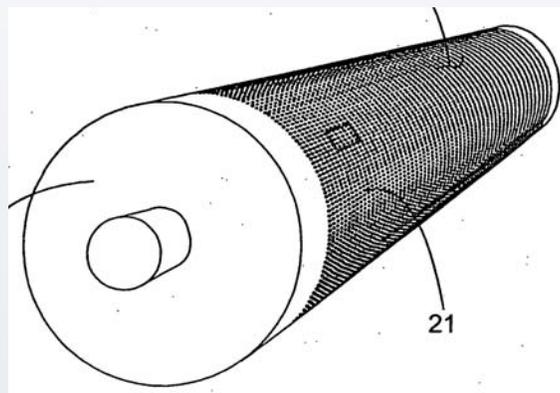




## Commercial Manufacturer Benefits from DoD Technology Transfer

Beyond the primary charge of providing technical solutions to the warfighter, it is also a mission of the IACs to transfer, or “spin off” innovative technologies to the U.S. industrial base, and – AMMTIAC has recently done just that. Through a commercial inquiry, AMMTIAC provided a manufacturer of wire and cable machinery with a machining solution that employed technology originally developed for the U.S. Army to solve a production issue and greatly improved product quality.

AMMTIAC’s client identified the root cause of the production issue as a poor surface finish on machine components, called forming rolls, that are grooved pieces of high strength steel used to shape individual strands of wire so that they can be wrapped together to form a larger cable. Due to the weight of the components (60 lbs each) and complexity of machining the wire grooves, achieving the proper surface finish needed to properly shape the wire strands is extremely difficult by traditional machining methods (i.e. Turning, Grinding, etc) and has plagued this component for several months. A collaboration of engineers from AMMTIAC and the component manufacturer discussed the possible solutions to the production and decided to apply a superfinish to the complex surface geometry of the forming rolls to achieve the desired surface finish.



Chemically Accelerated Vibratory Surface Finishing (CAVSF), more frequently referred to as Superfinishing, is a process that was originally developed by the U.S. Army to improve the surface finish and fatigue life of components in helicopter transmissions. Superfinishing uses a chemically-formulated conversion coating to oxidize the peaks on a surface after which they are placed in a vibratory media container, where the oxidized peaks are removed, leaving a microscopically-smooth surface finish. Metallic components that have undergone a superfinishing operation have demonstrated a 300% improvement in the fatigue life of the surface. Transition of superfinishing technologies has netted significant results in the automobile racing community as it has significantly improved the overall performance and service life of car transmissions and ring and pinion gears.

Application of superfinishing technology to the forming rolls produced a drastic improvement in the quality of the wire being produced. The improved surface finish (less than four micro-inches) has allowed the machinery manufacturer to produce individual strands of wire that are free of defects, eliminating a long-standing production issue. The success achieved by superfinishing the forming rolls has led the machinery manufacturer to consider permanently using the superfinishing process in the production of forming rolls. In addition, AMMTIAC is working with the machinery manufacturer to identify other machine components that would benefit from the use of superfinishing technology.

To learn more about this low cost method  
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