

CASE STUDY

BORSAFE™ HE3490-LS AND HE3490ELSH LEADING THE SHRIMP FARMING REVOLUTION IN VIETNAM



Minh Phu Seafood's shrimp farm in Lộc An, Bà Rịa–Vũng Tàu (Photo courtesy of Tien Phong Plastics JSC)

BACKGROUND

Vietnam is home to a multibillion-dollar shrimp industry, making it one of the largest shrimp exporters in the world today. Coupled with the favourable environmental conditions and rapid advancement in shrimp aquaculture technologies, Vietnam's shrimp farming industry has seen rapid growth in recent years.

Minh Phu Seafood, Vietnam's and one of the world's top shrimp producers and exporters, introduced a high-tech model of shrimp cultivation that utilises steel and plastic pipes, along with canvas. Dubbed the "2-3-4" method, it has helped to increase the farms' yield while ensuring quality water is supplied for shrimp growth without affecting the environment. This method sees shrimps raised in two different ways with three harvesting periods that are governed by Minh Phu's four farming operating principles – clean seeds, clean water source, clean antibiotics and clean environment.

This "2-3-4" model is implemented in Minh Phu's two main farming areas:

- Lộc An, Bà Rịa–Vũng Tàu Province, with a total farm area of 302 hectares and 250 ponds
- Kiến Giang Province, with a total farm area of 600 hectares and 900 ponds

CHALLENGES

The shrimp farming industry in Vietnam faces several issues. This includes the lack of quality water supply sources near shrimp farms, seepage of antibiotics in waterways, and disappearing mangroves that are being cleared to make way for shrimp farms in the coastal areas.

Without a tailored, sustainable solution that delivers a steady water supply that does not impact the environment, shrimp farms including Minh Phu have to look into costly water treatments, affecting their market competitiveness.

SOLUTION

To help the 1,150 ponds in Minh Phu's two shrimp farms receive a steady supply of uncontaminated seawater, a total of 4,572m of pipes were laid from the shrimp farm reservoir to the centre of the sea. Out of which, 2,376m of pipelines are laid eight metres under the sea level to transport large volumes of uncontaminated seawater to the farms.

Tien Phong Plastics Joint Stock Company (JSC) was appointed to supply pipes for the two farms that would transport over 7,000m³ of uncontaminated seawater far from the shore to 1,150 ponds per hour. Tien Phong Plastics JSC is well known in the industry for its long-standing expertise in pipe production and capability to produce big diameter pipes up to DN2000mm.

As the pipes will be installed under sea level amidst levels of high salinity and constant wave movement, the material of the pipes must be corrosion resistant, hygienic, easy to install, and can withstand tidal currents.

To deliver this major project, Tien Phong Plastics JSC chose BorSafe™ HE3490-LS, a high density polyethylene (HDPE), and BorSafe™ HE3490ELSH from Borouge.

The BorSafe™ HE3490-LS is a pre-compounded PE100 material with a successful track record of over 20 years in water distribution systems and key desalination projects. It has excellent carbon black dispersion and superior mechanical properties compared to natural resins and masterbatch, enabling pipes to have better quality consistency and weld quality. Other benefits of this material include:

- Lightweight and flexible
- Good corrosion resistance in a high salinity environment
- Hydraulically smooth surface that allows fluids to flow with minimum head loss
- Non-porous surface that prevents adhesion and growth of living organisms
- Versatile design which allows customers to produce solutions with pressure rating of up to 16 bars and pipe diameter of more than 2,000mm

With its high melt strength, BorSafe™ HE3490ELSH enables pipe manufacturers to achieve dimensionality and cost savings even for bigger and thick-walled pipes, which is usually difficult to achieve with conventional PE100 materials.

12.2km of DN1000, DN1200, DN1600 SDR21 and DN1400 SDR26 seawater collection and transmission pipes made of BorSafe™ HE3490-LS and HE3490ELSH were supplied and installed in Minh Phu's Lọc An and Kiến Giang shrimp farms.

The solutions provided by Borouge will ensure the quality of the water source, directly contributing to the output and quality of the farmed products, and encouraging a sustainable way of shrimp farming without affecting the coastal environment.

SUMMARY

Project name	Water pipes for Minh Phu Seafood
Project location	Vũng Tàu and Kiến Giang Provinces, Vietnam
Project completion date	2021 (Vũng Tàu) and June 2022 (Kiến Giang)
Producer	Tien Phong Plastics Joint Stock Company (JSC)
Application	Seawater collection and transmission pipeline
Project requirements	<ul style="list-style-type: none"> ▪ Anti-corrosion and durable in a high salinity environment ▪ Flexible and easy installation
Solution	BorSafe™ HE3490-LS and BorSafe™ HE3490ELSH
Solution benefits	<ul style="list-style-type: none"> ▪ Lightweight and flexible which suit the challenging installation conditions in the sea ▪ Resistance to corrosion, making it ideal in a high salinity environment ▪ Hydraulically smooth surface that allows fluids to flow with minimum head loss ▪ Non-porous surface that prevents adhesion and growth of living organisms ▪ Good flexibility in undersea conditions and wave movements ▪ Durability

About Borouge Borouge, listed on the Abu Dhabi Securities Exchange (ADX symbol "BOROUGE" / ISIN "AEE01072B225"), is a leading petrochemical company that provides innovative and differentiated polyolefin solutions for the energy, infrastructure, mobility, advanced packaging, healthcare and agriculture industries. ADNOC owns a majority 54% stake and Borealis holds a 36% stake in Borouge.

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