



SIGMA
AQUACULTURE

EDITION 2026

BIOFLOC · RAS · POND FARMING

Aquaculture Equipment Catalog

Manufacturer & exporter of fish-farming tanks, aeration,
filtration and complete recirculating systems.

www.sigma-aquaculture.com

info@sigma-aquaculture.com

ISO 9001 · CE

Table of Contents

TANKS & PONDS

PVC Fish Tank	05
HDPE Fish Tank	06
FRP Fish Tank	07
Galvanized Sheet Tank	08
Rectangle Fish Tank	09
Rectangle Aqua Tank	10
Crab House	11

AERATION & OXYGENATION

Paddle Wheel Aerator	12
Roots Blower	13
Regenerative Air Blower	14
Dissolved Oxygen Cone	15
Nano Bubble Oxygen Diffuser Pipes	16

RAS & FILTRATION

RAS System	17
Automatic Rotary Drum Filter	18
Biological Filter	19
Filter Media	20
Protein Skimmer Filter	21
UV Filter (UV Sterilizer)	22
Commercial Sand Filter	23
Screen Filter	24
Bag Filter	25

ACCESSORIES

Feeding Machines	26
Float Cage (Floating Fish Cage)	27
Probiotics for Aquaculture Farms	28
Submersible Water Pump	29
Multi-Parameter Water Quality Monitor (DO/pH/ORP/TDS)	30
Fish & Shrimp Feed	31

OTHER EQUIPMENT

Fish Egg Hatchery Incubator	32
Fish Tank Heating Equipment	33
Fishing Nets	34
Electricity Generator	35

CASE STUDIES & COMPANY

Export Case Studies	36
Company Introduction	03
Global Footprint	04

Company Introduction



SIGMA Aquaculture is the aquaculture equipment brand of SIGMA INDUSTRIES CO., LTD, founded in 2015 in Shandong province, northern China. From a 5,000-square-meter production plant we weld PVC fish tanks, produce HDPE film and supply complete biofloc and circular-tank farming systems — a manufacturer, not a trading company, controlling quality, lead time and price at the source. Our engineers bring more than 15 years of aquaculture experience, especially with tilapia and shrimp, and back every shipment with farm drawing design, operation guides and overseas installation support. Our equipment is trusted by industry leaders including Japfa Group, Japan's Nissui and Ghana's Tropo Farms, and is exported to every continent — with a full farm kit shipped in a single container.

2015

FOUNDED

5,000 m²

PRODUCTION PLANT

15+ years

AQUACULTURE
ENGINEERING

ISO 9001 ·

CE

CERTIFIED

ISO 9001

CE

OEM / ODM

Trusted by Farms Worldwide

From Japan to West Africa, SIGMA tanks and systems are running in commercial farms, hatcheries and research stations across 30+ countries — including projects for Japfa Group and Nissui (Japan).



Asia

Bangladesh

Ghana

Japan

Malaysia

Mozambique





Tanks & Ponds

Modular culture tanks engineered for biofloc, RAS and hatchery projects — food-grade liners, fast on-site assembly, any diameter.

01

PVC Fish Tank

The biofloc farmer's first tank, ready in hours



A welded PVC-coated tarpaulin fish tank that turns any flat ground into a high-density culture pond in hours, with no concrete and no excavation. A galvanized steel or PVC-pipe frame supports a seamless, high-frequency welded 650-900 GSM food-grade liner, backed by a 16-year warranty. One person can assemble a 16 m diameter tank in about an hour without tools or prior experience, making it the standard entry vessel for biofloc and RAS farming of tilapia, catfish and shrimp.

- Seamless HF / hot-air welded liner, leak-proof

■ Assembles in about one hour, no machinery

■ 16-year warranty on the complete tank
- 650-900 GSM food-grade PVC tarpaulin

■ No concrete or excavation required

■ Round or rectangular, any size to order

TECHNICAL SPECIFICATIONS

Model	Capacity	Typical Use	Core Configuration
SIGMA-PVC-3	~8-10 m ³ (Ø3.0 × 1.2 m)	Nursery / standard biofloc	700 GSM · round
SIGMA-PVC-5	~25 m ³ (Ø5.0 × 1.3 m)	Standard biofloc grow-out	750 GSM · round
SIGMA-PVC-10	~100 m ³ (Ø10 × 1.3 m)	Commercial grow-out	750 GSM · round
SIGMA-PVC-20	~470 m ³ (Ø20 × 1.5 m)	Large commercial grow-out	750 / 900 GSM · round
SIGMA-PVC-35	~1,440 m ³ (Ø35 × 1.5 m)	Largest single round tank	900 GSM · round
SIGMA-PVC-R	Per order (L × W × H)	Custom rectangular / square	700 / 750 GSM



02 HDPE Fish Tank

Cost-effective geomembrane tanks and pond liners



An HDPE geomembrane-lined fish tank that offers a lower-cost alternative to welded tarpaulin, with thermally welded, fully sealed and root-proof seams. The food-grade, FDA-certified membrane comes in 0.5-1.5 mm thicknesses and is supplied as roll stock for hot-wedge or extrusion welding on site. It suits above-ground framed round tanks, custom rectangles and the seepage-proof lining of large excavated or banked culture ponds, with a liner life of around 15 years.

- Food-grade, non-toxic FDA-certified HDPE
 - Thickness options from 0.5 to 1.5 mm
 - Acid, alkali and seawater resistant
- Hot-wedge welded, leak- and root-proof seams
 - Lower cost than welded PVC tarpaulin
 - Liner service life around 15 years

TECHNICAL SPECIFICATIONS

Model	Capacity	Typical Use	Core Configuration
SIGMA-HDPE-S	~4-10 m ³	Framed round tank Ø2-3 m	0.5-0.75 mm membrane
SIGMA-HDPE-M	~15-30 m ³	Framed round tank Ø4-5 m	0.75-1.0 mm membrane
SIGMA-HDPE-L	Hundreds to thousands of m ³ , per site	Excavated / banked lined pond	1.0-1.5 mm membrane
SIGMA-HDPE-R	Per order (L × W × H)	Rectangular, custom	0.75-1.0 mm membrane



03 FRP Fish Tank

Rigid fiberglass tanks built for decades of service



A fiberglass-reinforced plastic (FRP) fish tank with a smooth, food-grade gel-coat interior that resists algae adhesion and disinfects quickly between production cycles. Lightweight yet highly rigid, it is completely rustproof, UV-stable and serves for more than 15 years in freshwater or seawater. Molded to order in round, rectangular and D-end shapes, with central, side or dual-drain (Cornell-type) outlets and an optional viewing window, it is the permanent vessel of choice for RAS, hatcheries, indoor intensive farms and live-fish holding or transport.

- Smooth food-grade gel-coat interior
 - Round, rectangular or D-end, made to order
 - Optional viewing window for display tanks
- Lightweight, rustproof and UV-resistant
 - Dual-drain (Cornell-type) RAS outlets available
 - Freshwater and saltwater compatible

TECHNICAL SPECIFICATIONS

Item	Specification
Material	Fiberglass-reinforced plastic (FRP / GRP) with food-grade gel-coat interior
Interior	Smooth gel-coat — resists algae build-up, easy to clean and disinfect
Shapes	Round / rectangular / D-end, adjustable wall height
Drainage	Central drain / side drain / dual-drain (Cornell-type) for RAS solids removal
Options	Viewing window, overflow standpipe, reinforcing ribs, insulation, transport-tank version
Water type	Freshwater / saltwater
Working conditions	RAS, hatchery and nursery, broodstock / quarantine, indoor intensive culture, live-fish holding and hauling



04 Galvanized Sheet Tank

Steel strength with a replaceable food-grade liner



A galvanized corrugated-steel sheet tank that pairs a bolt-together hot-dip galvanized wall with a welded food-grade PVC or TPU inner liner. The rigid steel wall carries the full hydrostatic load, so single tanks scale from 5 to roughly 1,060 cubic metres without bulging, while the liner can be replaced independently of the frame. It ships flat, assembles on site without concrete or excavation, and serves as a durable, relocatable grow-out tank or farm reservoir for tilapia, catfish, shrimp and biofloc culture.

- Bolt-together hot-dip galvanized steel wall
- Single-tank volumes up to ~1,060 m³
- Heavier zinc coating for coastal sites
- Food-grade PVC / TPU liner, independently replaceable
- Ships flat, assembles without concrete
- Relocatable; diameter and height to order

TECHNICAL SPECIFICATIONS

Model	Capacity	Typical Use	Core Configuration
SIGMA-GST-2	~5 m ³ (Ø2.4 × 1.2 m)	Small grow-out / holding	PVC tarpaulin liner
SIGMA-GST-3	~12 m ³ (Ø3.6 × 1.2 m)	Standard biofloc tank	PVC / TPU liner
SIGMA-GST-5	~25 m ³ (Ø5.0 × 1.3 m)	Large-diameter grow-out	PVC / TPU liner
SIGMA-GST-10	~100 m ³ (Ø10 × 1.3 m)	Commercial grow-out	TPU liner
SIGMA-GST-15	~230 m ³ (Ø15 × 1.3 m)	Large commercial grow-out	TPU liner
SIGMA-GST-20	~470 m ³ (Ø20 × 1.5 m)	Large grow-out / reservoir	TPU liner
SIGMA-GST-30	~1,060 m ³ (Ø30 × 1.5 m)	Largest single tank / reservoir	TPU liner
SIGMA-GST-R	Per order (L × W × H)	Custom rectangular	PVC / TPU liner



05 Rectangle Fish Tank

Raceway-style rectangular tanks for intensive grow-out



A deep, raceway-style rectangular fish tank for intensive land-based grow-out of tilapia, catfish, carp and ornamental fish. Built in PVC/TPU-lined steel-frame, FRP and HDPE versions with high walls and a sloped floor draining to a central or end outlet, it delivers maximum water volume in a tight, straight footprint that fits neatly along walls, inside greenhouses or on rooftops. The three-layer PVC-coated polyester liner is UV-, acid- and alkali-resistant, works from -40 to +90 degrees Celsius, and a dual-drain layout lets the tank plumb directly into a RAS.

- Straight-edge footprint maximizes floor usage
- PVC / TPU liner, FRP or HDPE versions
- Dual-drain RAS plumbing available
- High walls and sloped floor for harvest
- Three-layer anti-UV, anti-leak liner material
- Folds flat when empty for transport

TECHNICAL SPECIFICATIONS

Model	Capacity	Typical Use	Core Configuration
SIGMA-RFT-2	~2.5 m ³ (2.0 × 1.0 × 1.2 m)	Small grow-out / holding	PVC-lined frame / FRP
SIGMA-RFT-3	~5.5 m ³ (3.0 × 1.5 × 1.2 m)	Standard grow-out	PVC / TPU-lined frame
SIGMA-RFT-4	~10 m ³ (4.0 × 2.0 × 1.2 m)	High-density grow-out	Steel frame, TPU liner
SIGMA-RFT-6	~14.5 m ³ (6.0 × 2.0 × 1.2 m)	Large grow-out	Steel frame, TPU liner
SIGMA-RFT-50	~3,000-3,750 m ³ (50 × 50 × 1.2-1.5 m)	Largest single pond	Steel frame + TPU / HDPE liner
SIGMA-RFT-C	Per order (L × W × H)	Custom	PVC / FRP / HDPE



06 Rectangle Aqua Tank

Fold-flat holding and grading tanks for working farms



A rectangular tarpaulin tank for the working side of the farm: holding and quarantining live fish, grading and sorting batches, staging live transport, or slotting in as a space-saving module tank inside a RAS room. The food-grade, three-ply PVC liner with screen-mesh reinforcement is UV-resistant, antibacterial and acid- and alkali-resistant, and sits in a steel support frame that assembles on site without special tools. The whole tank folds flat when empty, ships compactly, and a field repair kit covers accidental punctures.

- Three-ply food-grade PVC with screen mesh
 - Folds flat when empty, easy to relocate
 - Freshwater and seawater cultivation duty
- Tool-free steel-frame assembly on flat ground
 - Straight edges pack tightly in RAS rooms
 - Field repair kit for accidental punctures

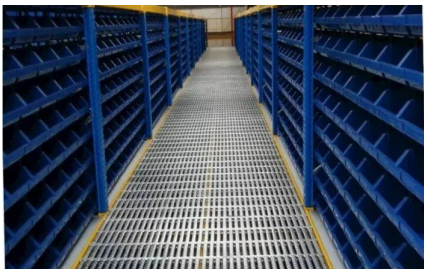
TECHNICAL SPECIFICATIONS

Model	Capacity	Typical Use	Core Configuration
SIGMA-RAT-H	Sized to order (L × W × H)	Holding / quarantine tank	Food-grade 3-ply PVC liner + steel support frame
SIGMA-RAT-G	Sized to order (L × W × H)	Grading / sorting tank	Screen-mesh reinforced PVC liner + steel frame
SIGMA-RAT-T	Sized to order (L × W × H)	Live-fish transport turnaround	Foldable lightweight liner, field repair kit available
SIGMA-RAT-R	Sized to order (L × W × H)	RAS module tank	Liner + frame, arranged in rows inside RAS rooms
SIGMA-RAT-C	Custom L × W × H	Multi-tank batteries	Straight-edge units abut to share floor space



07 Crab House

Vertical single-crab condos with closed RAS water



A stackable single-crab box system that houses each mud crab in its own cell, eliminating the fighting, cannibalism and limb loss of open-pond farming. Boxes of food-grade PVC, ABS or PP stack into vertical multi-tier racks — typically ten floors of ten boxes per group — multiplying output per square metre, while a recirculating water loop with mechanical and biological filtration, UV sanitation and aeration runs the farm indoors year-round, independent of tides and weather. Individual cells let soft-shell crabs be inspected and harvested at the exact moulting moment.

- One crab per cell stops cannibalism
 - Closed RAS loop with UV sanitation
 - Cell-by-cell inspection for soft-shell harvest
- Vertical racks multiply yield per square metre
 - Indoor, year-round, weather-independent operation
 - Food-grade PVC / ABS / PP boxes

TECHNICAL SPECIFICATIONS

Item	Specification
Box material	Food-grade PVC / ABS / PP — individual cells with perforated flow-through door
Layout	Vertical multi-tier racks, linkable for expansion
Water loop	RAS recirculation: tier-by-tier flow + mechanical / biological filtration + aeration
Options	Filter, circulation pump, biofilter, temperature control (chiller), automatic water supply / drain
Species	Mud crab / soft-shell crab fattening, live crab holding
Working conditions	Indoor year-round intensive fattening and holding — independent of tides and weather



Aeration & Oxygenation

Energy-efficient aeration and pure-oxygen dissolving equipment that keeps dissolved oxygen stable at high stocking densities.

08 Paddle Wheel Aerator

The world's most widely used pond aerator



A floating paddle wheel aerator that splashes water into the air to dissolve oxygen while driving a strong circular current that distributes dissolved oxygen, sweeps waste toward the centre drain and prevents stratification in shrimp and fish ponds. The corrosion-proof build pairs a 304 stainless steel frame and shaft with polypropylene floats and impellers, and the curved-bevel-gear drive in carbonitrided Cr-Mn-Ti alloy steel saves at least 20% energy over conventional worm-gear units. A mechanical seal prevents any oil leakage into the culture water.

- Aeration and circulation in one machine
 - 304 stainless frame, PP floats and impellers
 - Mechanical seal, zero oil-leak pollution
- Curved bevel gear saves over 20% power
 - Oxygen transfer of 1.25-1.5 kg O₂/kWh
 - 110-440 V, 50/60 Hz worldwide voltages

TECHNICAL SPECIFICATIONS

Item	Specification
Motor	Three-phase asynchronous / permanent-magnet synchronous DC (optional frequency-conversion control)
Gear drive	Curved arc-bevel gear (Cr-Mn-Ti alloy steel, carbonitrided) — ≥20% energy saving vs worm gear
Frame & shaft	304 stainless steel
Floats & impellers	PP (polypropylene)
Voltage / frequency	110 / 220 / 380 / 440 V · 50/60 Hz · single / three phase
Aeration efficiency	≥1.25-1.5 kg O ₂ /(kW·h)
Water type	Freshwater / brackish water (shrimp ponds)
Options	Solar drive, frequency converter, extended arm, full stainless set



09 Roots Blower

High-volume oil-free air for deep bottom aeration



A positive-displacement rotary-lobe roots blower that delivers large, steady air volumes at medium pressure to feed nano-tube diffusers and bottom aeration grids in biofloc tanks, RAS and intensive ponds. Twin or three-lobe rotors machined to high precision never touch each other, so the air stays 100% oil-free — protecting fish health and keeping diffusers clean — and the rugged drive runs 24/7 continuous duty. Each unit ships as a complete package with inlet filter-silencer, pressure relief valve, drive motor and belt guard.

- 100% oil-free air, rotors never touch
 - Built for 24/7 continuous duty
 - Complete package with filter and relief valve
- Near-constant flow under back-pressure changes
 - Ideal match for fine-bubble bottom diffusers
 - VFD and acoustic enclosure options

TECHNICAL SPECIFICATIONS

Item	Specification
Type	Positive-displacement rotary lobe (twin / three-lobe roots blower)
Air quality	100% oil-free — rotors never touch, clean air for fish health
Duty	Continuous 24/7 operation
Standard package	Inlet filter/silencer, pressure relief valve, drive motor, belt guard
Options	Frequency converter (VFD), acoustic enclosure, stainless pipework, pressure gauge
Voltage / frequency	220 / 380 V · 50/60 Hz · three phase
Water type	Freshwater / seawater (with corrosion-resistant pipework and diffusers)



10 Regenerative Air Blower

Compact, quiet, oil-free air with one moving part



A regenerative (side-channel / ring) blower that delivers clean, pulsation-free air at higher pressure than a paddle wheel, in a quieter and more compact package than a roots blower. A single direct-driven impeller — no belts, no gears — makes it essentially maintenance-free, while the cast aluminium body keeps it light and corrosion-resistant. Small 220 V single-phase units plug straight into ordinary farm power, making it ideal for single biofloc tanks, RAS sumps, hatcheries, protein skimmers and small-to-medium diffuser grids.

- Single moving part, near-zero maintenance
- Quieter and more compact than roots blowers
- Lightweight corrosion-resistant cast aluminium body
- Oil-free, pulsation-free clean air
- Plug-and-play 220 V single-phase models
- Inlet/outlet filter-silencer fitted as standard

TECHNICAL SPECIFICATIONS

Item	Specification
Type	Regenerative (side channel / ring) single-impeller blower
Drive	Direct drive — no belts, no gears, only one moving part
Air quality	Oil-free, pulsation-free, clean air
Body	Cast aluminium — lightweight and corrosion-resistant
Standard	Inlet/outlet filter-silencer
Options	VFD, pressure/vacuum gauge, stainless pipework, sound insulation
Voltage / frequency	220 V single phase / 380 V three phase · 50/60 Hz
Water type	Freshwater / seawater (with corrosion-resistant diffusers and pipework)



11 Dissolved Oxygen Cone

Push dissolved oxygen far past air saturation



A downflow oxygen cone (Speece cone) that dissolves near-pure oxygen into the RAS flow at 90-100% transfer efficiency. Water and oxygen enter at the narrow top at relatively high speed; as the cone widens, the water slows to hold the bubbles in a controlled cloud until they dissolve completely, with no gas escaping at the surface. By super-saturating the water beyond the air-saturation ceiling of paddle wheels and diffusers, it delivers far more dissolved oxygen per kilowatt-hour — the key to economically viable high-density, low-exchange RAS for salmon, trout, sturgeon, tilapia and shrimp.

- Oxygen transfer efficiency up to ~100%
- Corrosion-proof FRP / food-grade PP body
- Closed-loop control with DO monitor
- Super-saturated DO beyond air-saturation limits
- Works in freshwater and saltwater
- Modular scaling from one cone to banks

TECHNICAL SPECIFICATIONS

Model	Capacity	Typical Use
SIGMA-DOC-5	5 m ³ /h (~5,000 LPH)	Small RAS modules
SIGMA-DOC-10	10 m ³ /h	Mid-size recirculating systems
SIGMA-DOC-20	20 m ³ /h	Commercial tank arrays
SIGMA-DOC-50	50 m ³ /h (~50,000 LPH)	Large-farm units
SIGMA-DOC-100	100 m ³ /h	Large farms / clusters



12 Nano Bubble Oxygen Diffuser Pipes

Ultra-fine bubbles for maximum oxygen transfer efficiency



A flexible micro-pore aeration hose that releases ultra-fine micro/nano bubbles across the tank bottom, dramatically raising oxygen-transfer efficiency over air stones or perforated pipe and cutting aeration energy costs by up to 75%. The EPDM rubber membrane flexes with each pulse of air so the pores self-clean, resisting clogging even in biologically active biofloc water, where the gentle fine-bubble flow also keeps floc particles in suspension. Supplied by the metre or as pre-assembled grids, rings and coils, it connects directly to any roots or regenerative blower.

- Micro/nano bubbles maximize oxygen transfer
 - Self-cleaning EPDM membrane resists clogging
 - No moving parts, simple installation
- Cuts aeration energy costs up to 75%
 - Keeps biofloc particles gently suspended
 - By the metre or pre-built diffuser grids

TECHNICAL SPECIFICATIONS

Item	Specification
Form	Flexible micro-pore aeration hose — by the metre, or pre-assembled diffuser grids / rings / coils
Membrane	EPDM / rubber micro-pore membrane — flexes with each air pulse so pores self-clean
Bubble size	Micro / nano ultra-fine bubbles for high oxygen-transfer efficiency (OTE)
Common diameters	Ø ~12 / 16 / 20 mm (by series)
Air source	Roots blower / regenerative (ring) blower
Layout	Sized by metres of tube per m² of tank bottom plus matching blower air volume
Water type	Freshwater / seawater (corrosion-resistant membrane and fittings)
Options	Weights, connectors / air manifolds, stainless brackets, complete diffuser grids



RAS & Filtration

Complete recirculating aquaculture systems and the mechanical, biological and UV stages that build them.

13 RAS System

Turnkey indoor recirculating aquaculture in one module



A complete, plug-and-play land-based recirculating aquaculture system that pre-assembles drum filtration, protein skimming, biofiltration, UV/ozone sterilization and oxygen injection into a single module. It lets you raise fish or shrimp indoors year-round with full water-quality control while using only a fraction of the water a pond requires. Standard capacities run from 5 to 30 m³/h, with custom turnkey engineering above that range.

- Six-stage integrated treatment chain
 - Fresh- and saltwater ready
 - Low water use, energy efficient
- Capacity 5-30 m³/h, scalable
 - Skid-mounted, ships in one container

TECHNICAL SPECIFICATIONS

Parameter	Value
Process flow	Inlet → drum mechanical filter → protein skimmer + ozone → bio-filter (trickling + submerged) → UV → oxygenation → return
Mechanical filtration	Drum screen 50–200 µm (typ. 70/80 µm, 316L SS mesh)
Main materials	PP / UPVC / SS304 / SS316 (316L for saltwater)
Disinfection	UV sterilizer (e.g. 120 W = 3×40 W class) + ozone generator (e.g. 3 g/h class, optional)
Water type	Freshwater / saltwater
Options	PLC control, online water-quality monitoring, auto backwash, oxygen cone / degassing tower



14 Automatic Rotary Drum Filter

Self-cleaning micro-screen solids removal for RAS



A fully automatic microscreen drum filter that forms the first line of solids removal in any RAS, capturing suspended solids, uneaten feed, algae and faeces from 40 to 200 µm before they break down and overload the biofilter. High-pressure spray nozzles backwash the 304/316L stainless screen on a pressure or timer trigger for 24/7 unmanned operation, while gravity-fed flow keeps energy use low. Capacities range from 5 to 200 m³/h.

- Mesh 40-200 µm selectable
- 304/316L stainless screen
- 24/7 unmanned operation
- Automatic high-pressure backwash
- Gravity-fed, low energy
- Capacity 5-200 m³/h

TECHNICAL SPECIFICATIONS

Parameter	Value
Filtration precision	40 / 50 / 70 / 100 / 120 / 200 µm mesh options (70 µm typical)
Screen & drum	304 / 316L stainless-steel sieve mesh (316L wedge-wire on largest models)
Housing	Food-grade PP / SS304 / SS316 (316L for saltwater)
Water feed	Gravity flow preferred (low head loss, energy-saving) or pump feed
Self-cleaning	Differential-pressure or timer triggered, high-pressure spray-nozzle backwash to sludge tray
Water type	Freshwater / saltwater
Options	UV port reservation, VFD, PLC integration, enlarged sludge collection



15 Biological Filter

High-surface biofilter for stable RAS nitrification



The biological core of a recirculating system, supplied as moving-bed (MBBR), fluidized coral-sand or trickling type and packed with high-surface media where nitrifying bacteria convert toxic ammonia and nitrite into far less harmful nitrate. Its large contact area sustains high stocking density in a compact, low-power footprint, and corrosion-resistant LDPE/UPVC/PP/FRP housings suit both fresh and salt water. The reactor is sized to each farm's feed and ammonia load.

- MBBR, fluidized-bed or trickling formats
- Removes ammonia and nitrite
- Fresh- and saltwater ready
- Surface area up to 24,000 m²/m³
- Self-cleaning moving bed

TECHNICAL SPECIFICATIONS

Parameter	Value
Filter media	K1/K3/K5 MBBR carriers · coral sand · bio balls · ceramic rings
Ammonia handling	Fluidized coral-sand bed: ~16 g NH ₄ per kg of sand per 24 h (industry reference figure)
Specific surface area	Media-dependent: MBBR 500–5,500 m ² /m ³ ; coral sand 20,000–24,000 m ² /m ³
Housing	LDPE / UPVC / PP / FRP with standard UPVC pipeline connections
Water type	Freshwater / saltwater
Aeration	Requires blower + diffuser aeration to fluidize moving-bed media
Options	Combined trickling/degassing stage, enlarged reactor, PLC integration



16 Filter Media

High-surface bio media for fast nitrification



High-surface-area biofilter media — MBBR K1/K3/K5 carriers, bio balls and ceramic rings — that give nitrifying bacteria a large, protected surface to colonise, converting toxic ammonia into nitrate inside biofilters, moving-bed reactors and trickling filters. Made from 100% virgin HDPE (or sintered ceramic for ring types), the media are chemically stable, durable and reusable in both fresh and sea water. Specific surface area ranges from 500 to over 5,500 m²/m³.

- K1/K3/K5, bio balls, ceramic rings
- 100% virgin HDPE / ceramic
- Bulk supply by volume
- Surface area 500 to 5,500+ m²/m³
- Fresh- and saltwater safe

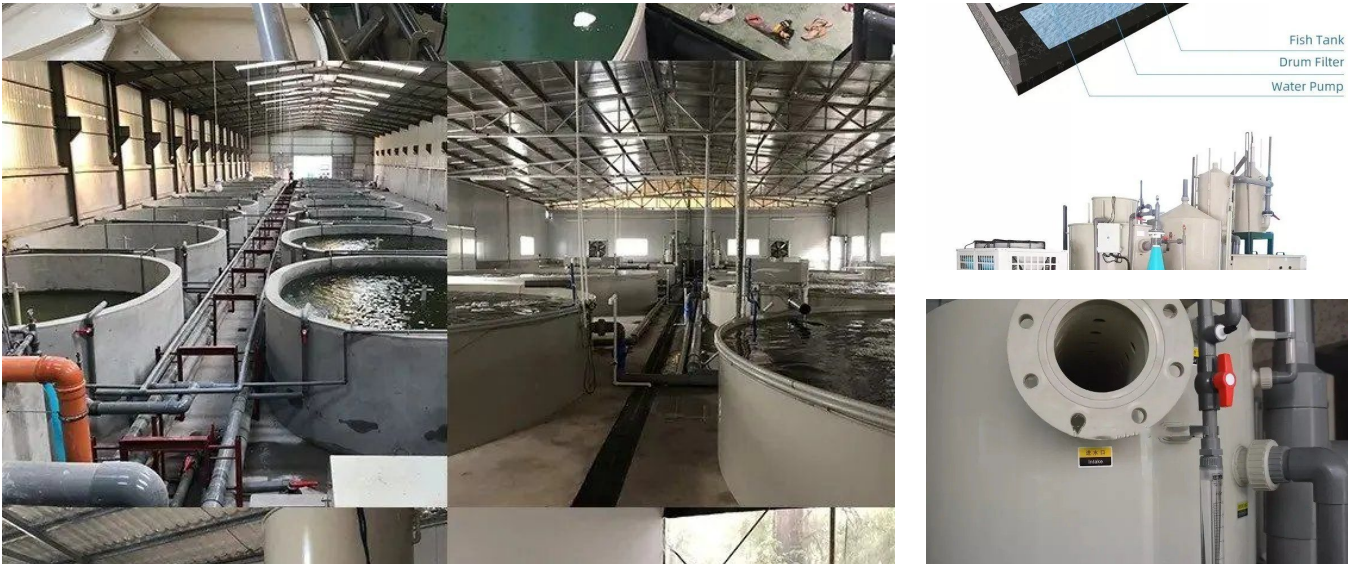
TECHNICAL SPECIFICATIONS

Parameter	Value
Material	100% virgin HDPE / PP (floating types) · sintered ceramic (ring types)
Specific surface area	500–800 m ² /m ³ (wheel types) up to >5,500 m ² /m ³ (structured chip types)
Filter compatibility	Moving-bed MBBR / fluidized bed (K1/K3/K5) · fixed bed, trickling tower and pond filters (bio balls, ceramic rings)
Water type	Freshwater / saltwater
Packing	By m ³ / ton / bag (bulk bags)
Options	Different K grades, pre-seeded / pre-matured media, media retention screens



17 Protein Skimmer Filter

Foam fractionation strips organics before they decay



An aquaculture protein skimmer (foam fractionator) that injects fine micro-bubbles to lift dissolved organic compounds, proteins and fine solids out of the water as foam, before they break down into ammonia. By removing waste at the source it reduces biofilter load, raises dissolved oxygen and pairs readily with ozone for extra clarity and disinfection. Corrosion-resistant PP/FRP/LLDPE construction makes it the natural fit for seawater RAS, with capacities from 3 to over 100 m³/h.

- Micro-bubble foam fractionation
- Reduces biofilter load
- Ozone-ready, seawater-optimized
- Capacity 3-100+ m³/h
- Raises dissolved oxygen

TECHNICAL SPECIFICATIONS

Parameter	Value
Working principle	Micro-bubble foam fractionation — organics attach to bubble surfaces and exit as foam
Flow per unit	Approx. 3–60 m³/h per unit; larger custom or parallel installation
Bubble generation	Venturi injector or pump-driven micro-bubbles
Housing	Corrosion-resistant PP / FRP / rotomolded LLDPE — seawater-ready
Best conditions	Most effective in seawater; usable in freshwater at lower efficiency
Options	Ozone port (pair with ozone generator for extra clarity and disinfection), foam collection cup, level control



18 UV Filter (UV Sterilizer)

Chemical-free UV sterilization, 99%+ pathogen kill



An inline UV sterilizer that destroys the DNA of bacteria, viruses, parasites and algae spores with a kill rate above 99%, forming the final disinfection barrier before water returns to the tanks. It works chemical-free, leaving no residue or by-products, and an optically engineered reflective chamber wall roughly doubles the effective UV dose. HDPE/PP or 304/316 stainless chambers handle fresh and salt water at flows from 15 to 300 m³/h.

- Kill rate above 99%
 - Chemical-free, no by-products
 - Capacity 15-300 m³/h
- UV dose 30 mJ/cm² standard
 - Reflective wall doubles dose

TECHNICAL SPECIFICATIONS

Parameter	Value
Sterilization rate	>99% — pathogen DNA destruction (bacteria, viruses, parasites, algae spores)
UV dose	30 mJ/cm² standard; higher doses available per species / pathogen
Lamps	Low-pressure high-output UVC lamps in quartz sleeves, ~16,000 h lamp life
Chamber	HDPE/PP / SS304 / SS316 (316 for saltwater)
Flow type	Flow-through inline design — large volumes, small footprint
Water type	Freshwater / saltwater
Options	Lamp-life monitoring and alerts, PLC integration, wiper cleaning, VFD



19 Commercial Sand Filter

Deep-bed sand filtration polishes water to 10-20 µm



A commercial high-rate sand filter that polishes water by trapping fine suspended solids down to roughly 10–20 µm in a graded quartz-sand bed — far finer than a screen or drum filter. A simple multiport valve backwashes the bed instead of replacing media, keeping running costs low, while corrosion-resistant FRP or stainless tanks suit fresh and salt water in vertical or horizontal layouts. Flow rates span small RAS loops to large commercial farms.

- Deep-bed filtration ~10-20 µm
 - FRP / SS304 / SS316 tank
 - Capacity 5-100+ m³/h
- Multiport backwash, no media change
 - Vertical or horizontal layout

TECHNICAL SPECIFICATIONS

Parameter	Value
Filter bed	Graded quartz sand; optional glass media / anthracite / multi-media beds
Filtration precision	Approx. 10–20 µm deep-bed filtration — far finer than a screen or drum filter
Cleaning	Multiport / backwash valve, pressure-differential triggered — no media replacement
Tank material	FRP (fiberglass) / SS304 / SS316 (316L for saltwater)
Water feed	Pressurized pump feed
Water type	Freshwater / saltwater (also used in pools and public aquaria)
Options	Multi-media grading, automatic backwash valve, pressure gauge / sight glass, enlarged capacity



20 Screen Filter

Self-cleaning screen guards pumps and downstream filters



A self-cleaning screen filter that traps leaves, debris and coarse-to-medium solids on a stainless-steel mesh, then automatically backwashes or scrapes the screen clear so it keeps running without manual cleaning or shutdown. Selectable 0.2–2 mm mesh and a high open area keep pressure loss low while protecting pumps, valves and downstream filtration. 304/316L construction suits both fresh and salt water, with capacities from 5 to 90 m³/h.

- Mesh 0.2-2 mm selectable
 - Low pressure loss
 - Capacity 5-90 m³/h
- Automatic backwash or scraper
 - 304/316L stainless screen

TECHNICAL SPECIFICATIONS

Parameter	Value
Mesh range	Approx. 0.2–2 mm coarse debris screening; finer mesh available for sieving duty
Screen material	SS304 / SS316 (316L for saltwater)
Housing	PP / stainless steel / FRP
Self-cleaning	Differential-pressure or timer triggered automatic backflush or scraper — continuous operation, no shutdown
Water feed	Inline pressure feed or gravity intake
Water type	Freshwater / saltwater
Options	Duplex changeover, sight glass / pressure gauge, PLC-controlled backwash



21 Bag Filter

Self-cleaning fine polishing, 1-200 µm



A self-cleaning bag filter that polishes water by trapping fine sediment and suspended solids inside a selectable 1–200 µm filter bag, with an automatic differential-pressure or timer-triggered backwash that extends bag life and cuts manual labour. It is an economical route to fine filtration for makeup-water lines, side-streams or single tanks where a full drum or sand filter would be excessive. Corrosion-resistant SS304/SS316 or PP housings suit fresh and salt water at 5 to 50+ m³/h.

- Micron rating 1-200 µm
- SS304/SS316 or PP housing
- Capacity 5-50+ m³/h
- Automatic backwash extends bag life
- Compact, low-cost fine filtration

TECHNICAL SPECIFICATIONS

Parameter	Value
Bag micron rating	1 / 5 / 25 / 50 / 100 / 200 µm — change the bag to change the precision
Bag material	PP / PE non-woven / nylon mesh (washable-reusable option)
Housing	SS304 / SS316 (316L for saltwater) / PP
Water feed	Pressurized pump feed
Self-cleaning	Differential-pressure or timer triggered automatic backwash and sludge discharge — far longer bag life, less labour
Water type	Freshwater / saltwater
Options	Multi-bag parallel housings, quick-open lid, pressure gauge / air vent, PLC-controlled backwash



Accessories

Feeding, monitoring, pumping and farm-management essentials that complete a working aquaculture facility.

22

Feeding Machines

Programmable broadcast feeding cuts labour and waste



A timer or PLC-controlled automatic fish feeder that broadcasts pellets evenly across ponds, cages and tanks, with adjustable hopper, feed rate and throw distance. Precise scheduled dosing reduces over-feeding and waste, keeps water cleaner, improves feed conversion and promotes uniform growth. The range spans small pond and cage units to large blower feeders, with mains, battery or solar power and weatherproof housings for outdoor duty.

- Timer / PLC scheduled feeding

■ Floating and sinking pellets

■ Weatherproof outdoor build
- Even broadcast coverage

■ Mains, battery or solar power

TECHNICAL SPECIFICATIONS

Parameter	Value
Control	Timer / PLC — set feeding times, portion size and run duration
Metering	Vibrating or rotating-disc feed metering
Broadcast	Centrifugal spinner / blower (large models)
Feed types	Floating and sinking pellets, common sizes
Housing	Weatherproof outdoor build (PP / stainless / galvanised)
Power	Mains / battery / solar panel (optional)
Mounting	Pond bank / cage walkway / tank-rim bracket
Options	Solar kit, PLC remote scheduling, enlarged hopper



23 Float Cage (Floating Fish Cage)

UV-stable HDPE cages for open-water fish farming



Floating fish cages built from UV-stabilised HDPE pipe collars with railing, mooring and a graded net pen, supplied in round or square modules. The corrosion-free, wave-flexible frame is engineered to ride waves in lakes, reservoirs, rivers and inshore sea, with a rated service life beyond 15 years. Each cage ships as a complete, site-assembled package and scales from small grow-out units to large commercial arrays for tilapia, snapper, grouper, sea bass and similar species.

- UV-stable HDPE collar, 2-3 rings
- Knotless graded net pen
- Complete site-assembled package
- Round Ø6-12 m or square modules
- Wave-resistant, 15+ year life

TECHNICAL SPECIFICATIONS

Parameter	Value
Floating collar	UV-stabilised HDPE pipe, double or triple ring — corrosion-free and wave-flexible
Shapes	Round (open-water, wave-riding) / square (modular pontoon walkways for sheltered water)
Round sizes	Ø 6 / 8 / 10 / 12 m common (circumference customisable)
Square modules	3×3 / 4×4 / 5×5 m units, joined into arrays
Net pen	Knotless nylon / HDPE netting; predator and bird net optional
Mesh size	Fingerling ~8–15 mm · grow-out 20–40 mm
Package	Floating collar + handrail/stanchions + mooring/anchor set + net — complete, site-assembled
Waters & species	Lakes / reservoirs / rivers / inshore sea — tilapia, snapper, grouper, sea bass and similar



24 Probiotics for Aquaculture Farms

Multi-strain probiotics for cleaner water, healthier stock



A multi-strain aquaculture probiotic blending *Bacillus*, *Lactobacillus*, nitrifying and photosynthetic bacteria that works two ways: in the water it digests organic sludge and keeps ammonia and nitrite low, while top-dressed on feed it improves gut health and feed conversion. Competitive exclusion of *Vibrio* and other pathogens lowers disease pressure and reliance on antibiotics, making it a standard input for biofloc tilapia and vannamei shrimp culture. It is supplied as powder or liquid in farm-scale packing, with OEM options.

- *Bacillus*, *Lactobacillus*, nitrifying, photosynthetic
- Controls ammonia and nitrite
- Suppresses *Vibrio* and pathogens
- Improves gut health and FCR
- Powder or liquid, OEM available

TECHNICAL SPECIFICATIONS

Parameter	Value
Form	Powder / liquid (concentrate available)
Strains	<i>Bacillus subtilis</i> · <i>B. licheniformis</i> · <i>Lactobacillus</i> · nitrifying bacteria · photosynthetic bacteria (blended by duty)
Live count (CFU)	Powder $\geq 1 \times 10^9 - 10^{10}$ CFU/g (range, by formulation)
Duty types	Water-conditioning type (pond / biofloc) · feed-grade gut type (top-dressed on feed)
Species	Tilapia / catfish / carp / vannamei shrimp / hatchery
Water type	Freshwater / brackish water
Packing	1 kg / 5 kg / 25 kg bags and pails (farm scale)
Options	Custom strain blend, OEM private label, dosing/top-dress instructions



25 Submersible Water Pump

High-flow, low-head pond circulation pump



A submersible pond pump engineered for the high-flow, low-to-medium-head profile that aquaculture water exchange and circulation demand, moving large volumes at low energy per cubic metre. A solids-tolerant open impeller passes the suspended matter and light debris typical of farm water without clogging, and a fully sealed motor is rated for continuous 24/7 duty. Corrosion-resistant cast-iron, stainless or engineering-plastic builds cover fresh and brackish water, with stainless models available for seawater.

- Flow 5-100+ m³/h
- Solids-tolerant impeller
- Corrosion-resistant builds
- Head 5-20 m
- Sealed 24/7 continuous-duty motor

TECHNICAL SPECIFICATIONS

Parameter	Value
Type	Submersible pump — drainage / irrigation / circulation duty
Flow	5-100+ m ³ /h by model; large-flow custom available
Head	5-20 m low-to-medium head, matched to pond exchange and circulation
Power	0.75-7.5 kW (1-10 HP range), sized by flow and head
Impeller	Solids-tolerant open / semi-open impeller — passes suspended matter without clogging
Motor	Fully sealed, continuous duty — rated for 24/7 running
Materials	Cast iron / stainless steel / engineering plastic — fresh and brackish water
Options	Float-switch level control, stainless models for seawater, VFD



26 Multi-Parameter Water Quality Monitor (DO/pH/ORP/TDS)

One meter reads every key water parameter



A multi-parameter water quality monitor that measures dissolved oxygen, pH, ORP, TDS, conductivity, salinity and temperature in a single device, available as portable handheld units or online inline probes. Optical fluorescence DO sensing delivers fast, stable readings with minimal recalibration — critical in high-density RAS where an oxygen crash moves quickly. Connected models log data and feed a controller that can trigger oxygen, aeration or alarms automatically, housed in rugged IP-rated enclosures for humid farm environments.

- Measures DO, pH, ORP, TDS, EC
- Handheld and online/inline formats
- IP-rated, fresh/saltwater probes
- Optical fluorescence DO sensor
- Data logging and alarms

TECHNICAL SPECIFICATIONS

Parameter	Value
Measured parameters	Dissolved oxygen (DO) · pH · ORP · TDS · conductivity · salinity · temperature (per model combination)
DO sensing	Optical fluorescence (stable, low-maintenance, preferred) or electrochemical
Form factors	Portable handheld meters and online/inline probes
Water type	Freshwater / saltwater
Display & data	Digital display with data logging; control models add alarm and control outputs
Protection	IP-rated housings for humid farm environments
Options	Calibration solutions, spare electrodes/probes, remote monitoring, PLC integration



27 Fish & Shrimp Feed

High-protein extruded feed for low FCR



Balanced extruded aquafeed in floating and sinking pellets for tilapia, catfish, carp, trout and vannamei shrimp, formulated at 28–45% protein for fast growth and a low feed conversion ratio. Graded pellet sizes cover every life stage from fine fry crumble to grow-out, and a quality binder keeps pellets water-stable so nutrients are eaten rather than lost, protecting water quality and easing filtration load. It is produced in-house for freshwater and brackish duty, with species-specific and OEM formulations available.

- Protein 28-45% by species/stage
- Pellet sizes 0.5-8 mm graded
- Farm-scale 25/40 kg bags, OEM
- Floating and sinking pellets
- Water-stable, low FCR

TECHNICAL SPECIFICATIONS

Parameter	Value
Type	Floating (extruded) / sinking pellets
Protein	28% / 32% / 36% / 40% / 45% — by species and growth stage
Pellet size	Fry crumble ~0.5–1.5 mm · juvenile 2–4 mm · grow-out 5–8 mm · shrimp 1–2.5 mm
Species	Tilapia / catfish / carp / trout / vannamei shrimp
Life stage	Full coverage — fry crumble through grow-out
Water type	Freshwater / brackish water
Packing	25 kg / 40 kg farm-scale bags (customisable)
Options	OEM private label, species-specific formulation, probiotic / attractant additives



Other Equipment Hatchery, heating, harvesting and power equipment supporting the full production cycle.

28 Fish Egg Hatchery Incubator

Where your harvest begins — maximum hatch rates



Upwelling fish egg incubators (McDonald jars and hatching cones) keep eggs suspended and gently tumbling in a continuous, oxygen-rich flow, so they neither smother nor develop fungus. A built-in screen retains newly hatched fry, while the cone bottom makes collection fast and gentle. Built from food-grade PP, the same platform serves trout, salmon, sturgeon, catfish and tilapia, and can be expanded into a complete RAS hatchery with biofilter, UV sterilizer and heater.

- Upwelling flow keeps eggs suspended and gently tumbling for maximum hatch rate
- Food-grade PP construction — leak-proof, corrosion- and crack-resistant
- Upgradeable to a full RAS hatchery with biofilter, UV and heating
- Built-in fry screen and cone-bottom discharge for fast, gentle collection
- Plug-and-play multi-jar racks delivered with sedimentation/filter tank as one set
- One platform for trout, salmon, sturgeon, catfish, tilapia and more

TECHNICAL SPECIFICATIONS

Item	Specification
Working principle	Upwelling flow — water rises through the egg mass, keeping eggs suspended and gently tumbling
Capacity per jar	20,000–60,000 eggs (~8 L jar, up to ~100,000 small trout eggs); flow 2–4 L/min
Material	Food-grade PP — leak-proof, corrosion- and crack-resistant, high strength
Fry retention	Built-in screen retains newly hatched fry; cone bottom simplifies collection and discharge
Water type	Freshwater / saltwater
Species	Trout, salmon, sturgeon, catfish, tilapia and many others
System pairing	Sedimentation/filter tank, biofilter, UV sterilizer and heater for a full RAS hatchery
Options	Aeration, custom cone diameters, PLC integration



29 Fish Tank Heating Equipment

Keep warm-water fish growing all winter long



Aquaculture water heaters that raise and hold pond, tank or RAS water at the warm temperature tilapia, catfish and shrimp need for year-round growth. Available as energy-efficient heat-pump units (COP 4–6), electric heaters or heat-exchanger systems, all built around a corrosion-resistant pure-titanium tube exchanger that handles fresh and full-strength sea water. Electronic control holds the set point within $\pm 1^\circ\text{C}$, with multi-layer safety protection for unattended operation.

- Holds water in the optimal 26–30 °C window so warm-water species keep feeding through winter
- Pure titanium heat exchanger — seawater passes directly through the unit
- Multi-layer protection: high/low pressure, overload, phase-loss, low-water and exhaust cut-outs
- Heat-pump efficiency COP 4–6 — 50–70% lower running cost than resistance heating
- $\pm 1^\circ\text{C}$ precision via electronic controller with set-point holding
- Wide capacity band from ~10 kW modules to 250+ kW commercial systems

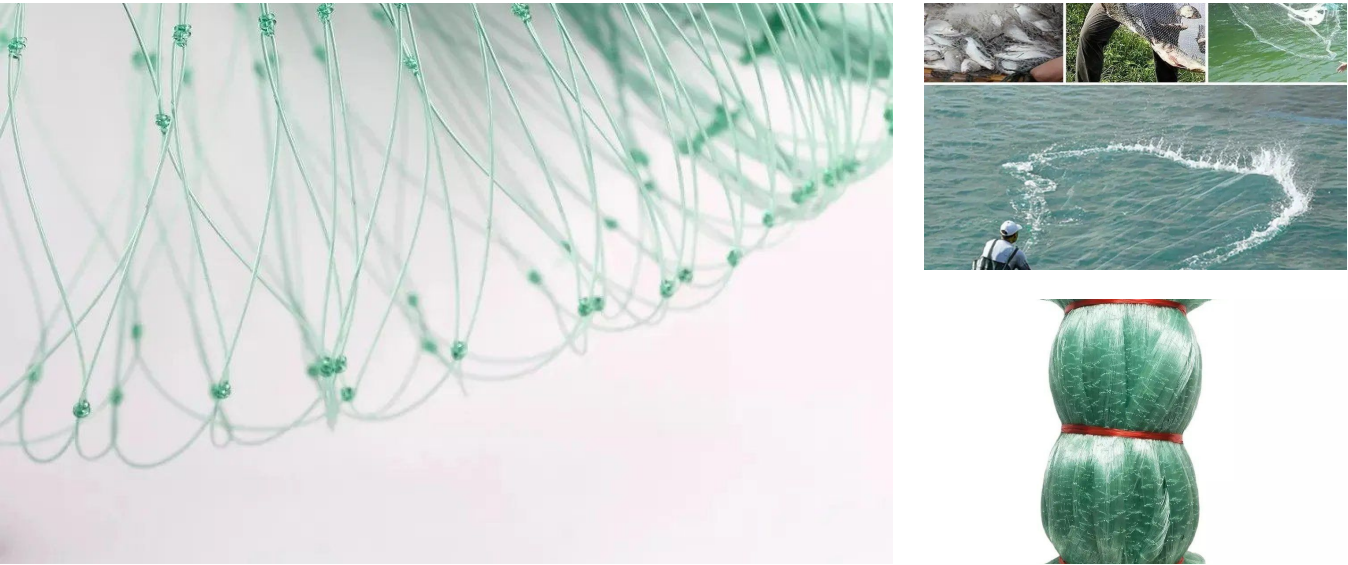
TECHNICAL SPECIFICATIONS

Item	Specification
Heating output	~10–250+ kW (models SIGMA-HP-10 to SIGMA-HP-250)
Heating method	Heat-pump (air/water source), electric heating or heat-exchanger heating
Heat exchanger	Pure titanium tube — corrosion-resistant, seawater direct up to ~35,000 ppm salinity
Temperature control	$\pm 1^\circ\text{C}$ via electronic controller with set-point holding
Energy saving (heat-pump)	50–70% lower running cost than electric resistance; 40–60% lower than oil/gas boilers
Water type	Freshwater / saltwater
Safety protection	High/low pressure, overload, phase-loss, low-water and exhaust-temperature cut-outs
Options	PLC integration, remote monitoring, multi-unit parallel, buffer tank, economy electric version



30 Fishing Nets

Nets for every job on the farm



Knotless nylon and HDPE aquaculture netting covering every net job on a fish farm: cage liner nets, seine/harvest nets, cast nets and dip/grading nets. Knotless mesh is gentle on fish skin and scales yet strong for its weight, and UV plus anti-rot treatment delivers long service in fresh and salt water. Every net is produced to order by size, mesh and material — including liner nets built to your exact cage dimensions.

- Knotless construction protects fish skin and scales during handling
 - Mesh graded to the stock — ~8–15 mm for fingerlings, 20–40 mm for grow-out
 - Made to your cage size for straight-swap re-netting of round or square cages
- UV-treated and rot-resistant for long outdoor life in fresh and salt water
 - Full range: cage liners, seine/harvest nets, cast nets, dip and grading nets
 - Produced alongside SIGMA floating cages and feeders — one source for the whole farm

TECHNICAL SPECIFICATIONS

Item	Specification
Net types	Cage liner nets / seine (harvest) nets / cast nets / dip & grading nets
Material	Knotless nylon (PA) / HDPE / PE monofilament
Mesh size	Fingerling ~8–15 mm; grow-out 20–40 mm (by species and stock size)
Treatment	UV-treated, rot- and mildew-resistant for long outdoor life
Edges	Rope-bordered top/bottom lines, lead-line weighting as required
Colours	Black / green / blue (common)
Water type	Freshwater / seawater
Options	Cage-liner nets made to cage size, predator/bird nets, fine-mesh fry netting



31 Electricity Generator

Backup power that saves the crop



Diesel generator sets sized for fish-farm backup, keeping aerators, blowers and pumps running when the grid fails — because without aeration, dissolved oxygen crashes and a whole pond can be lost in hours. With an automatic transfer switch (ATS), the genset starts and takes over within seconds of a power loss, then shuts down when mains returns. Built with premium engines and brushless alternators (Stamford, Leroy Somer, Marathon), in silent canopy or open-frame configurations from 5 to 100+ kVA.

- Protects aeration and circulation — the equipment that keeps stock alive during outages
- Silent canopy or economical open-frame configurations for siting near ponds
- Reliable diesel engines with extended-tank options for long unattended runs
- ATS automatic changeover starts the genset within seconds of grid failure
- 5–100+ kVA range, single or three phase, sized to the farm's essential load
- One manufacturer for backup power and the aquaculture equipment it protects

TECHNICAL SPECIFICATIONS

Item	Specification
Type	Diesel generator set (standby / prime duty)
Power range	5–100+ kVA, sized to farm load (5 / 10 / 20 / 30 / 50 kVA common)
Phase	Single phase / three phase
Start	Manual / electric start / ATS automatic transfer — starts within seconds of grid failure
Enclosure	Silent canopy or open frame; weatherproof housing for outdoor siting near ponds
Fuel	Diesel — long unattended runs
Options	ATS, extended fuel tank, noise-reduction canopy, remote monitoring

Export Case Studies



Biofloc Tilapia Tanks for Japfa Group

ASIA JAPFA GROUP

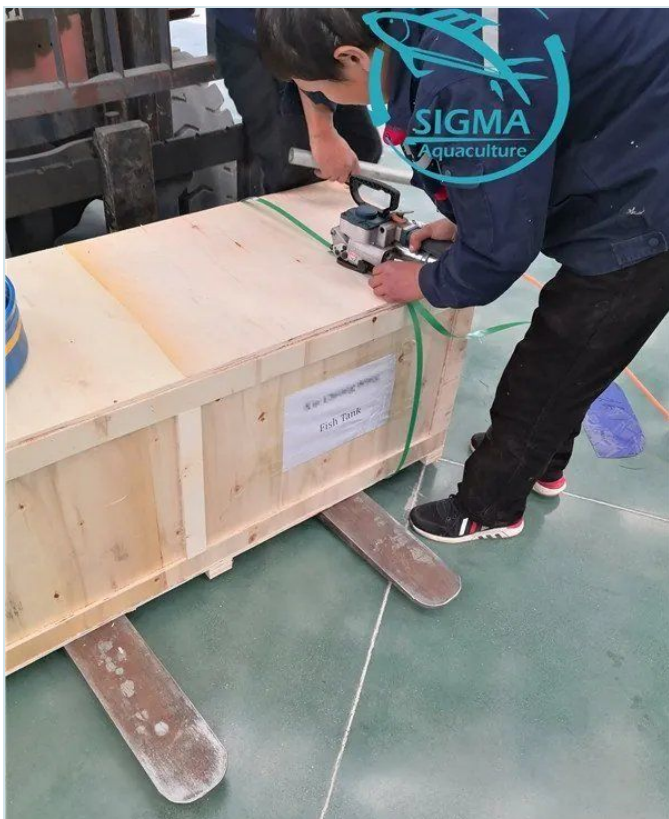
Japfa Group, Asia's largest aquaculture company, purchases biofloc fish tanks from SIGMA all year round. Galvanized circular tanks with food-safe liners were delivered and installed for high-density biofloc tilapia culture, a long-term repeat-supply partnership.



Fish Farm Tanks for Nissui, Japan

JAPAN NISSUI

Japan's Nissui, known for some of the world's most stringent quality requirements, sources fish tanks from SIGMA for its aquaculture projects. Tanks and liners were precision-packed in custom wooden crates at our Shandong factory for export to Japan.



Fish Tank Export to Bangladesh

BANGLADESH

Circular fish tanks were manufactured, crated and shipped to a fish-farming customer in Bangladesh. Each tank kit was strapped into plywood export crates and container-loaded at the factory, ready for quick on-site assembly.



Fish Tank Export to Malaysia

MALAYSIA

A greenhouse-covered farm of large circular tanks in Malaysia was equipped with SIGMA tank systems. Dozens of galvanized frame tanks with blue liners were supplied for intensive, high-density fish culture under cover.



Fish Pond Liner Export to Ghana

GHANA

Fish pond liners produced on SIGMA's own HDPE film line were baled, wrapped and container-loaded for a customer in Ghana. Factory-direct liner production means quality, lead time and price are controlled at the source.



Tilapia Circular Tanks for Ghana

GHANA

A complete circular-tank package for intensive tilapia farming — galvanized frames, liners and fittings — was container-loaded for Ghana, one of SIGMA's key African markets, where we also supply Tropo Farms, the largest fish-farming company in Africa.



Super-Large Fish Tank Export to Mozambique

MOZAMBIQUE

Super-large fish tanks were produced and shipped to Mozambique, with heavy-duty tank fabric rolled, strapped and crated for ocean freight. The project shows how even the largest tank sizes ship compactly and assemble quickly on site.



SIGMA
AQUACULTURE

Let's build your farm together.

EMAIL

info@sigma-aquaculture.com

PHONE / WHATSAPP

+86 155 8870 0780

WEBSITE

www.sigma-aquaculture.com

FACTORY

Anqiu, Weifang, Shandong, China

SIGMA AQUACULTURE (BRAND OF SIGMA INDUSTRIES CO., LTD) · SINCE 2015