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Diamond tool technology to assist in exploration

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It is now possible for diamond aligning technology to be used in drill bits following its successful incorporation in saw blades through the Arix technology, says diamond tool specialist Diamond Products director **Brian Clark**.

The technology enables the controlled deposition of diamonds onto a substrate, at predetermined positions.

"The procedure was introduced on saw blades by Diamond Products last year and is considered to be one of the biggest advancements in the manufacturing of diamond tools in the past ten years," he says.

The widely positive reception of the Arix saw blades led to clients proposing that the same technology be introduced in drilling bits. A feasibility study was undertaken last year, with the first tests done in November 2010, and resulted in the birth of the Arix AXT crowns, which will be used on drill bits if successful.
"This is likely to be a six-month project. We expect that the results will be positive and will result in the company continuing to work through the full range of exploration core bits," Clark says.

However, there are challenges. "Firstly, we need to overcome the technical challenges by simply manufacturing drill bits with the Arix technology and, secondly, we will need to undertake many field tests to fine-tune the product for the different formations that are drilled," he explains.

First introduced on the 300-mm- and 350-mm- diameter saw blades last year, and the 230-mm- and 250-mm-diameter blade this year, the Arix technology involves the placement of synthetic diamond grits precisely in three-dimen- sional patterns within the tool's cutting edge, which is laser-welded to the metal centre. This ensures the even and equal distribution of the diamonds, which enhances the lifetime and productivity of the tool, explains Clark.

"Traditionally, when manufacturing diamond tools, the uneven distribution of the diamonds could result in, for example, preferential wear, which means that the tool's cutting efficiency is not what it should be theoretically.

"This is where array technology, or Arix, is used. The technology was developed by a Korean research company specialising in diamond tools and Diamond Product is its sole distributor for Africa," says Clark.

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