

Surefire Solutions with Vortec Air Cooling

Surefire Fabrication, a family-owned fabrication business located in Penryn, California, machines metal, plastic, and wood components for a variety of industries, including government and commercial customers. As a custom fabricator, the company often uses aluminum, wood, and various other materials to design and bring new ideas to life for their customers.

The Problem

When Glen Spaulding, the owner of Surefire Fabrication, called Vortec, he was looking for a solution to cool aluminum while cutting without using liquid coolant. Surefire currently uses an Avid CNC PRO60120 router that has a 5' x 10' table with a 3hp spindle and VFD to machine many of the parts that they manufacture. Surefire uses two ¾" thick MDF spoil boards, that they mill flat, to better support the workpieces that they machine. Liquid coolant cannot be used with the MDF spoil boards as it contaminates them and makes a huge mess.

When Surefire tried to machine aluminum, the soft, malleable nature of the product made it bind with the cutting tools resulting in rough surface finishes and damaged tools. After machining, the aluminum parts are then powder coated and laser engraved, making a smooth surface finish essential.

The Solution

After an in-depth discussion between Glen and Vortec's application engineers, the 611 Frost Free Cold Air Gun was agreed to be the best result for Surefire's Application. The company's 3hp air compressor with a 60-gallon tank would allow for the cold air gun's operation. The frost-free characteristics of the 611 were essential to Glen because he did not want any condensation dripping from the Cold Air Gun's flexible nozzle onto the workpieces or on the MDF spoil board. The air consumption of the 611 fits well with their compressed air source, and the cooling capacity of 900 btuh and temperature adjustability matched their needs when machining the 3.1mm (1/8") thick aluminum sheets.



The Result

Glen made a steel bracket to bolt to the aluminum plate on the Avid's spindle so that the 611's magnetic support base could be used to quickly attach the Frost Free Cold Air Gun close to the cutting tool. The Avid machine is equipped with a vacuum system to carry away the chips. The 611's flexible nozzle extends through the brush that surrounds the vacuum pickup head so that the cold air is directed close to the cutting tool. Glen reports that the 611 works great when cutting aluminum and that the aluminum no longer sticks to the cutting tools, resulting in improved surface finishes.

How the Frost Free Cold Air Gun Works

Frost Free Cold Air Guns use vortex tube technology and filtered compressed air to produce sub-freezing air as low as -10°F for numerous industrial spot cooling applications. With no moving parts to wear out, Frost Free Cold Air Guns require no electricity at the target, just a source of clean and dry compressed air. The Frost Free Cold Air Gun features a double insulated flexible cold air outlet that eliminates condensation and frost from forming on the nozzle.

Frost Free Cold Air Guns are most often used for cooling of metal parts, in the machining and repair of metals, plastics, wood, ceramics, and other materials. Cold air machining outperforms mist coolants and substantially increases tool life and feed rates on dry machining operations. The active cooling from a Frost Free Cold Air Gun eliminates heat-related parts growth while improving parts tolerance and surface finish quality. The 611 Frost Free Cold Air Gun uses only 15 scfm of compressed air while producing up to 900 btuh of cooling, and temperatures as low as -10°F .



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Frost Free Cold Air Guns,
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