Tube & Pipe Mills Move from Off-line to In-Line Coating: UV Makes it Possible

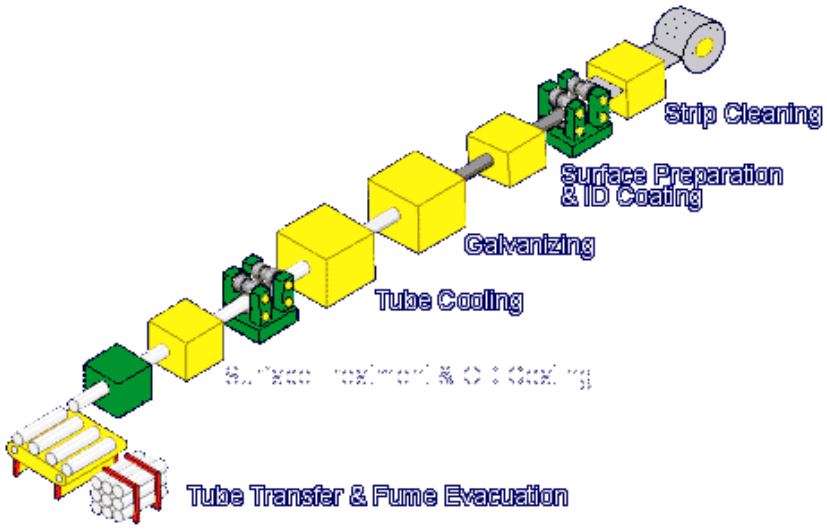
by Pete Chifo, President, Superior Technologies, Inc.

For many years coatings have been applied over welded steel tubular products to provide protection against corrosion, enhance product appearance, and make the product more suitable for a specific end use. The vast majority of these coating systems were off-line operations that were cumbersome, labor intensive and required a significant amount of factory floor space. By the nature of their design, these off-line systems usually required work-in-process inventories, which often resulted in higher production costs. Recently, tube and pipe producers have been working to integrate as many operations in-line as practical, with the goal of optimizing efficiencies within the tube or pipe mill.

In-Line UV Coating

For the progressive tube and pipe producer who wishes to add value to, and differentiate their product from those of the competition, UV coating systems represent a very attractive opportunity. The unique, virtually instant cure properties of UV-curable coatings make this technology the most well suited coating method for in-line tube mill applications. Unlike thermal-cure coatings, which require considerable line length for component installation, UV systems can be installed in a relatively compact area. This becomes an even greater advantage as line speeds increase.

With a properly designed UV line one can virtually double the rate of cure (increasing mill



speed from 130 to 250 m/minute) utilizing an increase in line length of only approximately 1.8 meters. The net result of this speed increase with alternative process technologies could be tens of meters.

UV-curable Coatings

Today there are a number of coating formulators that provide UV-curable coatings for a wide variety of tubular end-use markets. There are clear-coatings for fence tube, greenhouse tube, sprinkler pipe and electrical conduits intended to protect galvanized surfaces from white rust corrosion. Clear coatings designed to preserve the tube or pipe surface during the extreme and extended conditions of overseas transport are critically important in today's global

marketplace. Most recently, pigmented UV-curable coatings robust enough for post coating processing are being utilized to enhance product aesthetics and add higher value and utility to customers who have traditionally utilized un-coated pipe products. For example, interior fire sprinkler systems, especially in commercial buildings with exposed interiors, often desire coated pipe.

High-Speed Lines Require Stable and Robust UV Equipment

As the leading global provider of in-line galvanizing and coating processes, Superior Technologies, Inc. identified the need to develop a UV system which could efficiently and cost effectively cure at the in-line galvanizing system speeds. Currently our in-line galvanizing systems have speed capacities exceeding 300 m/minute. At these speeds, it is critically important that the UV curing lamps' output per inch of bulb length remain stable and that it can withstand the harsh environment of tube and pipe making facilities. To achieve these goals for stable output and robustness, Superior Technologies engineers specified the Heraeus Noblelight 10-inch, 600 W/inch microwave-powered UV curing system as best suited for use in a tube and pipe environment. With 600 watts per inch of bulb length, the Heraeus Noblelight UV curing system also provides a very compact installation required when retrofitting to an existing tube or pipe mill.

Quality Design and Construction Keys to Success

As with any form of coating, a substrate free of contaminants is critical to achieving optimal coating performance. A properly designed system will most certainly provide the best results. It is not unusual to see identical coatings achieve radically different test results because of a poorly designed process or component. Those considering UV coatings are strongly urged to evaluate both the process and process components and select the highest quality design and construction. This is certainly one area where you will get what you pay for. The money you may think you save on initial investment may well be spent many times over during operation. Your evaluation time spent up front will ensure years of efficient and reliable coating system operation and the achievement of your coating goals.

State-of-the-art UV Coating System Installed

An advanced, state-of-the-art UV coating process was installed and commissioned at Conduit S.A. de C.V.'s Monclova, Mexico facility. The system is a hybrid coating system that allows for the use of a number of coating formulations, both clear and pigmented. Operating at speeds of over 225 m/minute, the line produces a quality product with the surface finish for which UV systems are famous. As a nearly one hundred percent solids formulation, the process and facility does not fall under the scrutiny of other water or solvent based operations. This is yet another installation that has redefined producer and consumer standards for tubular product quality, performance, appearance and value.

Superior Technologies, Inc., is the global leader in providing in-line galvanizing and coating systems for tubular products and shapes. They have both USA and UK based operations serving a global market. For more information visit http://www.superior-tech.net.

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