



GRAHAM ENGINEERING

Press Release

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**CNC LEADER THERMWOOD CORPORATION TAPS EXTRUDER EXPERT AMERICAN KUHNE FOR ITS INDUSTRIAL 3D ADDITIVE MANUFACTURING SYSTEM**

***Designed for purpose, the vertical extruder is tightly integrated into the Thermwood system to deliver precise resin distribution in this innovative new 3D printing system***

American Kuhne customer Thermwood Corporation, a leading US-based manufacturer of CNC routers, has announced a program to develop a 3D Additive Manufacturing System capable of making large carbon graphite reinforced composite thermoplastic components.

The systems utilize a 'near net shape' approach where a custom-built vertical, integrated extruder deposits or 'prints' carbon graphite filled thermoplastic material to quickly create a structure that is close to the final shape. Once it cools and hardens, it is then five-axis machined to the final net shape.

This innovative process minimizes three challenges of conventional 3D printing, particularly for large parts: uneven cooling, material waste, and extensive post-print processing.



*Thermwood's 3D Additive Manufacturing System initial development machine can make parts up to 10'x10'x5'*



*The system's 1.75" vertical extruder from American Kuhne is fully integrated to provide precise material distribution*

These new systems will be based on Thermwood's Model 77, semi-enclosed, high wall gantry machine structures, which are currently offered in sizes up to sixty feet long. With the addition of an optional second gantry, both the 'additive' and 'subtractive' processes can be performed on the same machine.

'Thermwood's systems will feature full six axis articulated additive deposition head, allowing it to build layered structures on both a horizontal plane as well as planes canted in any direction up to ninety degrees from horizontal,' said Thermwood chairman & CEO, Ken Susnjara. 'We believes this capability will be important as technology advances and more complex structures are required,' he added.

The initial development machine, nearing completion, can make parts up to ten foot by ten foot by five foot high. It is equipped with an integrated, vertical 20HP, 1.75" inch diameter, 24-1 L/D extruder and support equipment capable of processing over 100 pounds of material per hour. Despite the relatively heavy weight of the extrusion system and head, which are both mounted on and move with the machine, the machine generates impressive performance with high acceleration rates and high feed rate capability.

‘3D printing is rapidly evolving and presents unique challenges, particularly at industrial sizes,’ said Bill Kramer, American Kuhne’s chief technology officer of extrusion systems. ‘We specialize in providing custom solutions for our customer’s extrusion challenges and are excited to contribute our expertise to Thermwood’s innovation.’

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The Graham Group acquired majority interest in American Kuhne in 2012, followed by Graham Engineering Corporation’s acquisition of Welex in June 2013. Together, Graham Engineering, American Kuhne, and Welex create a convergence of leading technologies, people, and capabilities in extrusion. Graham is a privately held company headquartered in York, Pennsylvania, USA.

**Graham Engineering** is the global standard in wheel and industrial extrusion blow molding solutions, with 400 installations in 20 countries. Graham Engineering offers package design, product development and processing expertise, along with monolayer, multilayer, and barrier extrusion blow molding equipment and technology upgrades. Visit [www.grahamengineering.com](http://www.grahamengineering.com).

**American Kuhne** is the preferred provider of engineered solutions for plastics, rubber, and silicone extrusion. American Kuhne solutions comprise standard and custom single screw extruders, feed screws, extrusion systems, and specialized turnkey systems for laboratory, medical tubing, narrow web, wire and cable, pipe, tubing, and profile applications. Visit [www.americankuhne.com](http://www.americankuhne.com).

**Welex** is the global standard in high performance sheet extrusion solutions, with over four decades of leadership. Welex solutions are installed in more than 3,000 customer locations in 69 countries. The company’s innovations include co-extrusion and multi-layer methods that lead the industry as well as dozens of barrier lines installed globally. Visit [www.welex.com](http://www.welex.com).

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**Thermwood** is a US based company with dealers and distributors worldwide. In addition to machine manufacturing and software development, Thermwood has a technical service organization that provides support, machine installation, training, retrofits, custom programming and production assistance. Visit [www.thermwood.com](http://www.thermwood.com).