



▲ Moving Floor Assembly Line

GROUND **Moving Efficiency.**

taken from an original article written by Patrick Roberts

With the massive 184,000 square foot Bourgault expansion in St. Brieux, SK, nearing its completion, processes that increase production efficiency are now coming to life. One of these major contributing processes is the giant moving floor assembly line.

At 390' long by 25' wide, the moving floor assembly line is designed to accommodate Bourgault's current, large-scale seeding and tillage equipment (*sizes of 100' in length and 75,000 lb in weight*). The giant moving floor system (*engineered and built by PFlow Industries out of*



Milwaukee, Wisconsin) weighs in at just under one million pounds and is designed to not only provide a high efficiency operation, but also deliver improved safety compared to conventional large machinery assembly lines.

Where to Begin

Devising a system of this magnitude, both in size and engineering scope, is no small feat. After assessing many different options, Bourgault's internal engineering team, led by David Konopacki, determined that a moving-floor assembly line would deliver the best throughput volumes and cost efficiencies for the company's needs. The idea was to have the moving floor not only support the tillage equipment during assembly, but to also have it support the kitting systems and parts to be assembled, as well as the workers doing the assembly. By the time the tillage equipment reached the end of the assembly line, it would be completely assembled, tested and ready to ship.

To facilitate bringing this design concept to fruition, Bourgault brought in PFlow Industries to co-engineer and build the moving-floor assembly system. Working in tandem, the PFlow and Bourgault engineering teams came up with a unique ultra-large-scale moving-floor assembly system. The design consists of a string of 25-foot x 10-foot steel floor segments. These 43 segments are queued end-to-end to form a continuous 390-foot long x 25-foot wide floor, which is pushed along on rails by hydraulic cylinders. As each segment reaches the end of the line, the completed tillage equipment would be rolled off of the assembly system. A full cycle can be completed in as little as 1 3/4 hours up to 45 hours as production requires. The segments are then lowered, and returned underneath the floor back to the front of the line to be reused.

Engineering on the project was started in July of 2013, in tandem with the design of the building site. Since the assembly surface of the moving-floor system was designed to sit level with the manufacturing plant's floor, virtually the entire system resides below floor level. A 400-foot long x 35-foot wide x 14-foot deep concrete-lined pit had to be constructed when the foundation of the building was laid, to house the system. By February, 2015 the moving-floor assembly system, consisting of almost one-million-pounds of fabricated steel, was fully installed and operational.

Performance

This system allows for the efficient assembly of Bourgault's tillage equipment by providing a method for workers, tools, components and materials to move along with the assembly. Although the system has just gone into operation, Bourgault estimates a productivity increase of 30 percent, due in large part to the ability to stage components and materials along the line at the specific point when they are needed, and to have them travel along with the tillage equipment.

"By any standard, Bourgault's moving-floor assembly line is an extraordinary system," said Mark Webster, Vice President of Engineering, at PFlow. The moving-floor system has the flexibility to add different Bourgault product lines, even with weight increases, if desired. And it has the ability to match the speed of the moving floor to the rate required for the assembly of different equipment.

"Our research shows that nobody has anything else like it," said Konopacki. It is quite unique. Although we have yet to integrate our full production processes with it, all indications are that the system is running as expected, and working out very well for us." ■

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