



# An Auto ID Symphony in 3 Movements

## Orchestrating More Efficient Construction Project Management Using Auto ID

The construction of a major industrial facility has many moving parts – people, equipment, tools, building components, materials and other resources – the paths of which all need to intersect at a precise point on the space-time continuum in order to complete the build on schedule and on budget. Any missteps or delays can lead to delivery conflicts rivaling a bad Keystone Cops flick, inventory pileups, idle personnel and huge cost overruns.

To avoid this, project management has to tightly plan and coordinate the entire process, assess costs and mitigate risks in real time. Like a skilled maestro conducting musicians from a shared song sheet to deliver a masterful collective performance, the project manager has to keep tempo, hurry some sections, quiet others, assess quality and correctly interpret the big picture all in mid-measure.

Granted, symphony conductor technology has changed very little in the past 400 years (still just a podium and a stick). But the technology available to project managers tasked with coordinating the construction of complex industrial, utility or other facility has changed by leaps and bounds in recent years. One of these technologies is automated identification (Auto ID). Auto ID, in the form of a machine-readable Item-Unique Identification (IUID) barcode or Radio Frequency Identification (RFID) tag, enables project supervisors to more precisely manage the flow, accuracy and quality of critical assets, equipment, parts and materials.

Auto ID harnesses today's cloud-based network infrastructure, software and systems to capture asset data and accurately track it anywhere in the supply chain, production line, tool crib, inventory shelves, repair shop or other locations. So it's an ideal technology for managing the movement of items and equipment on, into and out of a construction site. Knowing what, where and when items are available, in use, being fixed, en route or anywhere else at any time gives project managers unprecedented control in at least three distinct areas of construction project execution: supply chain predictability, equipment utilization and asset visibility.

**1. Supply Chain Predictability** In the construction site supply chain, procurement of materials and equipment has to happen in a just-in-time approach in order to meet completion schedule milestones. Project managers don't want to tie up funding by committing capital too early or having costly inventory lying in wait taking up valuable space. With Auto ID, the supply chain is more predictable, because it's "visible" from anywhere (more on visibility in a moment). So construction supervisors and managers are able to know precisely when resources will arrive at the work site and be more expedient in arranging the

appropriate personnel to be on hand when it does. Orchestral translation: If a tuba player blows the right note at the wrong time, or the wrong note at the right time, the entire performance suffers.

**2. Efficient Equipment Utilization** Much of the equipment used in a large construction project is leased for the period it is likely to be needed. Leased equipment can range anywhere from small hand tools and air compressors to mega-sized earth-movers and dump trucks. If this type of hardware is lying around unused, project costs skyrocket. Often, the on-site location of all rented equipment isn't readily known, so managers might rent a duplicate tool to meet an immediate need at an additional cost. Perhaps they ended up not returning something they leased, or they returned it too late, meaning they may have to pay an additional rental fee or eat the cost. On a huge work site, it happens. But by using equipment that has been marked with an IUID label or RFID tag, supervisors always know what they have (or shouldn't have) because it's been scanned into a database that is easily accessible on site. Orchestral translation: Instruments don't play themselves, you know.

**3. Asset Visibility** Being able to "see" assets, equipment and materials using Auto ID technology is essentially what makes the supply chain more predictable and equipment utilization more efficient. But visit any construction site and you're often greeted with a chaotic scene where valuable items are flying all over the place. Yet there is no one just standing around being unproductive because the tool they need can't be accounted for or is being used by someone else. Who's keeping track of all this stuff? How? With Auto ID, specifically RFID, it's possible to pinpoint the last location of an item or even have real-time visibility into the items current location and stick with the project schedule. Orchestral translation: you can have the most accomplished ensemble of musicians ever to appear on stage, but if the piano and bassoons are AWOL, that's not so good.

A2B knows first-hand how important tracking technology can be to improving project management and control. A recent example of a large-scale, highly complex facility construction project that benefitted from the use of Auto ID technology is the Plainfield Renewable Energy Facility in Plainfield, Connecticut. The fully-automated biomass power facility, completed on schedule in 2013, was a study in advanced technology and systems integration. In addition to using a real-time, 3D modeling collaboration tool, managers used IUID technology to track many critical parts and equipment from a temporary warehouse location to the project site. Types of items included:

- Solenoid valves
- Pumps
- Heaters
- Compressors
- Filters, fuses, gaskets and o-rings
- Specialized tools
- Pressure gauges

The project took just 30 months to complete and involved over 100 engineers and 30 subcontractors. Pretty impressive considering that's way more individuals than found in your garden variety symphony orchestra.