

The aircraft maker has distributed RFID requirements to suppliers of parts for its A350 aircraft, and will use EPC RFID tags to manage the configuration of A330 and A340 planes, as well as to track tools.

By Rhea Wessel

July 9, 2009—Aircraft manufacturer [Airbus](#) indicates it has distributed RFID requirements as part of its technical specifications for suppliers worldwide for the A350 extra-wide body (XWB) aircraft currently under development. In addition, the company says it has embarked on number of new RFID projects, and has expanded one it has already deployed.

Carlo K. Nizam, Airbus' head of value chain visibility and auto-ID—who recently discussed the company's RFID efforts at the [RFID Journal LIVE! Middle East 2009](#) conference, held last month in Dubai—says, "We have requested a combination of RFID and contact memory button [CMB] part marking for a selection of parts on the A350."



*Carlo K. Nizam, Airbus'
head of value chain
visibility and auto-ID*

The requirements the company has distributed will not impact all suppliers to Airbus, but will affect all that provide parts involved in a repair cycle. Nizam declines to reveal the types of parts or systems impacted by the requirements, since the aircraft systems are still in the detailed definition phase, but says that approximately 2,000 to 5,000 parts could require RFID part marking by suppliers by 2011 or earlier. The A350 XWB is scheduled to enter into service in 2013.

"We have created some criteria to help our suppliers assess which parts should be tagged, either with RFID or contact memory buttons," Nizam says. "These criteria are contained with the requirement documents that have already been distributed. For example, if a part is serialized, repairable and replaceable, it would require either an RFID tag or a CMB."

In pressurized areas of the aircraft, Nizam explains, RFID tags will be employed. In unpressurized sections, however, it is likely that contact memory buttons will be used, because of their greater robustness to harsh environments compared with current ultrahigh-frequency (UHF) tags.

Within the RFID requirement, Airbus specifies that the tag's memory be organized according to ATA Spec 2000 chapter 9-5 and Annex 11 (see [ATA Approves RFID Data Structures for Spec 2000](#)). As the aircraft goes through its evolution, Nizam says, the exact parts to be tagged will become clear. "Then the question will be: What kind of tags are commercially available for these specific parts?" he adds.

That's why Airbus is working closely with its suppliers to help them meet the requirements. It is also working with manufacturers of both low-memory (512 bits) and high-memory (minimum 4 kilobytes)

tags. Airbus specifies that the tag memory must be sufficient to store all maintenance information for a minimum of 12 years following the part's first delivery. In addition, it requires that high-memory tags have a minimum capacity of 4 kilobytes—though it can be higher, depending on what is needed.

In order to help suppliers select the proper memory size, Airbus has provided a table illustrating the amount of memory required for a range of maintenance cycles, as outlined in ATA's Spec 2000. Based on the number of maintenance cycles a supplier anticipates for a particular part, that supplier can select the minimum required memory.

What's more, Nizam reports that Airbus is moving forward steadily on its company-wide rollout and implementation of a wide variety of RFID-based applications to be used on the ground and in the air to improve business processes and reduce operational costs. Notably, the company expects to soon begin tagging in-cabin items such as seats and life jackets on long-range aircraft made in Toulouse, France, and to deploy a tool-tracking application in Filton, England.

RFID Tags for Configuration Management in Long-Range Aircraft

In early 2008, Airbus conducted RFID trials that involved the tagging of in-cabin items on its A330 and A340 long-range aircraft family, and determined that RFID would help speed up and streamline the company's configuration-management processes. As part of configuration management, an aircraft manufacturer goes through a procedure called attestation, in which it must confirm that what has been installed matches the design requirements. To do so, an aircraft maker must physically check which items were installed on board a particular aircraft.

For the RFID trial, Airbus placed EPC Gen 2 tags on cabin items such as seats and life vests, and also tagged locations on the airplane. Airbus then associated the bill of material (that is, the items' part and serial numbers) to specific locations on the aircraft.

According to Nizam, his company was able to collect information regarding the in-cabin items using RFID much faster than it did previously using paper.

"Based on the industrial tests, we found some very good results, and determined a net payback period of less than 12 months," Nizam states. "As a result, we've taken a decision to add RFID tags to seats in the short term, to access those benefits during the attestation process." After the plane has been outfitted with seats, Airbus will remove their tags before handing the plane over to a customer.

The project is currently being implemented, and is expected to be completed by the end of this year. The company expects to utilize roughly 23,000 tags annually, as well as 20 handheld interrogators, at the A330/340 final assembly line in Toulouse. Airbus will begin by tagging seats on the A330 and A340 long-range planes, Nizam notes, but eventually plans to ask its seat and life-vest suppliers to add the RFID tags before shipping such items to Airbus. It also expects to later expand the RFID application to other aircraft assembly lines.

"We're improving the speed, efficiency and accuracy of the attestation process," Nizam says. "Given the positive results of the test, Airbus has already distributed requirements to its A350 suppliers for RFID tagging of a selection of parts. In the near future on the A350, items will come already tagged with RFID." The requirements, he notes, will cover some cabin items, including life vests and seats.

Tool Tracking in Filton

During the past nine months, Airbus has conducted several industrial tool-tracking pilots. As a result, the firm has decided to begin RFID tool tracking at its manufacturing facility in Filton.

The aircraft manufacturer wanted to reduce the time it takes workers to "book in" and "book out" the tools they need. At present, employees go to the tool room, stand in a line and request the items they need for a given day's work. A staff member behind the service window retrieves the necessary tools and writes down what is being checked out. When items are returned, a tool-room employee then records what is being checked back in.

Once the RFID implementation is finished, employees running the tool room will pass RFID-tagged items across a table under which a reader is mounted. The system will identify the tool through the unique number on its tag, and associate that information to the worker, via his RFID badge (employees already have such badges). The interrogator under the table will comply with the EPC Gen 2 standard and [ETSI](#) regulations. Airbus expects to tag several thousand handheld tools in order to reduce the time required to check them in and out.

"Now that we will get more accurate information about the number of times a tool is booked in and booked out," Nizam states, "we will have more reliable information about the number of cycles tools are being used. This will help us improve the calibration process."

At present, Airbus calibrates tools based on pre-set fixed times. However, if it can reliably and accurately determine how often a tool has been used, the company can extend the calibration period and potentially cut down on unnecessary work. The manufacturer determined that the tool-tracking application will pay for itself within 12 months, and has chosen to roll out the system in Filton by the end of this year.

Ongoing RFID Implementations

According to Nizam, Airbus is also making steady progress on its other ongoing RFID implementations. The aircraft manufacturer has increased the number of RFID interrogators it uses at the A380 final assembly line in Hamburg, Germany, to more than 100.

The application tracks containers of parts used to supply the cabin furnishing equipment for the A380 (see [Airbus' Grand Plans for RFID](#)). Each container carries two passive RFID tags (EPC Gen 1 or Gen 2). The installation is now among the largest in Europe in a single facility, Nizam says, and has also been rolled out with 14 readers at an additional final assembly line in Germany—for Airbus' single-aisle airplane family.

Airbus Issues RFID Requirements, Expands RFID Usage

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Separately, at the end of 2008, Airbus finished rolling out a system that utilizes passive EPC Gen 2 RFID tags to track the locations of jigs, or transport frames, to help the company keep to a tight manufacturing schedule (see [Airbus Trials Showing Strong Results](#)). Workers use the jigs to transport large aircraft sections to its manufacturing and assembly facilities via a huge cargo aircraft, dubbed the Beluga.

The project was the first project to go live on Airbus' corporate auto-ID middleware provided by [IBM](#) and [OATS](#). All existing projects will be gradually migrated over to the standard platform. All of Airbus' auto-ID projects, Nizam says—whether involving RFID or bar-code technology—now run on the same corporate platform, which promotes reusability and convergence, and eliminates multiple projects running on different islands of software.