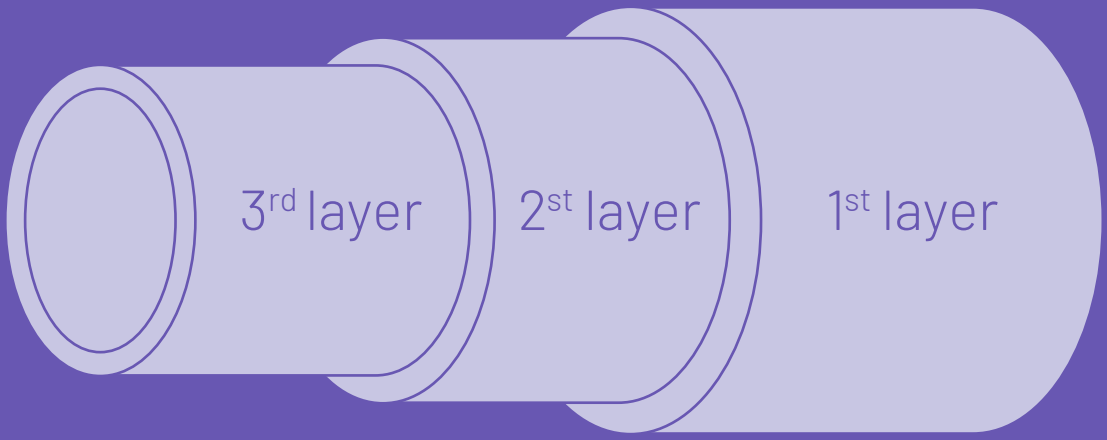
ADDITIVE MANUFACTURING

High performance 3DPro® Dry Gas Tube

Dry gas tubing pipe for preventing the argon/nitrogen gases from moisture contamination.



NIPPON GASES

Defining the problem

The quality of additively manufactured components is highly dependent on the quality of the base materials used and the environmental conditions during the build process. Gas-related contamination in high-performance additive applications can, among other things, lead to:

- Increased spatter formation,
- Faster powder aging,
- Premature component failure,

and further problems with component quality, process stability as well as the reproducibility of the process. Gases such as argon and nitrogen, as well as various gas mixtures, are generally available in sufficiently high purity levels for additive manufacturing.

Despite proper handling of the gas equipment, unwanted impurities from oxygen and moisture can occur. They diffuse from the surrounding atmosphere through the installed standard hose system and enter the closed supply system.

Since such system contamination would result in different gas purities at the machine inlet, a highly pure and reproducible gas atmosphere within the construction chamber can no longer be ensured.

This leads to varying building processes and component qualities, potentially resulting in increased component scrap rates.

Our solution

Unlike conventional hose systems, the multilayer design of the 3DPro® **Dry Gas Tube** prevents contamination of the gas used by the external atmosphere.

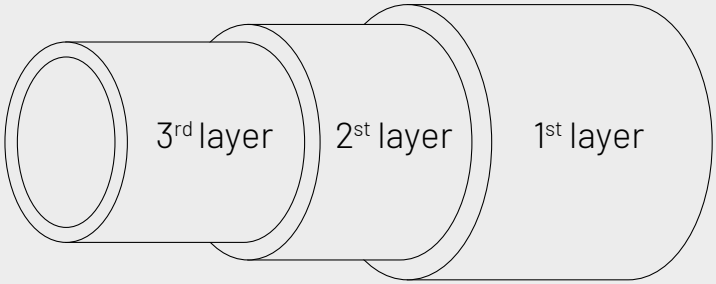
The gases transported through the 3DPro® **Dry Gas Tube** retain their high purity, from the gas outlet to the machine inlet, thus ensuring a consistently high gas purity during the additive production process.

3DPro® **Dry Gas Tube Technology**

In addition to protecting against contamination from the outside atmosphere, the 3DPro® **Dry Gas Tube** combines durable and heat-resistant properties due to its multi-layer structure, allowing flexible connection of your system to the gas outlet.

TNSC 3DPro®

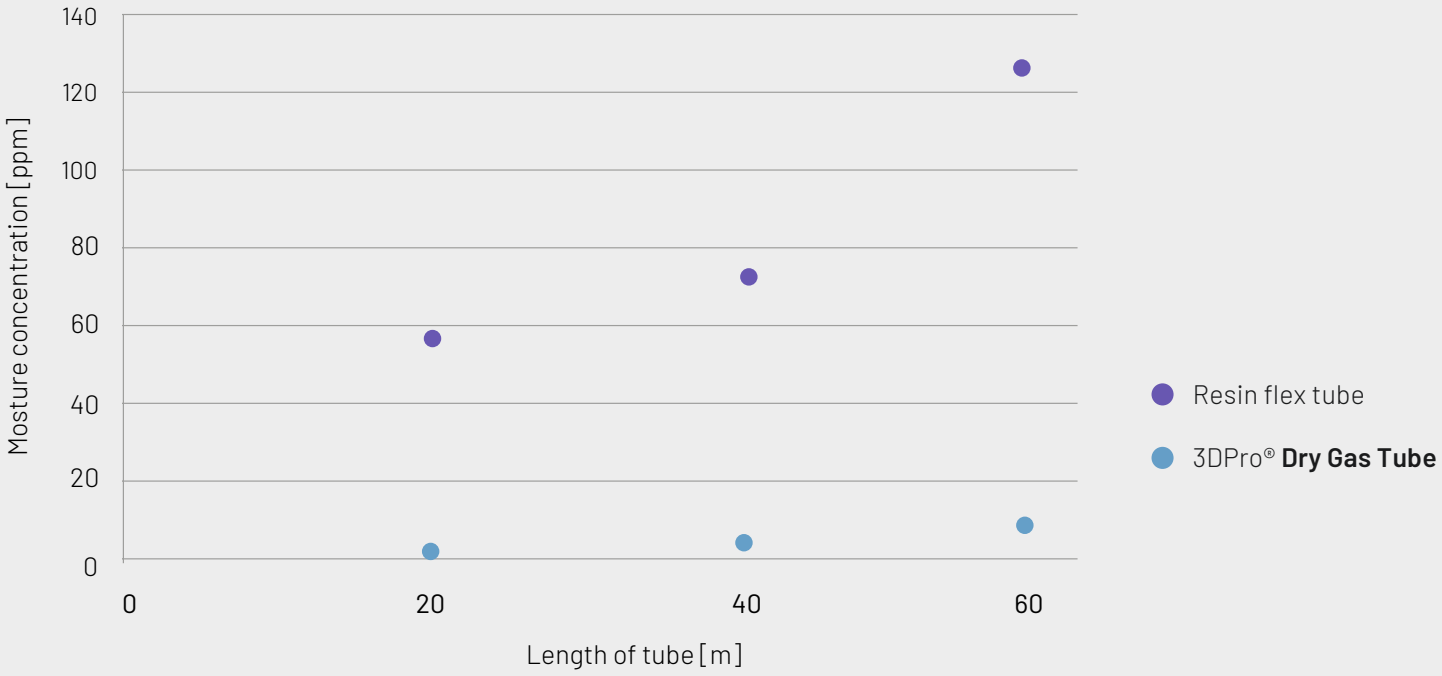
The 3DPro® **Dry Gas Tube** is part of our sister company Taiyo Nippon Sanso Holdings Corporation (TNSC)'s 3DPro® product line, which focuses on improving the metal AM process by optimizing the atmosphere during the building process. The gas solutions within the TNSC 3DPro® product line draw upon our extensive experience in the welding gas sector, as well as our expertise in providing demanding gas supplies to high-tech industries such as semiconductor, pharmaceutical, and aerospace.



The 1st layer protects against ambient moisture, the 2nd and 3rd layers protect against carbon dioxide as well as other impurities.

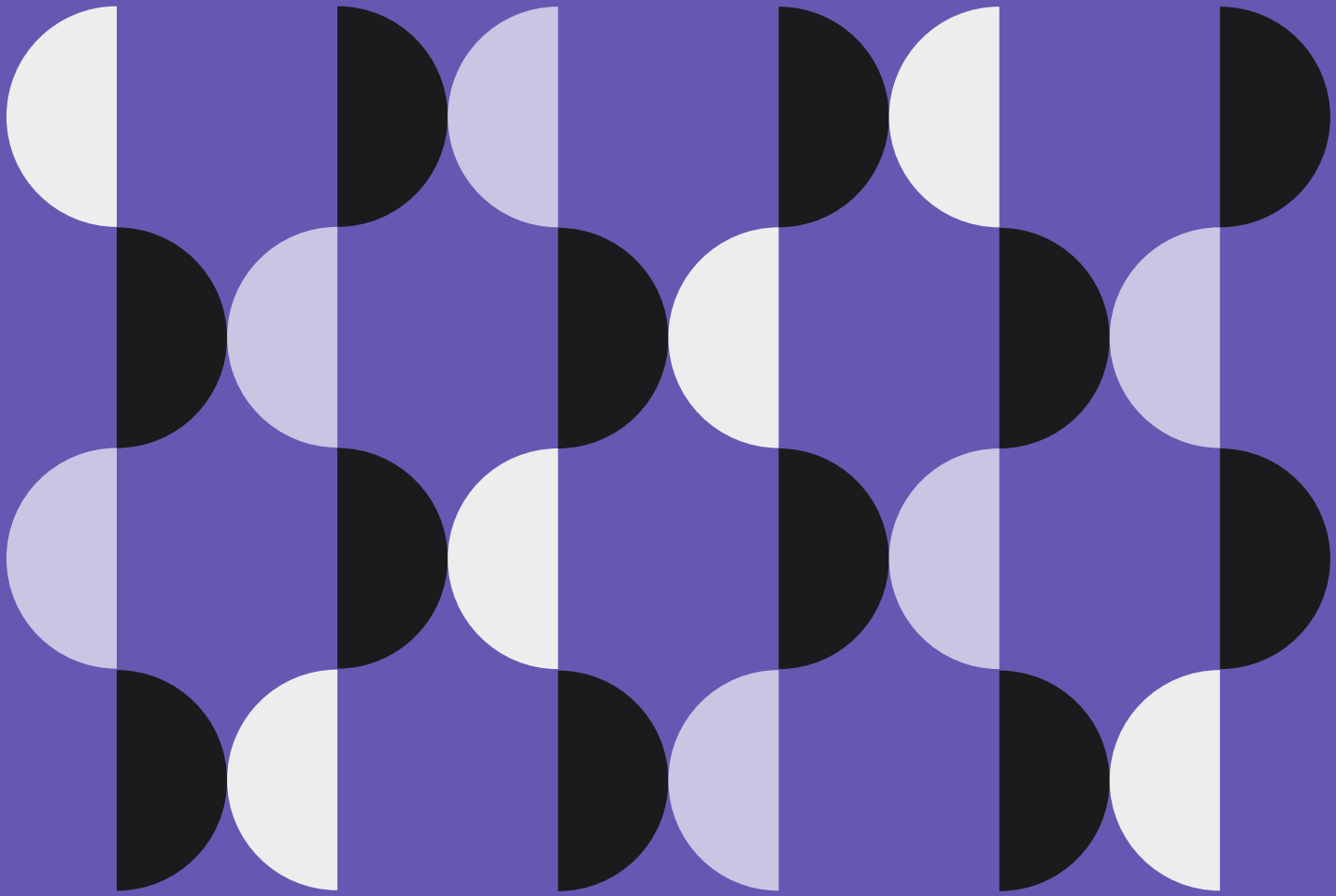
Performance

Since conventional hose systems have a porous structure through which contaminants can diffuse, gas-related contamination increases as a function of tube length.



Specification

Applicable gases	Ar, Ar/H_2 mixture, CO_2, He
Inlet pressure	less than 1.0 MPa
Diameter	OD 11mm, ID 6mm
Allowable bending radius	42mm
Temperature	0~50 [°C]



info@nippongases.com