

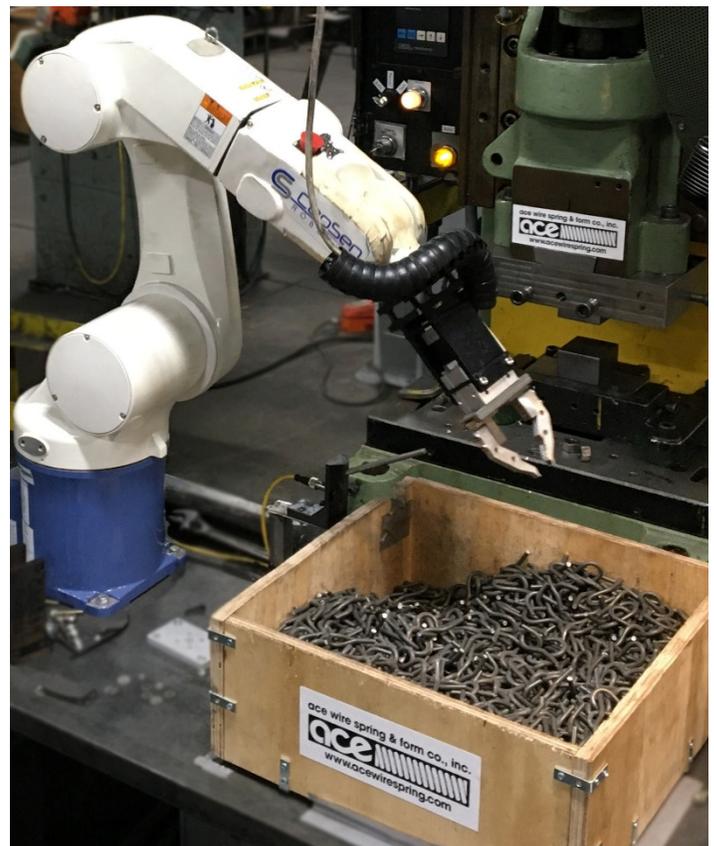
STATE OF THE ART MANUFACTURING

By John Higgins, Marketing Manager, Ace Wire Spring & Form
in Precision Pittsburgh – NTMA Pittsburgh Chapter

Advanced Manufacturing is a priority at Ace Wire Spring & Form, staying up to date on modern manufacturing techniques. Ace Wire Spring is investing in the company's future by purchasing state-of-the-art machinery for its employees to work with. One of the machines purchased and installed has caused some excitement within the company. It is a robot.

Late last year Ace Wire Spring purchased and installed a robotic arm for use on the shop floor. The robot is currently programmed for a project need involving an intricate, multistep production process that includes forming wire into metal hooks, passing them as bulk material into bins, and pressing the ends of them. These hooks are ultimately used in a swivel hook extension spring.

A key part of the production process involves moving a single hook out of a cluttered pile — a classic bin-picking task that was previously performed manually at Ace. But, unlike simpler bin-picking applications, it quickly became clear that grasping a hook from a pile can be exceedingly complicated; the hooks are dumped into the bin and often get tangled. The robot reaches into a bin of metal hooks, picks up one hook, is able to sense if the hooks are tangled, untangles them if needed, and then places the hook into a press for the end to be swedged. Once done, the hook is then placed in the box of completed hooks.



With the use of the robotic arm, Ace Wire Spring has created a high-speed, low-cost advantage, with consistent quality and savings that can be passed on to the customer. Also, workforce efficiency is improved, there is less downtime, and safer working conditions for the employees exist. The employees can now concentrate on less mundane tasks by working on projects that they are trained for. This leads to a higher output, better performance, and creation of quality products.

Grasping one hook at a time manually is a time-consuming, monotonous task that used to take skilled workers at Ace Wire Spring away from their core tasks for hours at a time. Now moving a single hook out of a cluttered pile and into the press by hand is a thing of the past at the company's factory.