



Use of Pexgol vs HDPE pipe system for feeding salmon

Marine Farms Chile | 2017

Pipes used:

Pexgol 90 mm (6 mm wall thickness)
HDPE 90 mm (10 mm wall thickness)

Application:

Fish feeding

Certification:

Study certified by the Universidad Austral de Chile, (Puerto Montt) through a Thesis.



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Characteristics

At the time of the study, Marine Farms were fattening Pacific Salmon or Coho with a 7 month fattening cycle.

About the cultivation center:

- One modified vessel with a feeding system built in.
- Two main pipelines.
- Selectors outside the vessel in a floating platform.
- Set of feeder lines to the farming cages. The farming center has 15 cages but during the study only six cages, three for each feed line, were in operation.

Variables to be measured

- Wear.
- Quantity of fine and broken generated.

Measuring points

The measurement was made at the major inflection points, where by historical background and by the turbulence that occurs in these areas, the pipes are more affected by the abrasion of the food.

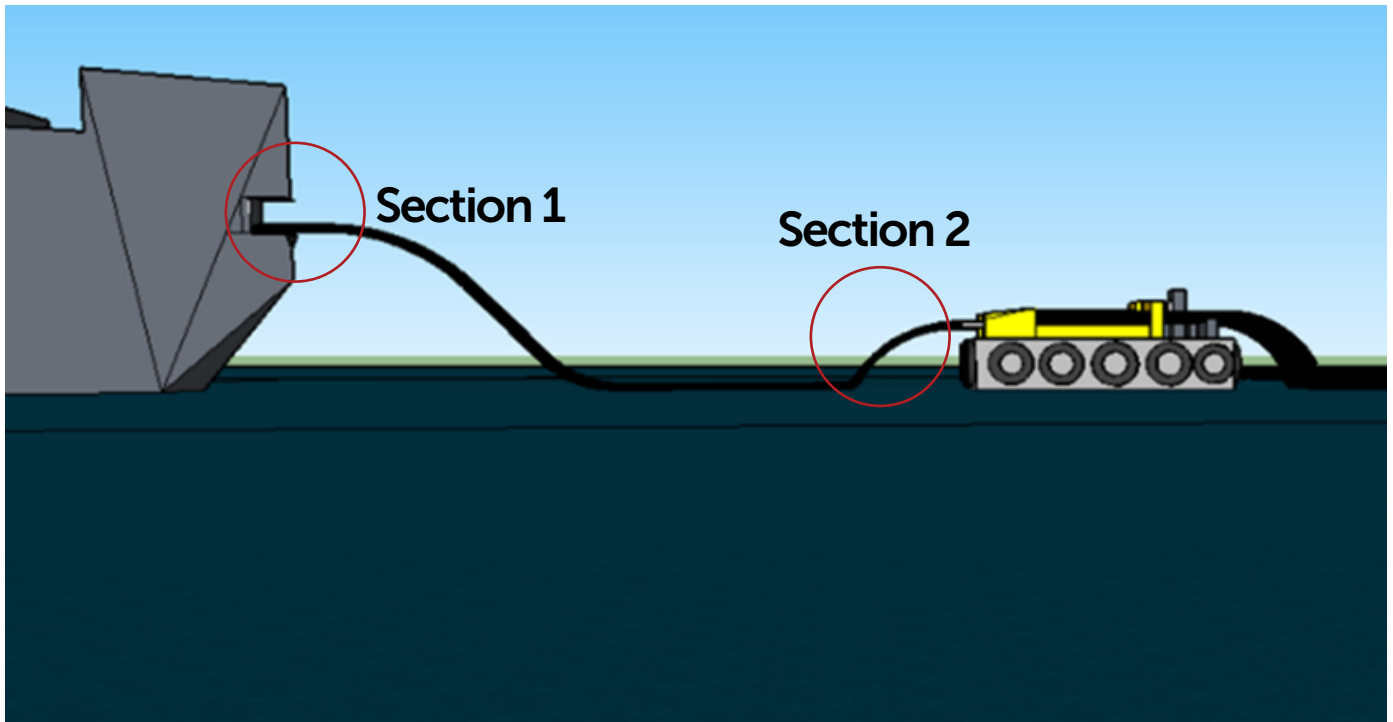


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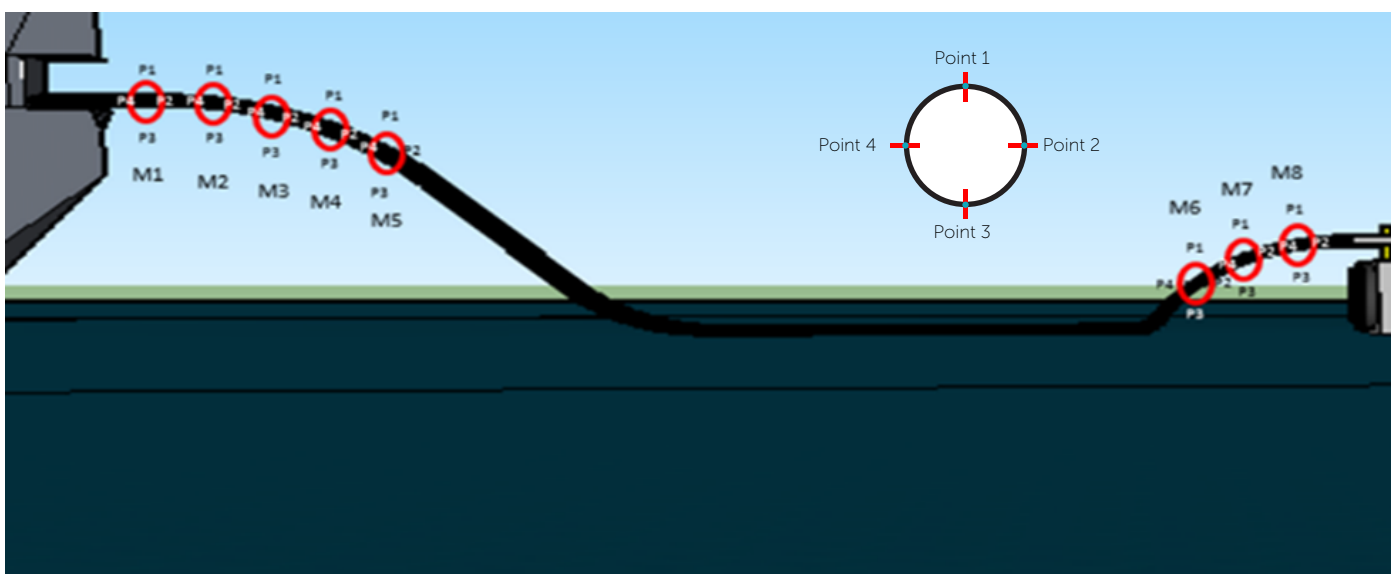


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Sections for the study of thicknesses



Measuring points for piping (ultrasound)



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Results



The average rates of wear give an expected result for Pexgol piping compared with HDPE piping under the same operating conditions. Average values of 3.26 - 4.69 mm / month for HDPE versus 0.0 - 0.26 mm / month for Pexgol were obtained. It is concluded that the operational life of the HDPE is projected at only 2.6 - 3 months under the feed rates assessed as average. Under the same conditions the Pexgol is projected to last nearly 18 times as long, that is 4.5 years (54 months).

Comparative table of wear measurement results:

Comparative table of wear measurement		
Measuring points(mm)	HDPE	Pexgol
P1	4,69	0,26
P2	3,73	0,02
P3	3,26	0,00
P4	3,63	0,14

Economic benefits

To analyze the economic benefit offered by the Pexgol pipeline for the salmon farming centers, considering only its longer lifespan due to greater resistance to wear, the total meters of feeding pipes of the cultivation center, its cost per meter and the replacement cost.

	HDPE	Pexgol
Meters	1.440	1.440
Value USD / M	4,2	10,4
Total Pipe Cost	\$6.048	\$14.976
Replenishment cost 1st cycle	\$6.048	-
Replenishment cost 2nd cycle	\$6.048	-
Total Cost	\$18.144	\$14.976

To analyze the economic benefit offered by the Pexgol pipe due to the lower loss of fines and broken, due to the fact that the Pexgol pipe has a roughness coefficient much lower than that of a conventional PE pipe, samples were taken from the Cellar, Dispenser and the output of the Selector.

This test was carried out in conjunction with the laboratory owned by the food supplier in Puerto Montt, through sieves required and recommended by the laboratory technicians. The measurements resulted in an economic saving of 63% only for this concept.



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HDPE

	Cellar	Dispenser	Selector
Percentage of fines and broken	0,17%	1,74%	1,41%
Food used per cycle (kg)	1.720.000	1.720.000	1.720.000
Amount of food loss (kg)	3.007	29.957	24.257
Salmon feed cost (USD / kg)	1,45	1,45	1,45
Loss in US dollars	US\$4.360	US\$43.438	US\$35.173

Pexgol

	Cellar	Dispenser	Selector
Percentage of fines and broken	0,14%	1,08%	0,52%
Food used per cycle (kg)	1.720.000	1.720.000	1.720.000
Amount of food loss (kg)	2.386	18.616	8.946
Salon feed cost (USD/ kg)	1,45	1,45	1,45
Loss in US dollars	US\$3.459	US\$26.993	US\$12.971

Savings	US\$900	\$16.445	US\$22.202
Percentage of Saving	21%	38%	63%



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Advantages

- **High resistance to wear:**
Pexgol is the preferred solution for abrasive materials transportation. Typically resists three times more than HDPE and twice more than steel.
- **Excellent chemical and corrosion resistance:**
Pexgol pipes can resist a wide range of chemical agents, slurries, toxic and radioactive materials.
- **High temperature resistance:**
Working temperatures can range from -50°C/-58°F up to 110°C/230°F.
- **Superb internal and external corrosion resistance:**
Our pipes are proven to withstand decades of exposure to corrosive environments, with nonstop performance in some of the world's harshest environments.
- **Long pipe sections:**
Pexgol's pipes can be supplied in long lengths coils, reducing number of joints, installation time and risks.
- **Creep and impact resistance:**
Pexgol's crosslinking piping solution can withstand high amounts of axial and radial stresses and are highly resistant to impact, fracture and fatigue. Also are completely resistant to cracks even when dragged over sharp rocky terrain and coagulated salt crystals.

