

# The sky's the limit

What started nearly nine years ago as a small one-man, one-machine operation in a farm outbuilding in rural Montana in the USA has now grown into a global business for cutting PCD and PCBN discs for a variety of customers in industries as diverse as automotive, aerospace, medical and oil and gas. **Martin Jennings** reports on how the vision, determination and attention to customer needs of one man has led to the creation of a company that provides a vital link between the major manufacturers of PCD and PCBN tool materials and companies that produce the finished tools.

When Russ Scoffield was growing up on his parents' wheat farm in Montana, he always – as the old cliché goes – wanted to be an engineer. Thus in 1990 he left for college and obtained his Bachelor's degree from Brigham Young University in Utah in 1996.

His working career started with Smith Megadiamond, followed by an appointment as a manufacturing engineer with Sandvik Cormorant in 1998. It was at Sandvik that he first identified what he saw as a niche area in the PCD and PCBN cutting tool industry. This was a need to buy pre-cut tips for all PCD and PCBN products. A suitable vendor could not be located, so he started researching the possibility of starting a company based around the concept of supplying pre-cut tips to tooling fabricators in all industries that used PCD or PCBN – in other words, a company that would act as a link between the manufacturers of large diameter PCD and PCBN discs (De Beers, G.E., Megadiamond) and the toolmakers (Sandvik, Kennametal, etc) who wanted those discs cut up into smaller sizes for tool fabrication.

However, six months of trying to arrange financing and write a viable business plan left Russ Scoffield discouraged: banks wanted contracts, a reasonable number of potential customers and financial guarantees, whereas any potential customer wanted to see a machine in place and running before making any commitment – a vicious circle of getting nowhere.

Help was at hand though. In January of 2000, his parents offered to lend him the money to start the business. To minimise the risk and keep expenses down, he decided to build the business on his parents' farm in Montana. With the internet starting to become an important business medium and the existence of global couriers such as UPS and FedEx, he felt he could do business anywhere in the world.

With the help of his family members, he remodelled a small outbuilding on the family farm to house the wire electrical discharge machine (EDM) that he had just purchased.

Thus the company – named Big Sky EDM – opened its doors for business in September 2000 with one member of staff and one recently purchased, Fanuc wire EDM machine... and no customers and no work.

Within a month though, Big Sky had acquired its first customer. Within two months, there were three customers, and within eight months the company was purchasing its second wire EDM. Now into its ninth year Big Sky has purchased a new piece of equipment every six months, whether it be a wire EDM or support equipment.

And the focus of the company has never changed: it cuts PCD and PCBN discs into smaller pieces for cutting tool fabricators, simple as that. In fact anything from a 12" (300 mm) diameter oil and gas drill bit to a single piece of PCD that measures 1 mm x 1 mm.



Figures 1 and 2 Big Sky now has 10 wire EDM machines for cutting PCD and PCBN discs

Big Sky now has customers in the automotive, aerospace, medical, oil & gas, mining, and heavy construction industries. Over the years, diversification in all these different markets has provided the company with a steady growth pattern.



Fig 3 July 2005 saw the opening of the company's current factory in Idaho



Fig 4 This Fanuc robot will be soon be working in conjunction with a new specially commissioned 7-axis version (see Fig 5)



Fig 5 Big Sky's new robot under construction – the rail on which it sits is the 7th axis



Fig 6 A countersink tool for use in the aerospace industry is cut on a Probe rotary machine



Fig 7 A Fanuc wire EDM cutting small triangles from a 58 mm diameter PCD disc

As would be expected from a company that has expanded so quickly, Big Sky has moved on from that first outbuilding in a Montana wheat farm and is now based in modern facilities in Hayden Lake, Idaho. The current machine inventory includes ten Fanuc wire EDMs, one Fanuc robot, one sinker EDM, one EDM drill, one CNC mill, and one 7-axis Fanuc robot being built with installation scheduled for February 2009.

The purchase of the new 7-axis Fanuc robot in many ways typifies Russ Scoffield's vision when he started the company. When he left Sandvik, he was intent on building a company that would not be reliant on human labour, so he has always tried to automate when and wherever possible. The company's first robot was installed three years ago and the new robot is being built by Methods Machine Tools based in Boston, Massachusetts. This robot is capable of loading/unloading 12 machines, and as a cell has been engineered to load PCD discs up to 76 mm in diameter, rotary tools up to 8" (200 mm) diameter, and any kind of stick tool (form tool).

Big Sky does business with all the major PCD/PCBN manufacturers in the world, holding consignment material from each of them to help it maintain a good delivery schedule for its customers. In fact, quick and efficient delivery is a key factor in the successful growth of the company: it maintains a 3-4 day delivery schedule, with some orders shipping out the same day the order came in. It prides itself on not only good delivery time, but also competitive pricing, and quality – reflected by the fact that Big Sky EDM currently ships product to tooling fabricators all over the world.

This is all underpinned by a commitment to be at the cutting edge at all times with technology – Big Sky claims to have the best equipment on the market for cutting PCD and PCBN and for measuring product. Whether it be machinery, software, inspection equipment, or even labelling equipment for shipping, Russ Scoffield is always looking at technology to help the company be more profitable and competitive. He strongly believes that Big Sky EDM has succeeded – and will continue to succeed – because of its relentless focus on the small details that its customers have come to expect.

He's come a long way from that wheat farm in Montana. ♦  
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