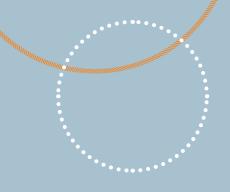
When clients become partners in innovating sealing solutions for the green transition



By collaborating closely with the client and leveraging the respective expertise and supplier networks, Dana-Seals successfully delivered a tailored sealing solution that addressed the specific challenges posed by hydrogen for e-fuel in cryogenic environments. The outcome exemplifies the power of partnership in driving innovation and achieving sustainable solutions for the green transition.

Background

Developing sealing solutions for hydrogen for e-fuel in cryogenic environments presents a unique challenge. This includes the need for new compounds and alloys to enable effective sealing against hydrogen H2, the smallest molecule in the world. Standard sealing solutions available today often fall short in addressing these requirements. A client from the European hydrogen industry faced a similar predicament. None of the existing seals met their specific performance and material needs. With time running out, they urgently sought a customized seal that could meet their requirements promptly.

Solution

To meet the tight deadline, Dana-Seals and the client's R&D department collaborated to form a fast-working team. This team not only combined their expertise but also tapped into each other's suppliers and extended networks. The race against time became a quest to source rare compound and alloy parts, as well as acquire unique raw materials within a limited timeframe.

Research & Development

Dana-Seals used a new high-performance thermoplastic compound, DanaFlon 196, specifically for this project. The spring energizer utilized a unique alloy combination capable of withstanding extreme temperatures as low as -196 degrees Celsius. The client requested an acceptable leak rate of up to 200 parts per million (ppm). However, the customized seal from Dana-Seals demonstrated exceptional performance, with leakage measuring less than 50 ppm. This remarkable achievement surpassed the client's requirements by fourfold.

Seal for cryogenic hydrogen

> Temperature	-196 degree C
> Media	5% hydrogen + 95% N2
> Movement	Static
> Diameter	Ø40 mm
> Groove dimensions	3,1 x 4,8 mm
> Sealing effect	Leak less than 50 ppm
Accepted leak	200 ppm
> Spring material	Special alloy
> Sealing material	DanaFlon 196 (High performance thermoplastic material)





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