

Cold Forming Training: Rock Valley College's Story

Cold forming, also known as cold heading, is a metalworking process that involves the extruding and upsetting of raw wire into a finished blank through a series of punches and dies. The blank is then suitable for further processing such as thread rolling, slotting, drilling, and grinding. With the cold forming process, raw material wire at room temperature (hence the name "cold forming") is headed under high forging tonnage beyond its limits of elasticity into a shaped part. As the part is formed, the grain structure flows into the desired shape. This allows for a much stronger part than cutting the grains in a shaving process. Complex tool design allows for parts to be formed in many shapes and sizes with specific surface finishes. The high speeds of the process help to reduce production costs. These speeds can range from 100 to 400 pieces per minute, depending on the size and complexity of the finished part. Unlike other machining processes, the cold forming process produces minimal to zero scrap, resulting in substantial material costs savings. The cold forming process serves many industries, including medical, automotive, semiconductor, appliance, consumer, and aerospace.

Rockford, Illinois, has played a leading role in the cold forming industry. Rockford's strong manufacturing history began in the late 1800s with the craftsmanship of Swedish immigrants, who excelled especially in furniture manufacturing. By the turn of the 20th century, Rockford had become the second leading center of furniture manufacturing in the nation. Hardware companies were born to support the burgeoning furniture manufacturing industry. One such company, Elco Tool and Screw, was founded in 1922 primarily to supply wood screws. Over the next several decades many more fastener companies were created in Rockford. By 1967, Rockford ranked among the nation's five largest manufacturers of fasteners. Rockford's fastener business grew so large that in the late 1970s and early 1980s Rockford was referred to as the "Screw Capitol of the World." The early 1980s presented economic challenges for manufacturers across the nation. Locally, many fastener companies were negatively affected by a sagging economy and increased competition from foreign companies. Companies were forced to lay off employees, issue pay cuts, and (worst-case scenario) close their doors. As Rockford's fastener companies closed or moved to other parts of the country, the highly skilled fastener workforce also left. Cold forming machines sat idle on shop floors across town because the shops could not find header operators to run them.



As manufacturing began to rebound in the 21st century, employers struggled to find qualified workers, especially people with cold forming experience. To address this issue, a small coalition of Rockford fastener companies began to meet in collaboration with the TechWorks team located at the EIGERLab.

When Rock Valley College (RVC) acquired TechWorks in 2015, the cold forming training center project became a priority. RVC organized a cold forming/header advisory committee representing eighteen companies. The committee agreed to recreate the formerly successful Fastener Tech Center through the leadership and support of RVC. The center would help employers fill vacant operator positions and would provide a means for current operators to receive training on the latest fastener technologies.

Bernie Luecke, director of TechWorks, Ron Geary, vice president of instruction, academic affairs, and Deann Sharkey, administrative



assistant, began their quest to locate an instructor, a location, and equipment. Through numerous committee meetings and fastener company tours, they gained much knowledge of and respect for the industry. During the September 2016 Cold Forming Advisory Committee meeting, Dave Booker, a retired Fastenal employee, was voted to become the lead instructor for RVC's Cold Forming Training Center. As Geary and Luecke continued to explore the cold forming industry in Rockford, they were continually directed to Randy Loomis, president of Loomis International. Through Loomis's relationship with the president of Nakashimada Engineering Works, Ltd., Mr. Masahiro Nakashimada, the center received a donated NP60 2 die/3 blow cold header. Geary began to investigate possible locations with Jim Ryan, city administrator. The city of Rockford, pleased to be part of the project, leased RVC a building located at 424 Buckbee Street. This location would provide a classroom and the shop floor space to house the equipment needed for the hands-on portion of the training.

On November 16th , 2016, RVC held an open house at their new TechWorks Cold Forming Training Center. Representatives of more than twenty fastener companies attended, some traveling from as far away as Michigan. The open house was so successful that more companies donated equipment. Loomis donated a wire drawer and special tooling. Brad Baker, president of Slidematic, donated a Hartford O-400 Roll Threader. Mike Kranish, president of Mid-States Screw Corporation, donated a 3/16th's NATIONAL Single Die Double Stroke Cold Header. Supplies were donated by partnering companies such as Fastenal, Specialty Screw Corporation, Ford Tool, Wire Tech Inc., National Header Die, and IMPAX-SK Technologies.

Orientation for the first class of RVC's TechWorks Cold Forming Training Center was held on February 7, 2017. The job-readiness section began on March 6 and the NIMS (National Institute for Metalworking Standards) Certification on March 13. March 29 was the start of the classroom/hands-on training with graduation scheduled for May 17th.

For more information on RVC's TechWorks Cold Forming Training Center, contact Bernie Luecke at 815-921-2067 or e-mail at B.Luecke@RockValleyCollege.edu.

Sources

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