



# Sanofi-Aventis

## Ultrahaler (MDPI)

### Brief

Sanofi-Aventis, the world's third-largest pharmaceutical group, offers world-class therapeutic innovations for the respiratory market. It had developed a metered-dose, dry powder inhaler (MDPI). However, increasing focus on patient compliance, especially in the US, demanded that a dose counter be added to the device.

Sanofi-Aventis selected PDD to conceive, design and implement a device counter to provide accurate indication of remaining doses.

### Solution

PDD worked in an integrated project team with the Sanofi-Aventis international supply chain in Europe, Scandinavia and the US.

Using ethnographic research techniques with asthma experts, nurses and sufferers in the US, PDD's research team explored the issues and values of a counter and tested its design hypotheses. This allowed us to define robust user and product requirements that were later endorsed by the FDA when it mirrored them in its published specifications.

Sanofi-Aventis needed a counter mechanism that would not change the existing device performance and was also compatible with existing manufacturing plant and automated assembly machinery.

The design needed to circumvent a mature intellectual property field. PDD's approach was to design a matrix of design elements that could navigate around existing patents and establish freedom to act.

Sanofi-Aventis targets 6 Sigma levels of production for 3 reasons: patient safety, commercial yield and effective assembly automation. Our best-practice quality management throughout the programme ensured design robustness and a high degree of product conformity.

PDD produced concept models, machined and cast prototypes and aluminium tools to provide the basis for verification testing.

The components of these were approved using our CMM (co-ordinate measuring machine) and CGI (Capture Geometry Inside) process.

Using analysis and simulation, the mechanism was further verified to work in extreme combinations of tolerance, material properties and temperatures.

### Result

Through qualitative research, inventive mechanisms, precision engineering and prototype verification, PDD was able to deliver a patented counter mechanism that is an integral part of the Sanofi-Aventis MDPI.

Since this project in 2001, PDD has continued to provide innovation and support on a number of Sanofi-Aventis programmes within its respiratory technology and drug delivery activities.

*"PDD's continued partnership and support has helped Sanofi-Aventis to implement an innovative design solution that fits our current manufacturing plant and is sympathetic to our supplier's 6 Sigma requirements."*

Dave Shadwell, Sanofi-Aventis

For more information email [info@pdd.co.uk](mailto:info@pdd.co.uk) or visit our website:

[www.pdd.co.uk](http://www.pdd.co.uk)