

# DIAMOND'S high-temperature assemblies for SA2FIR Clean Sky 2 project

## Project Overview

Located in Amsterdam, Netherlands, the Royal Netherlands Aerospace Centre (NLR) is involved in the SA2FIR project, funded by the Clean Sky 2 research program of the European Union. This project aims to develop a wind tunnel model of an Ultra-High-Bypass Turbofan Engine, equipped with numerous sensors for aerodynamic and acoustic testing. In this context, the project aims to investigate the influence of symmetry on the sound produced by the UHBR engine and the aero-acoustic properties under cutback conditions.



Video about the SA2FIR Clean Sky 2 project

## Customer's Requirements

NLR required a robust data acquisition system (DAS) capable of withstanding high temperatures and vibrations. Specifically, the cables needed to endure temperatures up to +120°C and fit within limited cable routing space.

## The Solution

DIAMOND's high temperature Interconnects are specifically designed to meet the demands of harsh environments, offering reliable and continuous operation in temperatures ranging from -55°C (-67°F) to +150°C (302°F). These specialized optical interfaces ensure optimal performance and precision even under extreme conditions, making them ideal for challenging environments. With a temperature range significantly higher than that of conventional plastic connectors, DIAMOND's high / low temperature fiber optic metal assembly systems provide unparalleled reliability and safety, making these assemblies with 1 and 3 channels of 26 meters in length the perfect choice for NLR's project.



High Temperature interconnects

## Challenges

One of the major hurdles we faced on this project was developing a cable jacket that could withstand extremely high temperatures while maintaining a compact outer diameter. DIAMOND's high temperature assemblies are able to withstand temperatures beyond conventional levels, reaching up to +120°C within the cabling system alone. At the same time, maintaining a small outside diameter was paramount to accommodate the limited cable routing space.

In addition, ensuring precise tolerances between the connectors proved to be another critical aspect of the project. In particular, achieving tight tolerances between connectors such as F-3000® and ST was essential due to the intricate cabling path. These connectors play a critical role in maintaining the integrity and reliability of the entire system, so precise alignment and tolerances are essential for optimal performance.

## Customer's Statement



*NLR (Netherlands Aerospace Centre)  
Floris van der Plas*

Our project required fiber-optic cabling capable of withstanding high temperatures, strong vibrations, and yet simultaneously having an outer diameter small enough to fit our limited cable routing space. Diamond SA met the high precision and quality requirements we set for our projects, and their team helped guide us throughout the entire design process to ensure every aspect would suit our needs. We are extremely satisfied with the resulting product and look forward to working together with Diamond SA in the future again.

## About DIAMOND SA

DIAMOND SA is a Swiss traditional company based in Losone, specializing in the development, manufacturing, and assembly of high-precision fiber optic connections. As a vertically integrated company, all components and products are consistently produced in Switzerland. For more information, visit [www.diamond-fo.com](http://www.diamond-fo.com).