

Energy-Efficient CNC Machining

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With heavy development of prototypes and the never-slowng business-to-business construction/adaptation of plastic, metals, and wood, laser sintering and [stereolithography](#) [1] have become widely energy efficient. These large machines have rapidly become *greener* by yielding the same, if not better output.

Utilizing [Computer Numeric Control](#) [2] and CAD, prototypes are able to develop unique designs and shape various metallic, plastic, and wooden materials into appropriate form. Since the first CNC machines were built (1940), there have been significant strides in providing a more energy efficient machine. Ranging from \$1,000 to nearly \$50,000 and weighing in at close to 6,000 pounds, these machines can eat up electricity much like a large industrial oven used in a pizza shop. Although this is a tremendous improvement from past machines, which soaked up close to 50,000 watts. Newer machines can range anywhere between 800 and 6,000 watts, depending on the make and price. In contrast, this is close to the electricity drain of a hot tub or stove.

It's easy to compare this change to that of a domestic furnace, where older versions were built to last, and newer models built to reduce electricity costs and promote sustainability. With more expensive machines running at close to 4,000 RPM, (revolutions per minute), it's no wonder why they require so much juice. The engine/motor eats up the most power, along with the CPU and cooling system, which leads me to my next point.

The machines ability to reduce business expenses effectively compliments its technological advances, which includes things like a brushless motor. Prior to construction, motors were subject to:

- Worn brush heads.
- Sparking and electricity (noise).
- Limitation of speed (efficiency).
- Slow cooling.

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With the implementation of a BLM (Brushless Motor), these machines not only have greater capabilities, but provide lower costs and greater efficiency.

As tool manufacturers are met with new market demands, they must also inherently adapt their business and machines. This is especially true for those in the niche of rapid prototyping. Adapting to new technology and market demands is essential for any business conducting sintering, cutting, welding, stereolithography and much more! With this, consumers should be *green* conscious, particularly in the development of CNC/CAD machines.

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Links:

[1] <http://www.dpt-fast.com/>

[2] http://en.wikipedia.org/wiki/Numerical_control