

Night moves

Jetliner production rates are going up, and Boeing teams are picking up the pace

By Dawsalee Griffin and photos by Bob Ferguson

In the late night and early morning hours when many Boeing Commercial Airplanes employees in Washington state are asleep, huge pieces of tooling and a future jetliner are on the move in the 777 bay at the sprawling Everett factory.

They are being “walked” across the floor by the third-shift tooling team—a vital cog in making sure that the 777 production line stays on schedule.

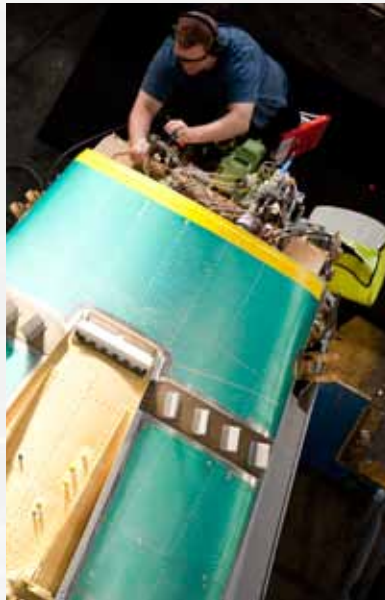
“The clock is ticking,” said Bob Bowen, third-shift 777 production manager. “We have to have everything ready for the first-shift employees to walk in and begin their work.”

Bowen calls it a “mechanical ballet” as forklifts maneuver tooling, including large sections of scaffolding, platforms and stairs, away from 777s in preparation for moving fuselage pieces to the proper position in the final body join area where the wings are added and a familiar-looking airplane begins to take shape.

The recycle team, as the group is known, has to

PHOTOS: (Below) The giant pieces of the 777 are moved into place in the final body join area at the Everett, Wash., factory. **(Insets)** 777 mechanics Lance Lieparek (left) and Derec Sysavath (right) help guide the wing section into the final body join tool.





PHOTOS: (Below) The Renton, Wash., factory turns out a record 31.5 Next-Generation 737s a month. That rate is scheduled to increase to 35 in 2012 and 38 in 2013. **(Insets)** 737 mechanics including Sameoun Van (center) work on Next-Generation 737s.

complete the intricate dance every fourth day in a little less than seven hours. And the pace is about to pick up.

Teams throughout the Boeing production system are continuously working to improve processes. But the drive to produce commercial airplanes even more efficiently has taken on a greater sense of urgency, especially for the twin-aisle 777 program at Everett and the single-aisle 737 program at the Renton plant about 40 miles (65 kilometers) south. The pace at which the jets are assembled and delivered is going up to meet growing customer demand.

Production of the 777 will increase in mid-2011 to seven airplanes a month. The 737 program, already producing a record 31.5 airplanes a month, is scheduled to push that rate to 35 a month in 2012 and then to 38 in 2013.

"We are always studying possibilities," said Mandy Burton, Commercial Airplanes business operations. "We look at the marketplace and figure out how to balance demand versus capability."

Knowing the current capacity of a production line—and how much of it is available for increased production—is essential in determining what needs to be done to increase rates.

Planning teams throughout Boeing identify what it will take, down to the smallest detail, to build more airplanes. The goal parallels that of the 777 team—to make sure everything is ready for the employees to do their jobs whether the increase is one plane a month or seven.

Information going back to Burton's group addresses requirements down to the





PHOTOS: (Below) Propulsion employees prepare engines to be installed on Next-Generation 737s. **(Insets)** From left, 737 mechanics Nichelle Lilly-Baylor, Jackie Thompson and Chi-Yao Hu work on 737s.

smallest detail—from people and equipment to the lead-time required for acquiring critical materials and parts. Even details such as the amount of space required for the increased production are considered.

“First-line supervisors participate in the planning,” said Rick Payment, 737 industrial engineer. “They help us understand what the mechanics do and the impact of any changes.”

Boeing has been here before. And the result wasn’t good.

“The process changed dramatically with the last 737 rate increase in the late 1990s,” explained Matt Bueser, director of 737 business operations. “We now do a more thorough study of the entire value stream, ask broader questions about capability and capacity—both inside and outside Boeing. No one wants to repeat the experience of shutting down the factories.”

Boeing performs the same production readiness assessment with suppliers. “We look at their facilities, equipment and operations in relation to capacity,” Bueser said.

Utilizing Lean+ is one way to build up capacity incrementally, according to Bueser. Boeing has made many improvements in the 737 moving line using Lean+ practices.

“We used to take 22 days in final assembly to build a Next-Generation 737. Now we take 11,” Bueser said.

It’s a similar success story at the Everett plant, where assembly processes have been



improved using Lean+ initiatives. A good example is one improvement made by the 777 third-shift tooling team.

At three positions on the production line, the tooling team has to remove equipment and then replace it for the next airplane down the line. The tooling team has to break down equipment, some of which can be 60 feet (18 meters) long and weigh up to 60,000 pounds (27,200 kilograms).

While the tooling is being moved, mechanics can't work on the planes.

The challenge: Find a way to complete the equipment moves quickly and correctly so that the mechanics can get back to work on the airplanes.

The third-shift tooling team reorganized the work area using Lean+ practices and help from second-shift provisioners who stage parts and tools so mechanics don't have to leave the airplanes to find what they need.

"Since using the new staging process," said Adam Ginsburg, 777 industrial engineer, "the tooling group has been able to complete the critical milestones two hours earlier."

That means the mechanics on third shift can get back on the airplanes earlier to complete their tasks—just one of the many critical moves that must take place in getting to rate. ■

dawsalee.griffin@boeing.com

PHOTOS: (Below) Dan Wheeler (foreground), 777 Tooling, prepares the front sections of a 777 to move into final body join. **(Insets)** The 777 line move takes the coordinated efforts of many employees. From left: a Shared Services Group forklift driver prepares to maneuver tooling; Marcus Whybark, Shared Services floor-sweeping equipment operator, cleans any foreign object debris from the floor during the line move; Rachel Bovey, 777 Tooling, directs traffic during the line move.

