

EXAMPLE PROJECT · SHRIMP HATCHERY

Commercial Shrimp Hatchery — Equipment & RFQ Checklist

A supplier-neutral planning checklist for a commercial *Litopenaeus vannamei* hatchery producing 200–600 million post-larvae per year. Use it as a starting point for feasibility, RFQ scope and bankability review — then adapt to your site, species and market.

This document is provided by FishMatch Group as a planning aid. It is not engineering advice and does not replace site-specific class-3 estimates.

Project assumptions

Assumption	Indicative value
Species	<i>Litopenaeus vannamei</i> (SPF/SPR)
Annual output	200–600 million PL10 / year
System type	Flow-through marine hatchery + RAS nursery
Cycles per year	30–35 staggered larval cycles
Survival target (egg → PL10)	35–55% base · 50–65% mature
Water salinity	28–35 ppt (coastal seawater)
Indicative CAPEX	\$3.5M–\$6.5M (200M PL) · \$7M–\$12M (600M PL)
Indicative OPEX	\$0.8–\$1.5M/yr (200M) · \$1.8–\$3.2M/yr (600M)

Indicative CAPEX composition

Item	Indicative share of CAPEX
Biosecure building & civil works	22–30%
Tanks, raceways & plumbing	12–18%
Water treatment & RAS loops	10–16%
Live-feed production systems	8–14%
Broodstock & maturation equipment	6–10%
Electrical, controls & SCADA	6–10%
HVAC, heating/chilling & backup power	6–10%
Engineering, permits & PM	6–10%
Contingency (recommended)	10–15%

Equipment checklist

Tick each item as you confirm scope with a supplier. Every line should appear in at least one RFQ package.

Broodstock holding & maturation

- ☐ Temperature-controlled maturation tanks (5–20 m³) with photoperiod control
- ☐ Unilateral eyestalk ablation station OR validated non-ablation protocol setup
- ☐ Spawning / egg collection tanks with gentle aeration and dark cover
- ☐ Nauplii counting tables and disinfection bath before transfer
- ☐ SPF/SPR broodstock quarantine facility separate from production
- ☐ Broodstock feed cold storage (fresh squid, polychaetes, maturation diet)

Larval rearing

- ☐ Conical or flat-bottom larval tanks (10–40 m³) with central drain
- ☐ Aeration grid (oil-free blower) and air distribution manifold
- ☐ Green-water AND clear-water protocol capability
- ☐ Larval feeding trolleys, siphon kits and screen-mesh harvest nets (25–500 µm)
- ☐ Immersion heaters / heat-exchange loop to hold 28–30 °C
- ☐ Backup oxygen (LOX or PSA) with tank-level solenoid dosing

Live feed & algae production

- ☐ Microalgae photobioreactors or bag/batch systems (Chaetoceros, Tetraselmis, Nannochloropsis)
- ☐ Sterile inoculum lab (autoclave, laminar flow hood, incubator)
- ☐ Rotifer culture systems with continuous or batch harvest
- ☐ Artemia cyst incubators, separation screens and enrichment tanks
- ☐ Cold storage (–20 °C) for cysts, algae paste and enrichment emulsions
- ☐ Backup live-feed supply contract with an independent producer

Nursery & PL conditioning

- ☐ RAS or flow-through nursery tanks (20–80 m³) with biofilter and degasser
- ☐ Gradual salinity acclimation manifold (freshwater blending)
- ☐ Temperature conditioning loop to farm-side receiving temperature
- ☐ PL counting device (volumetric or image-based) and grading screens
- ☐ PL packing station: oxygen bottles, plastic bags, cardboard cases
- ☐ Backup power for nursery life-support (biofilter + O₂ dosing)

Water treatment & biosecurity

- ☐ Coastal intake with coarse and fine screening and settling reservoir
- ☐ 3–7 days storage reservoir with chlorination and dechlorination
- ☐ Rapid sand filter + cartridge filter (5 µm and 1 µm final)
- ☐ UV disinfection sized for peak flow (≥ 40 mJ/cm²)
- ☐ Ozone contact tank with residual monitoring and off-gas destruction
- ☐ Effluent disinfection (chlorine or ozone) before discharge
- ☐ PCR / microbiology lab for WSSV, EHP, AHPND, IMNV, IHHNV, TSV

- ☐ Biosecure zoning: foot baths, hand-wash, dedicated PPE per zone

Monitoring & controls

- ☐ Continuous DO, temperature, salinity, pH probes on critical tanks
- ☐ SCADA / PLC with SMS + email alarms and remote view
- ☐ Automated data logging for larval survival, feed and water quality
- ☐ Microbiology bench with microscopes and larval health scoring sheets
- ☐ Batch traceability (broodstock lot → nauplii → larvae → PL shipment)

Energy & utilities

- ☐ Installed electrical load: 250–800 kW depending on RAS extent and climate
- ☐ Standby generator sized for broodstock + larval + nursery life-support
- ☐ UPS on SCADA, alarms, PCR lab and critical dosing pumps
- ☐ Heat pumps or chillers for temperature stability (26–30 °C rearing)
- ☐ Steam / hot-water for algae media sterilisation and CIP
- ☐ Compressed air (oil-free) with duty + standby blowers
- ☐ Optional solar-hybrid array for daytime aeration and pumping loads

Buildings, civil works & compliance

- ☐ Biosecure hatchery hall with epoxy floor, drains and wash-down
- ☐ Separated broodstock, larval, algae, nursery and PL packing rooms
- ☐ Quarantine building physically detached from the main hatchery
- ☐ Laboratory (wet + dry) with dedicated bench and fume hood
- ☐ Office, meeting room and PPE / laundry facilities for staff
- ☐ Chemical store (chlorine, sodium thiosulphate, acids) with bunding
- ☐ EIA, water abstraction permit, discharge consent and animal-health approvals

Bankability checklist

Lenders and investors typically expect every point below to be answered before releasing project finance.

- ☐ Signed LOI(s) with grow-out farms for the planned PL output
- ☐ Seawater intake characterised for salinity, temperature, pathogens and seasonality
- ☐ SPF/SPR broodstock or nauplii supply secured with two independent sources
- ☐ Qualified hatchery manager with vannamei experience named
- ☐ PCR / microbiology capability in place or contracted
- ☐ Environmental & discharge permits achievable within the project timeline
- ☐ CAPEX supported by class-3 estimates from ≥ 2 independent sources
- ☐ OPEX modelled at pessimistic, base and optimistic survival scenarios
- ☐ Financing structure matched to a 18-24 month cash-flow ramp-up
- ☐ Disease risk (WSSV, EHP, AHPND, IMNV) mitigated by design AND SOPs

Before you send the RFQ

Confirm each of these data points are documented in your RFQ package so quotes are comparable across suppliers.

- ☐ Target capacity in million PL10 per year (base case AND scaled case)
- ☐ Hatchery type (flow-through, RAS nursery, hybrid)
- ☐ Number of larval cycles per year and staggering plan
- ☐ Broodstock source and biosecurity requirements (SPF/SPR, PCR panel)
- ☐ Live-feed strategy (in-house vs. outsourced Artemia / algae)
- ☐ Water source, salinity range and required treatment (UV, ozone, filtration)
- ☐ Site conditions (climate, grid, seismic, road access, discharge point)
- ☐ Certification targets (BAP / ASC-aligned hatchery practices)
- ☐ Delivery Incoterms, commissioning and training package
- ☐ Warranty, spare parts and after-sales support terms

Next step

Build a confidential, supplier-neutral RFQ at **fishmatchgroup.com/quote** — supplier identities stay private until you approve them, and buyers never pay us.