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Renishaw technology helps bring further success for Olympic champion

When reigning Olympic women's two-man bobsleigh champion Sandra Kiriasis issued an appeal for help to manufacture blades that would meet her sport's new regulations, world leading metrology company Renishaw rose to the challenge. Working with other manufacturing specialists, Siemens, Sescoi and Iscar, Renishaw used its latest measurement technologies, including the revolutionary REVO™ measuring head for co-ordinate measuring machines, to deliver a blade solution that saw Kiriasis dominate the 2006-2007 FIBT season, winning both the World Cup and World Championships.

Following her extraordinary success at the FIBT Women's Bobsleigh World Championships where, together with brakeman Romy Logsch, Kiriasis took the gold medal by a margin of over two seconds, she stated to TV broadcasters in St. Moritz that "the blades are the secret of my success". This achievement and the recognition of the contribution to her success made by the various manufacturing partners, highlighted the impact that engineering technologies can have at the highest levels of competitive speed-sports, and has led to Team Kiriasis and Renishaw signing a formal partnership agreement, which will run until at least the end of the 2007-2008 FIBT season.

Explained Rainer Lotz, Managing Director of Renishaw GmbH, "Renishaw is already making significant technical contributions in the world of international motorsport, such as F1 and NASCAR racing, both in engine manufacture and on-car monitoring systems, so we know about the small margins between success and failure at the highest levels of international sports. We have been delighted to add our measurement expertise to the Team Kiriasis blade project, and look forward to contributing to Sandra's continuing success."

The blade project arose following new rules introduced by the FIBT (International Federation of Bobsleigh and Tobogganning) in October 2006, which aimed to remove on-going disputes over the use of various materials and treatments in blade manufacture. All bobsleigh teams must now use the same specification steel, with creativity only allowed in blade form. Kiriasis was happy with the performance of her existing blades, but as these had been created using manual techniques there were no drawings or electronic CAD data that would allow them to be re-manufactured using the standard specification steel.

Following the appeal for assistance by Team Kiriasis placed in a German metalworking magazine, various companies offered their services, but it was the strength of the presentation by the Siemens, Renishaw, Sescoi and Iscar partnership that led to their selection.

The existing blades were first sent to Renishaw's UK research facility, where its revolutionary REVO™ five-axis measuring head for CMMs was used to scan the blade, quickly capturing many thousands of data points to enable its form to be defined in great detail.

Unlike conventional scanning methods, which rely on speeding up the motion of the CMM's three axes in order to scan quickly, REVO™ uses synchronised machine and head motion to minimise the dynamic errors of CMM motion at ultra-high scanning speeds. This allows high accuracy inspection at scanning speeds of up to 500 mm/s.

Once the data had been captured, both DXF and IGES files were created and sent electronically to Sescoi, who created a CAD/CAM program for a Siemens Sinumerik machine tool controller fitted to a DMG CNC milling machine located at tooling manufacturer Iscar. Following machining, the finished blades were checked for form using the Renishaw OMP400 touch probe, a strain gauge based product which allows highly accurate on-machine measurement to be performed.

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