AXTRA3D

CASE STUDY

PRINOA DENTAL: WHEN DENTAL PRODUCTION FINALLY STOPS BEING A RISK

From Order to Shipment in 24 Hours: Digital Transformation Under Pressure

THE PRODUCTION CHALLENGE

Rising quality requirements, increasing shortages of skilled labor, and ever-shorter delivery times are placing significant pressure on dental laboratories and production centers. While additive manufacturing has long been an integral part of modern workflows, the reality often looks different: high productivity frequently comes with greater error susceptibility, increasing complexity, and growing strain on employees.

Prinoa Dental GmbH is a highly digitalized production center. They manufacture dental semi-finished products such as splints, crowns, and bridges using industrial processes with the goal of combining reproducible quality, short lead times, and reliable delivery schedules. Orders received by 6:00 p.m. are shipped the following day. This commitment requires not only speed, but above all, stability. Their previous 3D printing system was constantly at its limit. Every new order increased dependence on flawless execution.

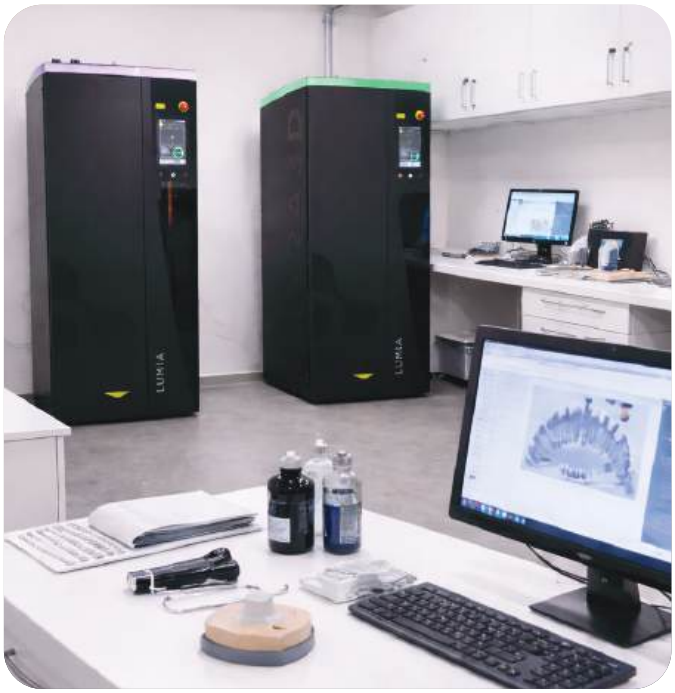
The central question was no longer “How do we print faster?”, but rather “How do we produce without every job being a risk?”

THE SHIFT: PRODUCTIVITY THAT FEELS CALM

With the introduction of the Axtra3D Lumia X1, a noticeable shift occurred in day-to-day production. The machine was not deployed as a pilot project or test system, but was directly integrated into live customer manufacturing. The objective was to transform additive manufacturing from a fragile bottleneck into a robust and dependable component of the overall workflow.

Even during ongoing operations, clear improvements emerged:

- Print jobs ran reliably with fully loaded build platforms
- Reprints became rare
- Post-processing became predictable
- Material changes no longer disrupted production
- Print processes no longer required constant supervision
- Manufacturing did not just become faster, it became predictable and consistent.



THREE YEARS LATER...

50,000

Dental Parts Produced

5,000

Print Jobs Completed

That’s proof of high speed reliability under continous load

OPERATIONAL AND ECONOMIC IMPACT: PRODUCTIVITY + RELIEF

This transformation also had a clear economic effect:

- Shorter print times
- Higher part density per build
- Significantly reduced error rate
- Lower cost per part.
- Higher overall output with fewer machines

These efficiency gains were achieved through stabilizing process repeatability, not cutting corners.

An often underestimated aspect of additive manufacturing is the mental burden on employees. Before the transition, daily work was characterized by constant monitoring and concern over failed prints. With the stable process control of the Lumia X1, the need for manual intervention decreased significantly. Production once again feels like structured craftsmanship rather than constant crisis management.

SCALING AS PROOF: THE 2ND MACHINE

After one year of consistent operation, Prinoa installed a second Axtra3D Lumia X1. This decision was not made as a backup or experiment, but out of conviction. The technology proved to be predictably scalable, redundancy was easy to implement, and further growth did not introduce additional operational stress. The Lumia X1 thus became the standard within Prinoa's AM environment.

THE RESULT: A PRODUCTION SYSTEM FOR GROWTH

Looking back, it is clear that sustainable performance in digital dental manufacturing does not stem from individual components. The decisive factor is the interplay between robust hardware, validated materials, and well-defined workflows. The Axtra3D Lumia X1 has helped Prinoa transform additive manufacturing from a potential risk into a reliable production pillar.

The experience at Prinoa shows that modern dental manufacturing begins where technology takes responsibility, not where humans are forced to compensate for its shortcomings.

AXTRA3D'S DENTAL SOLUTIONS

Our dental offerings include solutions for:

Dentures
Splints
Dental Models
Crowns & Bridges
Aligners
Surgical Guides

Which we proudly offer as Axtra Solutions™ with our material partners:

pro 3d ure medical

keystone industries

Next Dent by 3D SYSTEMS

NEW: THE AXTRA WORKFLOW™