

Built for Generations: A 40-Year Test of GRP Durability

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In the early 1980s, Amiblu (then Vera) installed a GRP pipeline for a hydropower facility operated by Statkraft in Jøsenfjorden, Norway. Four decades later, a detailed ultrasonic inspection confirmed what long-term performance had already suggested: despite demanding service environments, the pipeline is still in excellent condition. A quality that is backed by decades of research and product development by Amiblu.



Fig. 1: GRP pipeline for a hydropower in Jøsenfjorden, Norway shows excellent condition after 40 years of operation

Installed in a tunnel connecting two bodies of water through a mountain, the GRP pipeline DN 800, PN 10 has operated under stable, moisture-rich conditions with minimal light exposure for 40 years. Originally fabricated as filament-wound spools, the pipe was designed to handle a service pressure of 700 kPa in hydroelectric water management.

In October 2024, Amiblu conducted an ultrasonic inspection. The findings are remarkable: The pipe showed no visible surface cracking, blistering, deformation, or signs of wear. Wall thickness measure-

ments remained consistent with original design specifications. Even more significantly, the corrosion-resistant inner barrier – often the first line of defense in chemically aggressive applications – was found intact and undamaged. There was no sign of degradation due to chemical, physical, or biological attack.

The ultrasound findings were also analysed by UT-Comp using their UltraAnalytix® method to further analyze the pipe condition and indicate future inspection strategies for continues safe service.

With a critical threshold for pipe condition through the UComp percent design life factor (PDS) set at 50%, the tested section showed a healthy 87% PDS – well above the limit for more frequent monitoring. This indicates that the material retains much of its original mechanical strength and structural stability. Minor external wear such as small deposits of minerals and isolated rust on supports had no impact on the pipe's integrity.

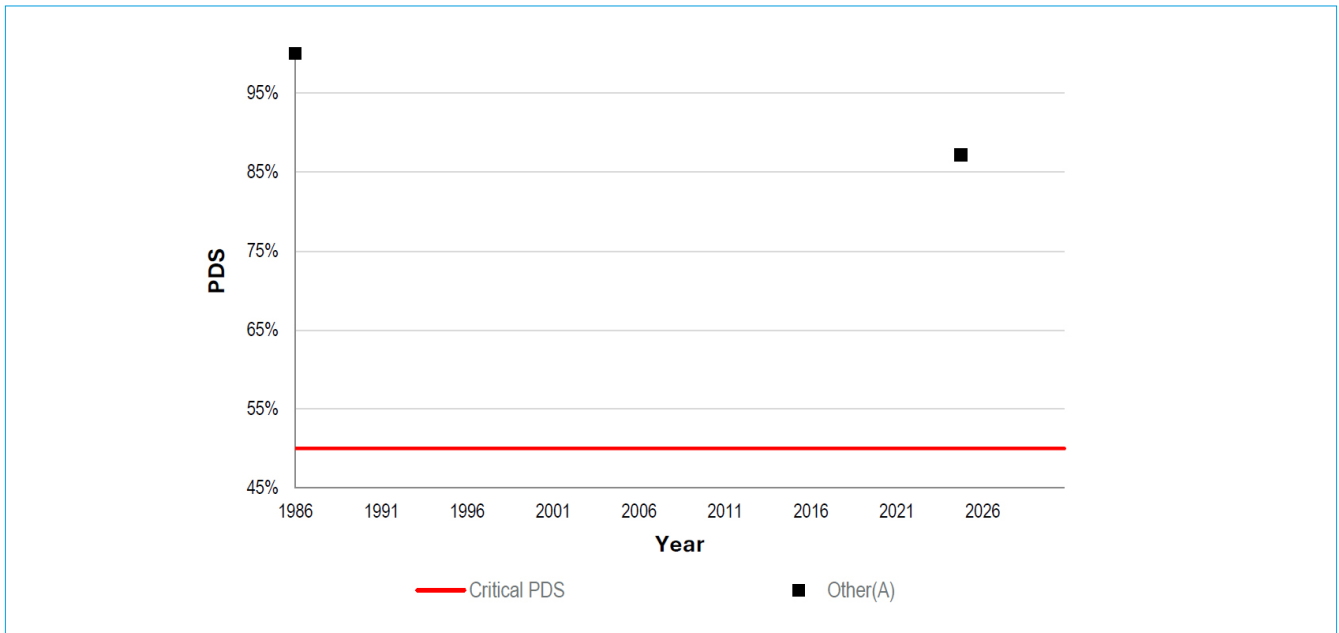


Fig. 2: Full thickness PDS over the asset service life

Historical performance modeling and current inspection data support the conclusion that the pipe can continue in service well beyond the next scheduled evaluation, which is set for 2027. This case represents not only a milestone in GRP pipe operation but also a rare opportunity to observe such infrastructure at the 40-year mark – a longevity few pipe materials can match without significant deterioration. Statkraft, the asset owner, can continue relying on this infrastructure with confidence.

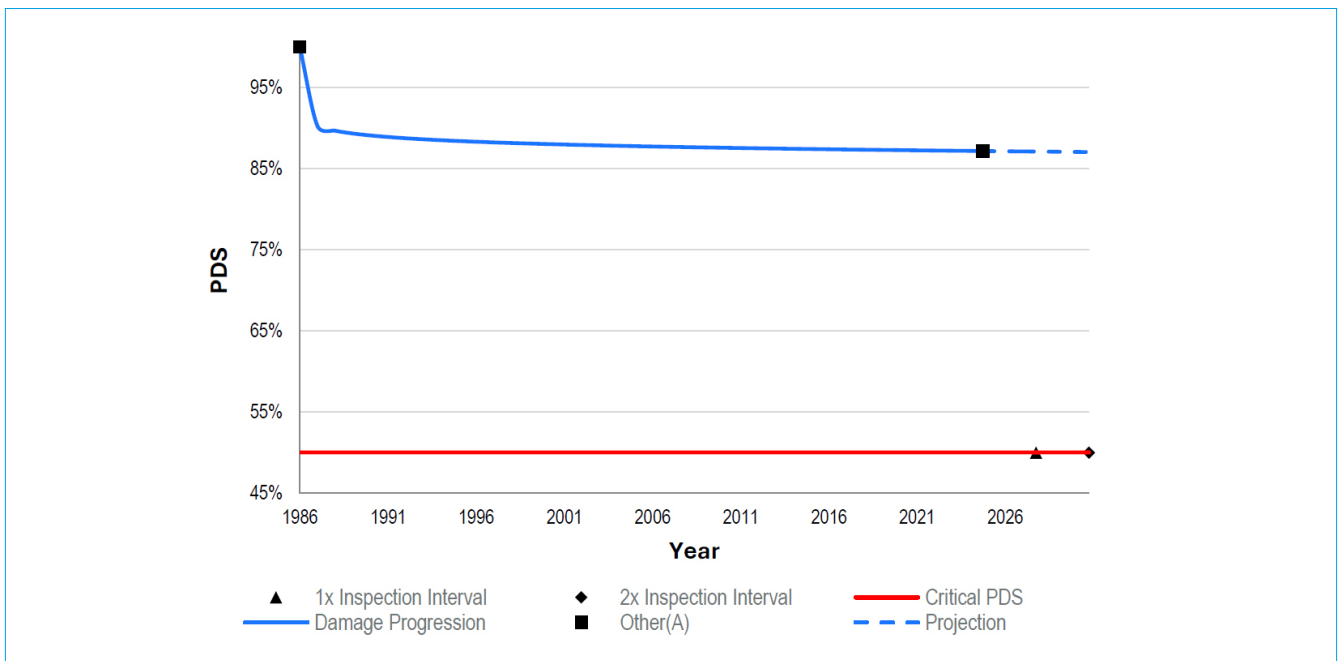


Fig. 3: PDS change and progression



Fig. 4:

The ultrasonic inspection from October 2024 showed no visible surface cracking, blistering, deformation, or signs of wear

This success story is one of numerous powerful testaments to the intrinsic properties of GRP materials and to decades of meticulous research, development, and testing by Amiblu. GRP pipes are designed to resist the primary mechanisms that cause failure in traditional pipe systems, particularly corrosion.

These field results confirm what the laboratory testing predicts: GRP pipes do not suffer from the same long-term vulnerabilities as other materials. Their performance is not theoretical; it is proven across real installations, in both buried and submerged conditions, in sewage and fresh water, in mild climates and harsh environments alike.

The long-term success of GRP pipes is the result of thoughtful system design, precision manufacturing, and adherence to industry-leading testing protocols. It also reflects the importance of monitoring and scheduled inspection programs that verify in-service performance and guide responsible asset management.

As infrastructure owners around the world seek solutions that balance initial investment with long-term reliability and sustainability, GRP offers a proven solution supported by decades of research and successful real-world performance.

