

Starting Up

APPLICATION: Plasma Ski Patent: A Game Changer For Skiing

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Innovative process modifies the functional properties of the surface of UHMWPE ski bases.

An innovative, patented impregnation process developed by a team of Italian researchers from Plasma Nano-Tech, the in-house research department of Turin-based science & technology center Environment Park S.p.A, (*Photo, courtesy of Environment Park*) is said to bring about a sixfold increase in the amount of adsorbable wax on the sintered UHMWPE running surface of racing skis. Key to the technology,



which appears to be a ‘game changer’ in the history of international skiing, is the use of the proprietary Openair atmospheric plasma technology and PlasmaPlus atmospheric nano-coating process developed by Plasmatrete GmbH (U.S. office in Elgin, Ill.; Plasmatrete.com).

The patent, which was obtained in collaboration with the Skiman Association, also shows other interesting results. Through optical microscopy analysis of the final structure of UHMWPE revealed wider and cleaner cavities, while the sliding test after waxing showed a significant increase in flow properties, improved abrasion resistance, and a considerable increase in the lasting time of the wax on the base surface. From the start, the researchers surmised that plastic residues in the molecular base structure generated during the sintering process—conducted with heat and pressure, have an adverse effect on wax absorption. Their aim, which was achieved, was to remove contamination by fine cleaning with atmospheric pressure plasma. UHMWPE has proved to be an excellent bearing material, but it is inert and difficult to bond. In the “PlasmaSki” process, the plasma is used in a first step on the base of the ski (running surface) for fine-cleaning the molecular structure of the UHMWPE, and then in a second step for the nano-coating, which strengthens the walls of the cells.