

Hands on

A heads-up observation helps Seattle lab technicians be more efficient

By Adam Tischler

Looking at Craig Henningsen's hands side by side, it's easy to tell which one has been shaped by years of carefully preparing surfaces for the tiny gages used to measure structural loads on test aircraft.

He's spent innumerable hours clutching hand sanders and sharp Exacto knives to pry material out of hard-to-reach places to implant the gages.

The gages Henningsen installs are typically about the size of a postage stamp. It is delicate work and "you gotta be like a surgeon," said Henningsen, a Boeing Test & Evaluation technician in the Seattle area. "Everything has to go right."

All around him in the Strain Gage Lab, technicians are in various stages of meticulously melding the metallic test instruments into various test materials. But thanks to something Henningsen spotted at another Boeing facility, the Strain Gage Lab team found a way to do this work much more quickly and ergonomically. It's an example of what Boeing employees are doing to help the company run more efficiently—and ergonomically.

The unexpected discovery came when Henningsen took a temporary assignment to help out in Boeing's Seattle-based Wind Tunnel Lab for several weeks.

"I snooped around looking at all their tools," he quipped. His interest was piqued when he saw a dental sander in use. A dental sander is used to sand and shape dentures rather than clean a patient's teeth. Much like a hand-held rotary shop tool, it has a small replaceable bit and a high degree of speed variability for precision work in tight spaces.

Henningsen immediately called Robert Moshcatel, his team lead at the Strain Gage Lab. The two had previously experimented with other tools to improve the strain gage application process—with little success. But the dental sander had the characteristics they had spent years searching for.

"It was really slick," Henningsen said.

With the dental sander back in the Strain Gage Lab, the benefits were measurable. The average time saved on installing an individual gage was about 65 seconds, but on components that can measure 10 feet by 5 feet (3 meters by 1.5 meters), with hundreds of gages, the time saved was measured in days.

Once mounted, strain gages are wired to a computer that records the effects of stress on materials. The electromechanical gages test everything from the extreme pressure of strenuous flight maneuvers to the force a flight attendant puts on a cabin door's hinges while opening or closing it.

The Strain Gage Lab works closely with Boeing Test & Evaluation's Structures Test Lab to test materials that will eventually make their way onto Boeing products. Every measurement is critical and there is no room for error in the labs.

Strain gage installation used to require real physical exertion: "You'd take an Exacto and go like this," Moshcatel explained, simulating the scraping motion across a composite test material. That was the old way, before the discovery of the dental sander. Now, lab technicians flip a switch and in short order carefully and mechanically remove just enough surface to implant a strain gage on a surface.

The little sander has made the lab work easier and faster and produced significant savings—saving wear and tear on Boeing people as well. ■

adam.m.tischler@boeing.com



*It is delicate work—
"you gotta be like
a surgeon."*

— Craig Henningsen, Boeing Test & Evaluation technician

PHOTOS: Boeing Test & Evaluation lab technician Craig Henningsen employs a dental sander to prepare a panel on which dozens of strain gages will be mounted. The process used to take days; now technicians in the Strain Gage Lab can do it in hours. MARIAN LOCKHART/BOEING