filter media sensor	o	✓	✓	✓	✓	✓
Filtrate tank level sensor	o	✓	✓	✓	✓	✓
Bandfilter level sensor	✓	✓	✓	✓	✓	✓
Remote monitoring & control capabilities	-	o	o	o	o	o

✓ = Standard supply o = Optional supply

MODEL SELECTION

- 100** Nominal treatment capacity 1,000 L/h
- 200** Nominal treatment capacity 2,000 L/h
- 400** Nominal treatment capacity 4,000 L/h
- 600** Nominal treatment capacity 6,000 L/h
- 800** Nominal treatment capacity 8,000 L/h
- 1000** Nominal treatment capacity 10,000 L/h
- 4** Materials of construction 304SS
- 6** Materials of construction 316SS
- X** Pre BCU treatment, without
- O** Pre BCU treatment, included, custom
- X** Post BCU treatment, without
- P** Post BCU treatment, included, custom
- X** Specification, standard
- C** Specification, custom

BCU - _____



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