A 737 engine is moved into position for installation on a wing in the Renton, Wash., Final Assembly area. About 50 Propulsion Systems Division employees will relocate to Renton in December, performing engine buildup on a moving line alongside the 737 moving line.

ED TURNER PHOTO

Location, location, location

Propulsion Systems Division takes Lean to the next level with value stream management

By Debby Arkell

Talk about adding value. Engines and propulsion systems buildup work performed by the 500 people of Boeing's Propulsion Systems Division in Seattle represents 35 percent of the value of any Boeing jetliner delivered. And they're about to add even more value as a group of PSD employees prepares to relocate to the 737 Final Assembly factory in Renton, Wash., furthering their Lean journey.

PSD plans to relocate some team members to Renton and some to Boeing's factory in Everett, Wash. In so doing, leaders expect to achieve benefits above the gains the division already has made through Lean manufacturing improvements.

Over the next six months, PSD will take its first steps to becoming a fully integrated value stream, supporting the next phase of Boeing Production System implementation (see box at right). This means the people of PSD—who as a value stream assume ownership of everything engine-related—will be fully integrated with their most immediate customer: Final Assembly.

This December approximately 50 employees will be the first from PSD to move "shipside" in Renton. There they will build up engines alongside the 737s, on which the engines will be hung. In essence, they'll become a feeder line to 737 airplane production.

"Airplane Production has established point-of-use staging, feeder lines and moving lines separately in PSD, Renton and Everett as part of the Boeing Production System," said Sandy Postel, Propulsion Systems Division vice president. "Now it's time to take Lean to the next level and hook up these lean lines, resulting in an even more efficient system."

PSD has long been a leader in Lean. From 1997 to today, PSD employees have reduced

facility square footage by 63 percent. Inventory turn rates have jumped 79 percent, from 13 to 41 per year. And workers have achieved a 20 to 85 percent reduction in manufacturing flow time across all models by implementing moving lines. On the 737 program, this has reduced the time required to build up an engine from 30 hours to just 4.5.

Moving into the airplane factory, PSD employees will bring their culture of improvement, furthering Airplane Production's vision for the future and supporting transformation across the production system.

"Being within line of sight of the airplane and communicating directly with other Renton colleagues will be a great advantage," said Postel.

Leaders have identified a number of benefits from the move shipside. They expect more benefits to become apparent as the value stream is fully integrated.

According to Karyl Bartlett, former Boeing Production System leader for PSD, having production support closer to assembly and integrating the value stream creates many opportunities, all stemming from the ability to link processes up with the airplane program customer.

"From an operations standpoint, bringing the value stream together will be beneficial to product flows," Bartlett said. "PSD already is extremely lean and efficient. By working together we can get the whole value stream even more efficient."

THE CHANGE CHALLENGE

Propulsion Systems employees are proud of their history. PSD traces its origins back to the late 1970s when it was known as Power Pack and Strut. It officially became a division in mid-1991, responsible for all engine, strut, strut structure, nacelle and inlet work, and accomplishing the work under one roof. Later it incorporated the supply chain as well—in essence becoming responsible for "everything under the wing."

That PSD is among the first to blaze new trails in value-stream management has presented challenges. And there will be additional challenges as PSD seeks to maintain collocation synergies with the rest of its organization, Bartlett noted. Supporting emergent work such as quick engine changes (QECs) and Commercial Aviation Services support—something PSD always has done well—is one such potential challenge.

"Our people have always been extremely responsive," said Bartlett. "With collocation, if QECs are needed, you can easily put them on different lines and get the job done."

JEFF SPEIGNER GRAPHIC

Reduced transportation requirements, improved process flow, and line-of-sight process alignment are among many benefits Commercial Airplanes expects when engine and strut buildup collocates with final assembly in Renton and Everett, Wash.

Another challenge is maintaining the PSD culture. It is special in how the people work together to support the airlines, Final Assembly, Commercial Aviation Services and other customers—and each other.

With so much at stake, Human Resources naturally is focused on change management. "Whether you're managing a move of 50 people or 5,000, you treat it the same," said PSD Human Resources leader Harold Adams. "Ultimately, it's not the building that makes PSD people special—it's the people themselves."

FULL SPEED AHEAD

As Airplane Production forges ahead with plans to integrate feeder lines into Renton and Everett Final Assembly, PSD leaders are defining their management model, determining what it looks like to manage a value stream, and establishing the support structure—such as Human Resources and Finance—for their newly dispersed team.

However, one thing is certain as the first group of PSD employees moves to Renton: They're leaders, taking Lean to the next level. Ultimately, the goal is to integrate the best of PSD with the best of Renton and Everett.

"In the end, it's an airplane we deliver—an integrated product—not just engines," said Postel. "Within the Propulsion skills—whether it's operations, engineering, supply chain management or on the support side—we will always be respected. There's tremendous potential by moving shipside. It's absolutely the right thing to do. And there will always be a future for us." ■

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What it means

Value stream: The entire set of activities, from raw material to delivery, for a specific product, with processes optimized from the customer viewpoint. Value streams link internal processes and those between Boeing and its customers.

Feeder line: Assembly work performed off the main production line, such as the creation of subassemblies or parts staging, just prior to installation on an airplane.

Boeing Production System: A holistic look at the extended commercial airplane enterprise, aligning improvement efforts to meet customer needs, reduce costs, improve quality and shorten lead times. These improvements reduce waste and infrastructure and streamline the flow of material, parts and products through the system, ultimately creating simpler processes for products that are assembled more easily. The BPS is based on principles developed by Toyota and utilizes Lean tools, which can be applied in both the factory and the office.