

Metal Magician Meets Engineering Wizard

A hypodermic needle so fine that it makes injections pain-free. This was the challenge proposed by the Tokyo-based medical equipment manufacturer, Terumo Corporation, with the goal of alleviating the daily discomfort of insulin injections for diabetic children. It was met by bringing together Terumo's engineer, Tetsuya Oyauchi, who has a string of patents to his name for medical syringes, and Masayuki Okano, the 73-year old head of a small metal pressing factory.

The usual method of manufacturing needles is to hollow out a tiny cylinder of metal. But the thinner the cylinder, the more difficult this procedure becomes. Terumo Corporation's quest for an ultra-thin needle had been turned down as impracticable by a string of large metalwork firms, before they turned to Mr. Okano, whose skilled craftsmanship, *Web Japan* reports, had earned him a reputation as a metalwork magician.

"I thought if no one else can do it, I will," said Mr. Okano. He tried a different approach, defying experts who had advised him that it was not possible. Taking a super thin sheet of stainless steel, he rolled it into a tiny tapered cylinder, then sealed it by welding the seam.

Refined and developed with the medical engineering expertise of Tetsuya Oyauchi, Terumo's PCT application for a tapered "injection needle and liquid-introducing implement" was published in 2004. The resulting product, the *Nanopass 33* syringe, went on the market in July 2005. Terumo claims that the tip, which measures just 0.2 millimeters across – no wider than two strands of hair – is 20 percent thinner than conventional needles, and that it reduces discomfort to no more than a mosquito bite.

Courtesy of Terumo Corporation



"You won't feel a thing..."

The *Nanopass 33* needle was awarded the 2005 Grand Prize for Good Design by the Japan Industrial Design Promotion

Organization, winning the award by a wide margin of votes. "It is fun to make something that doesn't exist in the world," commented Mr. Okano.

More information: web-japan.org/trends/science/sci051220.html