



Advancements in Mechanical Conveyor Design

March 1, 2016

By Bill Mecke, P.E. KWS Manufacturing Company, Ltd.

Bulk solids processing and handling is an exciting and challenging industry that continues to evolve every day. The 40th anniversary of the International Powder and Bulk Solids Conference and Exhibition, also known as the Powder Show, takes place in Rosemont, IL, during the first week of May. Numerous companies will be exhibiting to show off their current technologies and to take advantage of the opportunity to meet with a diverse customer base from all over the world.

The Powder Show also gives manufacturers the chance to discuss the state of the industry with their peers and predict the future of our industry. Personally, I have attended the Powder Show for 24 years and gained many benefits from attending the highly informative seminars. However, the unique ability to share "best practices" with other processing and conveying manufacturers is priceless. Again this year, I look forward to attending the conference and participating in a forum that will enhance the future of mechanical conveyor design for the processing industry.

Mechanical conveyors are used throughout the bulk solids processing industry in almost every application. Mechanical conveyors include - screw conveyors, screw feeders, drag conveyors, belt conveyors, and bucket elevators. These conveyors have proven to be reliable and cost-effective for conveying a wide variety of bulk materials, from dry and free flowing, to wet and sluggish. Today, there are millions of mechanical conveyors in operation throughout the U.S. and the rest of the world, conveying bulk materials from A to Z (adipic acid to zinc concentrate).

Over the past 40 years, mechanical conveyors have evolved and advanced in design and ease of manufacturing.

Design and Application Software

Back in the "old days" most of us used pencil and paper or even a slide rule to size conveying and processing equipment for a specific application. As technology improved, many companies developed equipment design software that utilizes the empirical knowledge that was gained through many years of testing of bulk materials. Today, most process equipment manufacturing companies employ integrated design and application software for equipment sizing and design.

Manufacturing Improvements

Many manufacturing improvements have been made over the last 40 years. Advances in manufacturing techniques, such as the use of high-definition laser or plasma cutting machines, allow manufacturers to cut piece parts for assemblies with exact precision. The use of automatic or robotic welders has increased the speed of manufacturing, as well as the quality of the welds. Many companies are adopting the concept of Lean Management to eliminate waste in the form of labor or materials in their manufacturing processes.

Over the next 40 years, mechanical conveyors will continue to advance in design and ease of manufacturing. Customers will demand better products that are delivered faster and at the lowest possible cost. This tremendous challenge for manufacturers of processing and conveying equipment will require a consistent environment of continuous improvement.



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Product Configuration Software

Eventually, customers will be able to design their own mechanical conveyors for specific applications using product configuration software. Basic design parameters can be input along with dimensional information about the layout requirements of the application. The product configuration software will generate a CAD model in the requested format that can be downloaded and placed in a plant or process layout drawing. Because the software will also generate pricing, the customer can receive both engineering and equipment pricing information almost instantaneously. Many equipment manufacturers currently utilize product configuration software. As the software becomes more sophisticated and easy to use, our customers will have full access to it from the web or a mobile device.

More Process Improvements

Our customers will only become more demanding in the future. The speed to obtain information or receive delivery on a piece of equipment will only continue to increase. Processing and conveying equipment manufacturers must adjust to every increasing speed of doing business, or they will not survive. Quotes must be generated in a few minutes and not a few days. Approval drawings must be submitted in a few days and not a few weeks. Equipment must be delivered in a few weeks and not a few months. The future will be challenging, but also rewarding for the companies that improve with the demands of the customer.

The mechanical conveying of bulk solids has certainly changed over the past 40 years. However, mechanical conveyors remain a popular solution to many bulk solids handling applications. Mechanical conveyors are cost-effective, versatile, and rugged devices that can be designed for conveying or metering almost any bulk solid. The future of the bulk solids handling industry is bright. Forthcoming improvements in design technology and manufacturing processes will only make our lives easier and our customers more satisfied.

Bill Mecke, P.E., is president of KWS Manufacturing Company, Ltd, one of the largest screw conveyor manufacturers in North America. He has over 20 years of industry experience working directly with customers to solve their material handling needs. Mecke earned his Bachelor of Science degree in Mechanical Engineering from Texas A&M University. He is also a registered Professional Engineer in the State of Texas. For more information, call 800-543-6558 or visit www.kwsmfg.com.



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