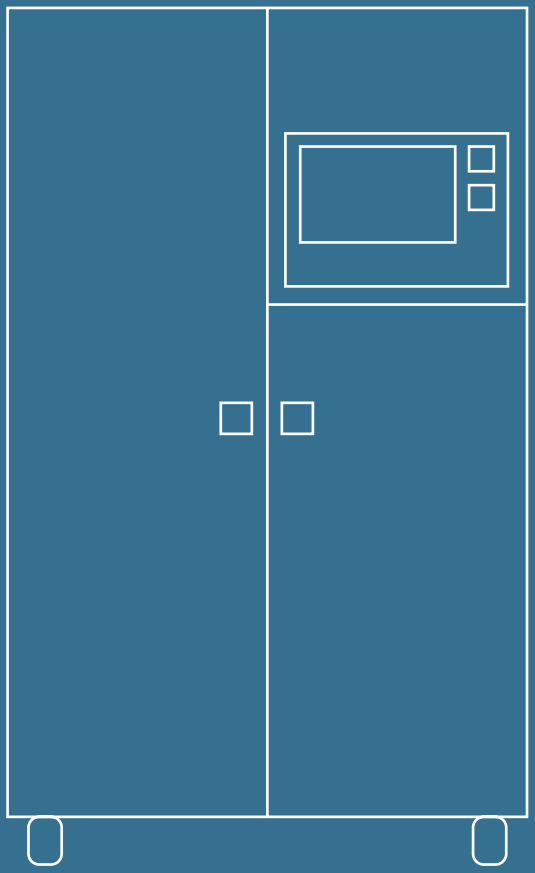
3DPro® Purifying Technology



NIPPON GASES

Additive Manufacturing

Introduction

In an additively manufactured component, even small amounts of absorbed oxygen and absorbed moisture can increase the risk of premature material fatigue. Possible consequences for the end user would be high costs due to premature component failure. The primary reason of the increase in moisture and oxygen content in the final component is the lack of a precise and consistently low controlled gas atmosphere within the building chamber.

Nippon Gases has in its 3DPro® portfolio different solutions to purify the consumed gas using recirculation purifying technology.

With those technologies, moisture and oxygen impurities are actively adsorbed during the building process and filtered out down to a few ppm. By creating a reproducible, high-purity and precisely adjustable atmosphere within the building chamber, moisture and oxygen absorption into the component can be significantly reduced and the mechanical component properties noticeably optimised.

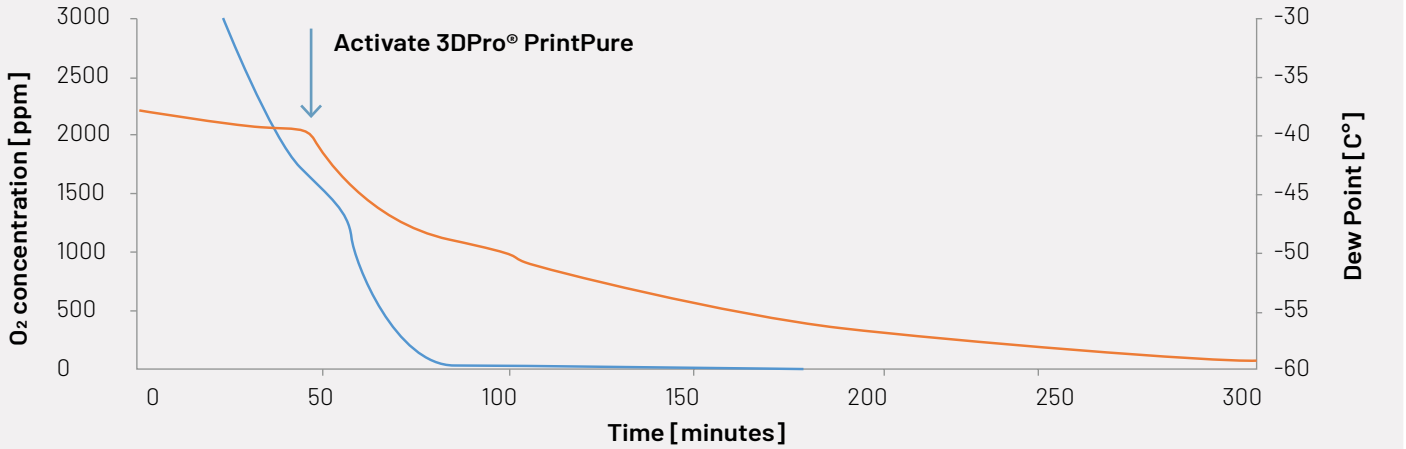
The use of purifier technology also shortens the inerting time at the start of the powder bed fusion process, improving the customer's productivity while reducing gas consumption.

Performance and Data Test

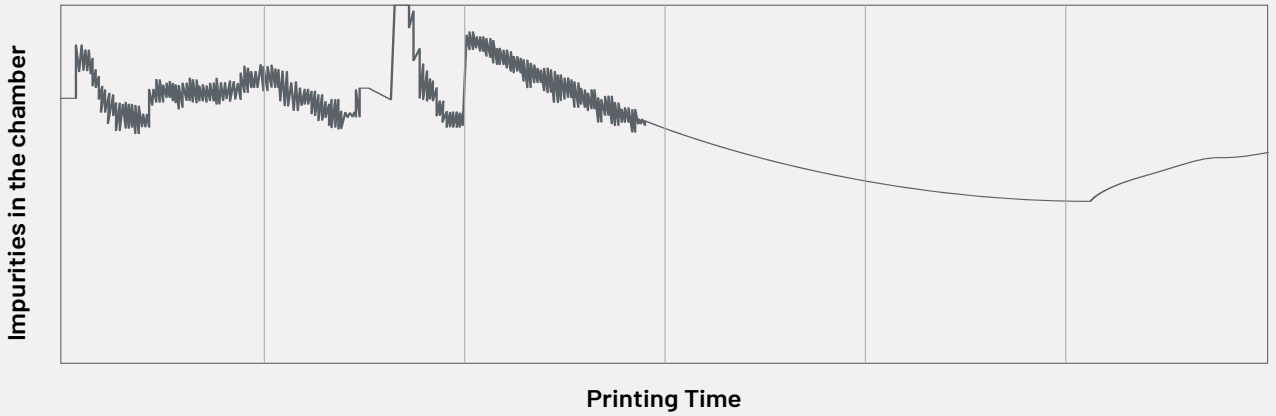
Oxygen concentration:
1000 ppm ⟶ less than 1 ppm*

Dew point:
DP-35 deg.C (15400 ppm) ⟶ DP-50 deg.C (64 ppm)*

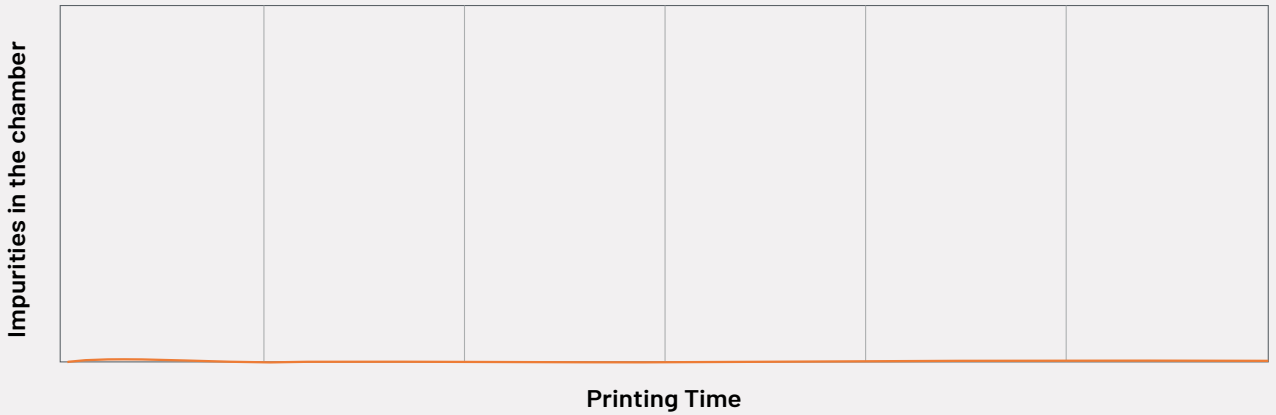
*Reference values dependent on more variables.



Typical Data

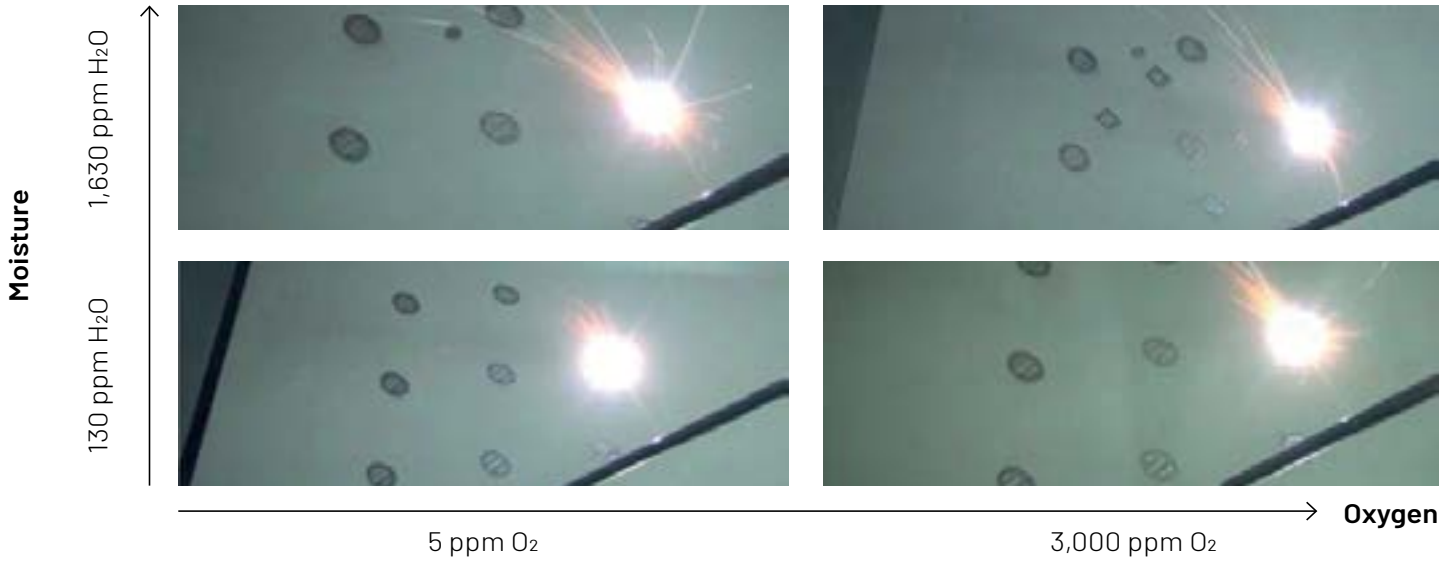


With 3DPro® Purifying Technology



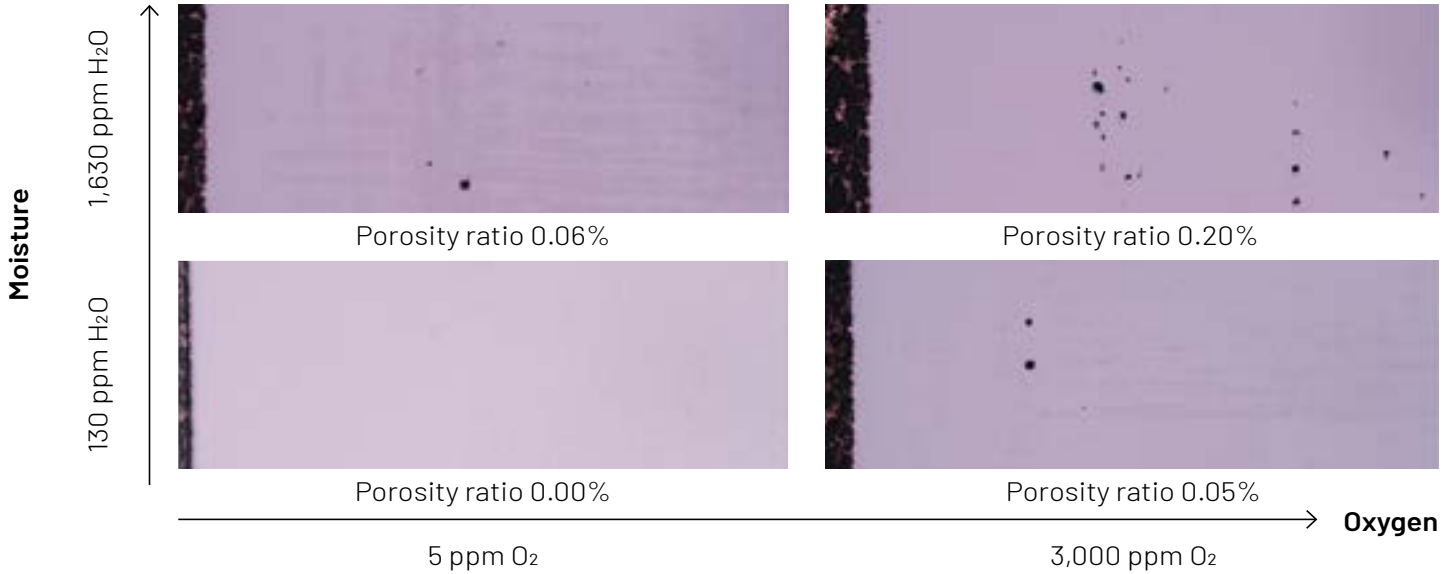
Can maintain extremely low ppm level

Effect of Moisture & Oxygen

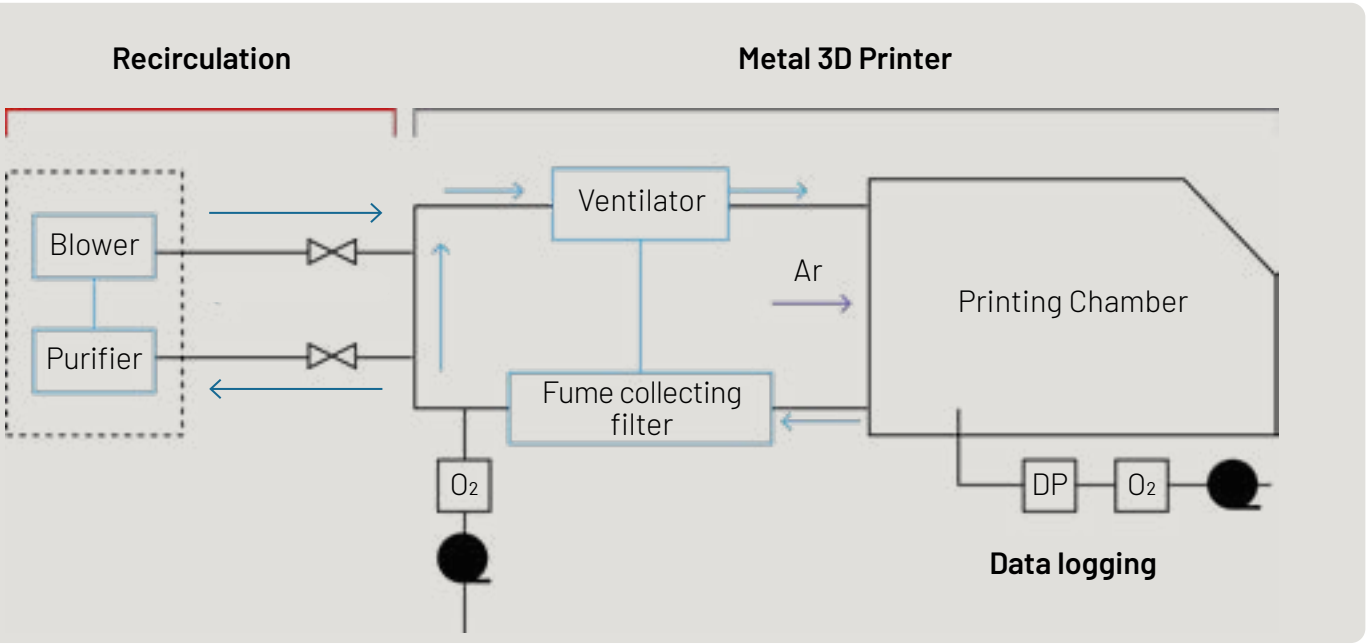


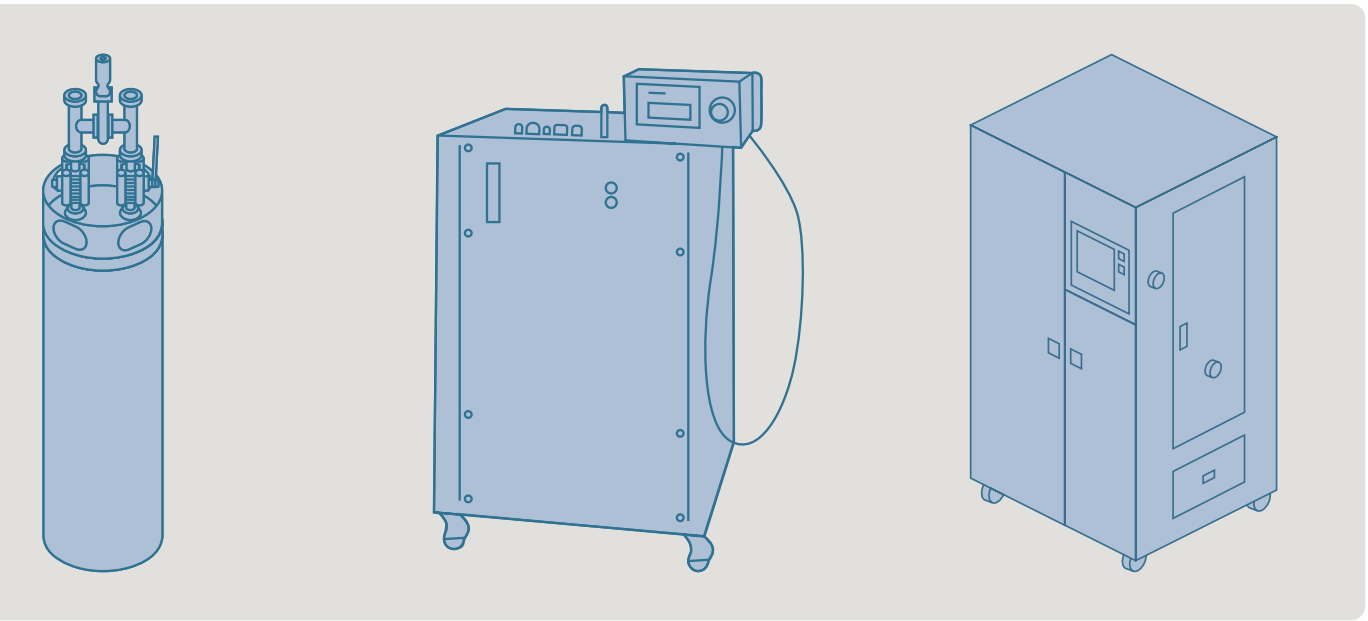
Test Results at Taiyo Nippon Sanso Corporation (TNSC) Yamanashi

- Metal: Ti64
- Concept Laser M2



Product Specifications





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