



A global snapshot of next-gen shrimp production systems

Matt Craze, Head of Research



All shrimp is land-based!

Traditional pond farming



Modern recirculating systems



- Dating from the 1970s, traditional shrimp farming started in ponds in Central America, Ecuador, Indonesia. Boom-and-bust cycles often sparked by mortality rates that can exceed 40%
- Ponds use rudimentary recirculation -- electrically powered paddles oxygenate water
- Shared waterways, little biological control

- Indoor, temperature-controlled farms
- Still a concept, unproven at big industrial scale
- Can be located in major consumer markets
- Operators can control biology although no-one has succeeded at scale
- Systems use recirculation, pioneers using both hybrid biofloc or pure play RAS technology

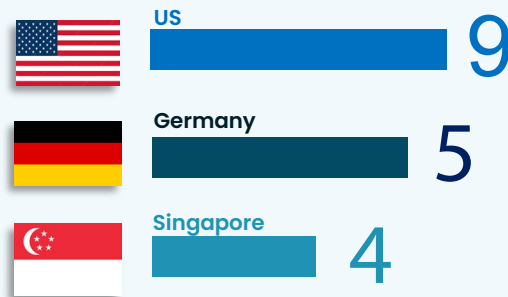
A snapshot of next-gen shrimp projects by status

- Spheric Research compiled the first ever database of these facilities in its [Land-based Aquaculture Report](#)
- To qualify, facilities must operate indoor, closed containment farms using recirculating technology
- Production statistics are hard to come by, and very few operate beyond pilot stage volumes
- Spheric Research uses primary and secondary research to gather market intelligence and build the database

■ Operating ■ Pilot ■ Conceptual ■ Construction



Countries with highest number of projects

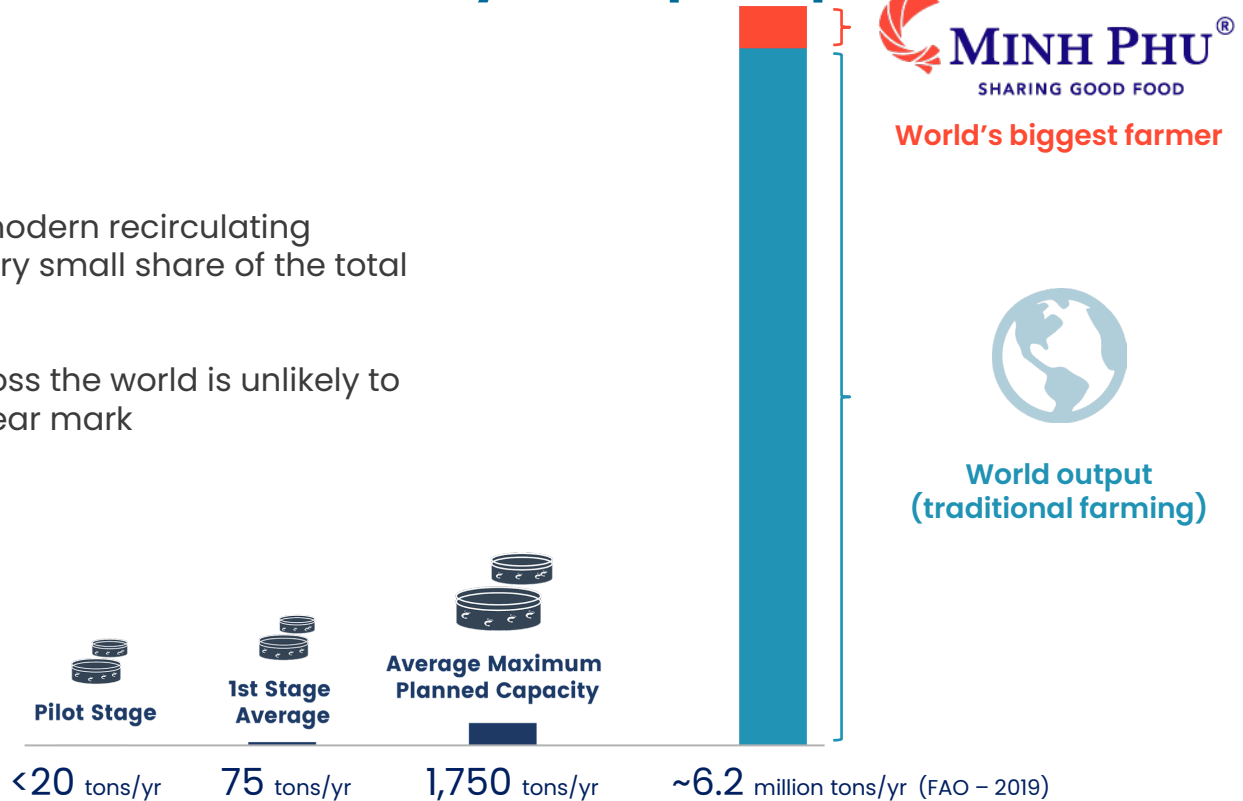


“ No-one has really mastered the art of RAS shrimp farming yet. ”

– Robins McIntosh, Executive vice-president of Charoen Pokphand Foods

Bringing this nascent industry into perspective

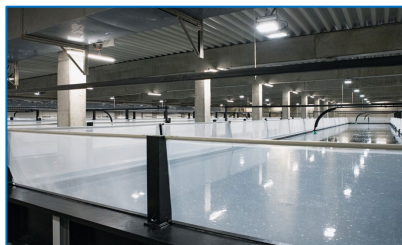
- Shrimp production from modern recirculating facilities accounts for a very small share of the total world output
- Output from all farms across the world is unlikely to breach the 1,000-ton-a-year mark



Current landscape

- RAS shrimp farming pioneers are using clear-water RAS tech and hybrid biofloc technology

Clear water systems



- Biofilter to extract nutrients from water
- Systems have more filtration equipment, higher capital and operational costs

- **Companies using the systems:**



SWISSSHRIMP⁺

Hybrid biofloc system



- Retains more nutrients in the water
- Less equipment, lower capital costs than clear water systems

NORAY



Several projects coming online in North America



Name	Status	1st Stage Capacity	Commission year	Eventual Maximum Capacity
Homegrown Shrimp (CP Foods)	Construction	190	2022	1000
Midland Co	Pilot	Unknown	2018	40
Natural Shrimp, FL	Construction	Unknown	2022	Unknown
Natural Shrimp, IA	Operating	Unknown	2021	212
Natural Shrimp, TX	Operating	70	2021	Unknown
Piscaria	Pilot	Unknown	2009	125-200
Royal Caridea	Conceptual	10	2024	650
Sun Shrimp	Operating	230	2013	Unknown
Tru Shrimp	Conceptual	Unknown	Unknown	2300

- Shrimp is the most consumed seafood product in the US, several entrepreneurs are aiming to produce vannamei in modern systems. Thai shrimp feed giant Charoen Pokphand Foods is building a facility in Florida. Natural Shrimp is publicly traded and building three facilities

Germany, Spain leaders in modern shrimp farming

Name	Country	Status	1st Stage Capacity	Commission year	Eventual Maximum Capacity
Alpengarnelen	Austria	Pilot	10	2015	Unknown
CaraRoyal	Germany	Pilot	15	2014	Unknown
Crusta Nova	Germany	Pilot	30	2016	Unknown
FloGro	UK	Conceptual	Unknown	2022	300
Forde Garnelen	Germany	Pilot	10	2015	Unknown
HansenGarnelen	Germany	Pilot	10	2019	10
Lisaqua	France	Pilot	10	2023	100
Merman's House	Ukraine	Pilot	10	2022	6,000
Neue Meere	Germany	Pilot	18	2015	25
Noray Seafood	Spain	Operating	100	2011	600
ShrimpVision	Norway	Conceptual	50-100	2025	1,000
Swiss Shrimp	Switzerland	Pilot	Unknown	2018	60
White Panther	Austria	Pilot	Unknown	2019	Unknown



- Several companies are operating in Europe at pilot stage, and Germany leads the way. Noray Seafood is one of the oldest operators and secured financing from French private equity fund Creadev to undertake a significant expansion

Singapore is aiming to lead shrimp innovation



Name	Country	Status	1st Stage Capacity	Commission year	Eventual Maximum Capacity
Aqua Development	South Korea	Pilot	Unknown	2021	1,000
Blue Aqua International	Singapore	Pilot	Unknown	Unknown	200
Charoen Pokphand China	China	Construction	540	2022	10000
Guolian Aquatic	China	Pilot	Pilot	2017	800
IMT Engineering	Japan	Pilot	25	2007	Unknown
KEPCO/IMT	Japan	Construction	80	2022	Unknown
Nippon Suisan Kaisha (Nissui)	Japan	Pilot	Unknown	2016	200
Universal Aquaculture	Singapore	Construction	40	2021	400
Vertical Oceans	Singapore	Pilot	Unknown	Unknown	Unknown

- Singapore's 30-30 ambition (30% of all food must come from domestic sources by 2030) spurred investment in new shrimp farming technology. Chinese shrimp trading giant Guolian is reportedly giving up on a land-based shrimp facility as it quits aquaculture farming

What our next update will likely include

- The investment climate has not been favorable for new projects, as the industry observed through the unsuccessful IPO attempt of truShrimp
- China's Guolian is planning to quit its aquaculture business, leaving the future of the RAS shrimp project in doubt
- New actors are entering the arena to crack the code of next generation shrimp farming. The joint venture of Germany's Aquapurna and RAS specialist Billund Aquaculture is interesting
- Like salmon farming (and the flagship Atlantic Sapphire RAS project) it is incumbent on leading pioneers like CP Foods with its Homegrown Shrimp and Noray Seafood to crack the code of indoor shrimp farming

Matt Craze, Head of Research – Contact Email: matt@sphericresearch.com

More insights in our
upcoming report



Spheric

Thank you!

