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RFID Protects Liquid Assets

Colder Products Co. (CPC), company that designs and manufactures connectors and fittings for flexible tubing, has turned to RFID specialists Innovision Research & Technology (IRT) to help cut the cost of Colder's RFID-enabled Smart Coupler products.



Smart Coupler
with built-in
RFID reader

Couplings are used to let flexible liquid-carrying tubing be quickly and easily connected and disconnected. Adding RFID technology to the couplings promises to help keep unauthorized liquids from being introduced into storage containers or dispensing systems. For example, RFID-based coupling applications in food and beverage dispensers can help ensure that correct amounts are dispensed, that sugared syrup is not used in drinks advertised as sugar-free, and that products are monitored for freshness. In chemical plants, RFID tagging can be used to confirm the correct types and sequencing of ingredients.

CPC's Smart Coupler system works by embedding an RFID tag into a coupling joined to a liquid container, such as a syrup canister. The company also incorporates an RFID reader into a matching coupling fixed to a permanent piece of equipment, such as a soda dispenser. The IRT-designed passive 13.56 MHz tag can hold 16 bytes of data, which may include referencing date codes, batch codes, filling sequence, product identification and product parameters. The reader can then obtain data from the tag and transfer it to the manufacturing or standalone machine control system. CPC's system can read and write prior to connection, at approximately 1.5 inches before the two coupling halves mate. A cable can be incorporated into the flexible tubing to power the reader and can carry data back to a control system. The Smart Coupler system uses 13.56 MHz tags, according to the CPC, because the company understands the characteristics and limitations of the

tags and because regulatory power limits for 13.56 MHz tags are adequate for CPC's coupling application everywhere in the world.

The company's non-RFID couplings are already included in the Bunn coffee makers installed at every McDonald's restaurant across the U.S., in the water filters in GE refrigerators and in Dirt Devil vacuum cleaners, so CPC sees great potential for its low-cost RFID-enabled couplings. CPC says that within three years, it could be selling its new Smart Couplings in volumes of up to 30 million a year.

"Switching to new couplings means a large infrastructure change-out for our customers, but after a year or two of testing, a customer that decides to adopt the system could increase its purchase volumes from in the thousands to in the millions overnight," says Rick Garber, manager of CPC's smart technology business unit, which is based in St. Paul, Minn.

For the past year, the company has offered RFID-enabled couplings incorporating tags using I Code chips from Philips Semiconductors. To enable it to offer smart couplings that can appeal to more price-sensitive markets, CPC decided to switch to chips designed by IRT, a U.K. RFID engineering firm in Wokingham, Berkshire.

"The food and beverage market, where the couplings would be used on low-cost consumables, cost has been a factor," says Garber.

For 100,000-piece orders, the company charges \$2.25 each for a complete fluid coupling for application in a 38mm bag-in-box, snap-in neck that includes an embedded RFID tag. The new tags using IRT technology will have less memory than the ones made with Philips chips (16 bytes instead of 48 bytes) but will still have enough memory to support an EPC code with additional memory for company specific applications. The company says while the lower memory of the IRT design will

make the new tags cheaper to produce, CPC believes a large part of the cost savings comes from the fact that IRT—a small consulting company without its own fabrication plants—can use third-party manufacturing to undercut the cost of the Philips chips.

CPC expects to sell couplings made with the new IRT tags starting in September.

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