

Additive Manufacturing for Man's Best Friend

Source: Hansgrohe



Stress-free grooming:
3D-printed dog shower head
with gentle jet types, petting
nubs, and a water brake.

Challenge

Rapid and cost-efficient production of a series production-ready, drinking water-approved shower head for dogs, made from just a few components, offering quality, design, and convenience functions that will impress dogs and their owners alike

Solution

3D printing of a shower head using existing high-volume components available within the group, as well as laboratory testing and certification of the material

Results

Drinking water permit for PA 2200

Sellable product within 22 weeks

Post-processing allows standard seals to be used

Functional integration saves one third of the parts

Product range expanded with minimal financial risk

Innovation with a Woof at Hansgrohe InnoLab: the Dog Shower

It all started with Shaggy – the official Chief Happiness Officer of the Hansgrohe InnoLab team. Like many other furry friends, this mixed-breed canine doesn't like to shower. But what if our water-shy four-legged companion could simply be petted clean? And thus was born an idea – a special shower head for dogs. The first sales opened just six months after the earliest design stages, in no small part thanks to the 3D printers provided by EOS.

Challenge

For the furry canine shower head, there were initially two key tasks to solve: first, improve relations between dogs and owners. Second, take the product from concept to series production under tight cost and time constraints. The goal was to bring a Minimum Sellable Product (MSP) onto the market within just six months – a profitable and high-quality product ready for sale, not just for testing. The project requirements were therefore similar to what you might find in an IT start-up environment, well within the skillset of the thinktank division of faucet and shower specialists Hansgrohe in the Black Forest: agility – test quickly, find errors quickly, learn quickly.

Faced with these requirements, the furry team immediately decided to use additive manufacturing to build their prototypes and the first sales batch. This decision was logical, so the first step was perfectly simple, but the next proved somewhat more troublesome: the shower head had to meet the legal requirements for drinking water.

"Technical concepts for new hand-held or overhead showers are our daily bread, part of our nature. For furly, we took advantage of the significantly greater creative freedom offered by additive manufacturing compared to injection mol-

ding," remarks Jochen Armbruster, Head of CA-Tools & Prototyping at the Hansgrohe Group. "For example, we were able to integrate functionality directly into the component and significantly reduce the number of distinct parts required. Since the shower connects to the public drinking water network, we needed certain permits. And the permits had never been granted before to 3D-printed workpieces, neither in the USA nor in the EU." The furry team now had a third major task: obtaining a permit for the plastic material PA 2200.



Short Profile

The InnoLab team at Hansgrohe SE is tasked with testing the market acceptance of product ideas for the company's portfolio with short time frames and low investment costs.

Further information
<https://en.furly-dogshower.de/>

Approved: shower head made from PA 2200 is suitable for use with drinking water.
(Source: Hansgrohe)

„With the EOS P 396, we were able to develop our dog shower head within a short time frame and quickly test whether it would be accepted on the market. Our customers were impressed with the high quality and resilience of the end product. Thanks to 3D printing, we were able to expand our product range with minimal financial risk.“

Jochen Armbruster,
Head of CA-Tools & Prototyping at the Hansgrohe Group

Solution

Thanks to close collaboration between Hansgrohe and EOS, a drinking water certification was successfully obtained for the additive manufacturing material: EOS submitted samples of the powder-based material PA 2200 and the relevant extracts of the patented recipe created by EOS to several laboratories. Compatibility with drinking water was confirmed with no exceptions, meaning that PA 2200 could now be used in sanitary fittings for the very first time. Permit in hand, Hansgrohe now set about building the furry prototype and the first batch of 5000 units with the EOS P 396 printer.

To be able to produce a single, functionally integrated component to which only a few additional standard parts would need to be fitted, the furry team immediately planned a suitable material processing approach. A standard O-ring seal was installed at the interfaces between components. This required the surface of the dog shower to be printed very smoothly to avoid the necessity of laborious mechanical post-processing. The feel and durability also needed to meet the high standards of the Hansgrohe Group.

But, most importantly, they had a goal in mind for their users: a comfortable and stress-free grooming experience for dogs and their owners. Once again, the furry team found a convincing approach: prototypes of the dog shower head were repeatedly tested for their suitability under everyday use, and the datasets were adjusted based on the results. The final design allows the user to switch between different types of water jet by pressing a button. Another practically inspired idea is a water brake fitted within the handle: whenever the dog's owner releases the shower head, the flow of water stops. This allows the shower to be operated with just one hand.

Results

"Implementing so many rapid tests and optimizations cost-effectively to create a MSP was essentially only possible because of additive manufacturing," adds Jochen Armbruster. "The conventional injection molding process would have been far too expensive." In fact, thanks to the functionally integrated production, the team saved around one third of the parts that would otherwise have been required: reduced complexity makes assembly easier while also reducing manufacturing costs. It only took around five and a half

months between the first design and an internally tested, sellable product.

The design ensured that there was no need to weld any of the components together. Only the switch valve for changing the jet was fitted separately, borrowing a part from one of their own high-volume series. "Overall, it was cheaper than designing our own additive part," explains Jochen Armbruster. The switch valve allows dog owners to choose whether the water should flow gently over the nubs of the shower head, or instead as a firm, compact jet. And thanks to the high manufacturing quality of the EOS P 396, both furry friends and their human companions will enjoy this special shower head for years to come.

"The Hansgrohe InnoLab works on product innovations within the Hansgrohe portfolio using the methods of a start-up company to draw from innovative resources. It's no surprise that we were able to use additive manufacturing technology for this," summarizes Jochen Armbruster. The furry team successfully brought a product to market within a very short time frame and could immediately test its acceptance – with very low investment costs.

Hansgrohe has repeatedly taken advantage of industrial 3D printing since 2003, but previously only for single parts. With the Hansgrohe furry shower for dogs, the company not only successfully produced a market-ready product by 3D printing in series, but also contributed to advancing technological research together with EOS. The knowledge gained from the project and the efficient "fail fast, learn fast" culture will be incorporated into future innovations from the Black Forest valve and shower manufacturer. Shaggy and his four-legged colleagues can now look forward to enjoying their special solution from Hansgrohe with a happy woof.

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