3D-METAL PRINTING?
ONLY WITH QUALIFIED TESTING!

Validation of tightness and permeation in additive manufacturing processes

Pressurized components from additive manufacturing processes are of particular interest with regard to tightness and pressure resistance. The influence of the layered structure towards evacuability, tightness, permeation behavior and compressive strength can often only be verified experimentally.

How tight is leak tight?

Even if the printed components do not show a spontaneous increase in leakage rate during industrial leak testing, as would be typical for a mechanical defect, very often the leak signal slowly approaches a certain stationary value - typical for permeation.
In practice, this may cause "sweating" on the component surface facing lower pressure and very poor evacuation behavior in vacuum systems.

Compressive strength tests - ideal proof of stable component properties

Due to the layer-by-layer structure for additively manufactured components, spontaneous leakage must also be expected while pressuring the parts even if leak testing was positively proven. Experience from apparatus engineering shows: In practice, this behavior can be eliminated by applying a controlled test pressure with subse-

quent leak testing. Weld seams, soldered joints and sintered components should therefore be pressurized prior to leak testing.

Typical test adapter with defined permeation area for exact testing of printing process parameters

Components from laser sintering processes: flanges, pipe bends, vacuum adapters.
Without proof of tightness only limited use!

WITZENMANN
APPLIED SERVICES

The non-destructive testing of pressure holding components and systems has always been one of our core competences. With the clever industrial service from Witzenmann, your company can benefit from this too! Our broad portfolio of test equipment and our highly qualified test personnel are at your disposal - whether for individual parts or accompanying serial production!