



# Honeywell Aerospace

## Jet Engine Manufacturer Tracks Thousands of Parts Accurately With the HighJump WMS

### Company Profile—Honeywell Aerospace

Honeywell Aerospace builds jet engines for civilian and military aircraft at its manufacturing facility in Phoenix, Ariz. They were so successful at building jet engines that nobody realized they had a problem with inventory accuracy and productivity. Workers regarded such problems as "the way of life" in the jet engine business.

In 1997, Honeywell installed HighJump™ Warehouse Advantage from HighJump Software (Eden Prairie, Minn.) and it was quickly apparent to everyone what they had been missing. Suddenly, accuracy skyrocketed and productivity took off as the new software boosted operations like an afterburner.

### Honeywell Finds the Advantage

Honeywell Aerospace is one of the world's largest suppliers of aircraft engines, equipment, systems and services for

commercial transport, general aviation and military aircraft. The Engines & Systems group developed the modern hi-bypass AS900 and TFE731 turbofan engines used in today's business jets, and it builds TPE331 turboprop and LF502/507 engines for business aviation, regional airlines, military aircraft, and marine and industrial applications. In addition to manufacturing, Honeywell has an engine rental pool of more than 1,200 engines, a worldwide service and support network, and a wide variety of systems and components—such as engine controls, start systems, valves, electro mechanical interface devices, sensors, actuation systems, and oil, air and fuel coolers.

Honeywell's products are much in demand. The AS900 family of engines was selected to power the Bombardier business jet and British Aerospace's Avro RJX regional aircraft. Although the AS900 has a reduced parts count, thousands of parts are nonetheless needed to build one of these engines.

The manufacturing facility takes up several buildings, stretching across one mile near the Phoenix International Airport. In that plant,

Honeywell builds jet engines for airplanes plus smaller engines for accessories such as air conditioning, heating, power and hydraulics. The warehouses in the plant store hundreds of thousands of parts.

When Honeywell builds a large jet engine, the inventory control system prints out pick lists for the thousands of parts needed. These go into large kits containing many pieces that are then delivered to the assembly lines. One jet engine might require dozens of parts kits.

"Before HighJump Software, our inventory was only 75 to 80 percent accurate at any time," said Hank Henry, business analyst at Honeywell Engines & Systems. "We never really knew what we had in inventory, because sometimes it would take days to update the inventory control system after we picked parts."



The legacy system stored parts by part number, which created many problems. One problem involved storing new parts that fell between two existing part numbers.

In that case, parts had to be moved to make room. Some small parts wound up in large bins or cabinets, while big parts wound up in racks. Because of this, the legacy inventory control and pick system was inefficient and caused production delays.

“The system would give us a pick list for all the parts needed to build a jet engine,” Henry said, “but they were listed by part numbers, and the parts were scattered all over the warehouse. We had to start in cabinets or bin boxes to pull parts, and skip over parts in the racks because we didn’t want to keep bouncing from the cabinets to the racks and back again. So we couldn’t pull parts in an efficient manner, and we made mistakes.”

One of Honeywell’s divisions in Florida updated to the HighJump Warehouse Advantage warehouse management system, so Henry was eager to give it a try. “We had been wanting a modern inventory control system for a long time, and we had looked at several applications previously,” Henry said. “But everything was too expensive. The HighJump system appeared to be much more affordable.”

They contacted HighJump Software, had their first conceptual meeting in April 1997, got a test facility up and running by November 1997, and went into production in the entire facility in February 1998.

“One of the biggest issues for us was the ability of the HighJump Warehouse Advantage system to interface to our host MRP system,” says Henry. “HighJump Warehouse Advantage is highly adaptable and easily configurable, so we were able to connect to the host system fairly easily.”

**“OUR INVENTORY ACCURACY SINCE MAY 1998 HAS CONSISTENTLY BEEN BETWEEN 97.5 PERCENT AND 99 PERCENT. WE HAVE STATISTICAL COUNTS THAT WE DO AT THE FIRST OF EVERY MONTH. WITH ALL THAT CHECKING, LAST MONTH WE ACTUALLY HAD AN INVENTORY ACCURACY OF 99.1 PERCENT.”**

-Hank Henry, business analyst

## Picking and Kitting

One advantage that HighJump Warehouse Advantage gives Honeywell is the ability to store parts in a way that makes sense, rather than by a rigid parts numbering system.

“Because we build many different engines, we have many parts that are similar,” Henry said. “We wanted to set up ‘parts classes’ to keep all the similar engine groups together in the same area of the storeroom.”

With the innovative and adaptive HighJump Warehouse Advantage, Honeywell could create a parts class to keep similar parts together and put them in locations that made more sense. “For example, we have 30 parts cabinets for the auxiliary power units we build for Boeing. With the pick list from HighJump Warehouse Advantage, we start at one end and go to the other end to pull all the little parts in sequence. Then we go through all the racks to pick the bigger parts. We pull everything as we go, and we don’t miss parts anymore.”

## Results

Honeywell no longer has to ship jet engine kits off to the assembly line on the assumption that all the parts have been pulled when some parts are actually missing. When an engine arrives at the assembly line today, it has all of its parts.

An additional advantage is the improved accuracy. “Our inventory accuracy since May 1998 has consistently been between 97.5 percent and 99 percent,” said Henry. “We use planned and unplanned counts to check

the system. Currently, we’re making 13,000 to 14,000 opportunity counts per month. We count these parts during our issuing cycle when the parts reach five or less on the location. That is to say, the system prompts us to count parts. We have statistical counts that we do at the first of every month. With all that checking, last month we had an inventory accuracy of 99.1 percent.”

Thanks to the flexible architecture of the WMS, HighJump Software and Honeywell have been able to expand the system easily and keep up with changing requirements. “The architecture makes it easy for HighJump Software to keep our system running,” Henry said. “Whenever any of their people come out here to do upgrades or switch hardware and software, the system has been very adaptable. When we want to make changes because of new needs or requirements, they’ve been able to get the systems changed and running very fast.”

For example, Honeywell asked HighJump Software to implement an automation point-of-use plan that involved 15 separate warehouses and storage places, 100 terminals and 50 to 75 printers within the facility. HighJump Software easily configured the system so that the WMS is used to manage all of them.

“Thanks to HighJump Warehouse Advantage, we know whether we have the proper parts in inventory—because it updates everything in real time as we pick parts,” said Henry. “It’s made everyone’s life a lot easier. Compared to

