With the popularity of the Split-Impact® machine growing, Louis Hébert, President/Owner of Automacad, and his team of engineers decided it was time to reduce the number of cables and improve the networking technology on their machine.

Automacad looked to ifm efector North America for their expertise in providing networking solutions for actuators and sensors. ifm offers the Actuator-Sensor interface (AS-i) bus system for networking I/O points and reducing wiring complexity.

Designing and building the equipment that can manipulate masonry products in a variety of models is the brainchild of Automacad Concrete (Québec, Canada) an original equipment manufacturer of concrete product machinery.

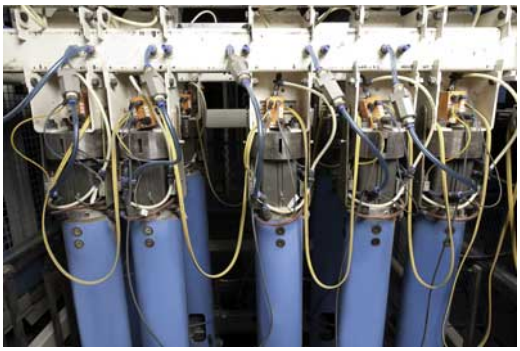
Automacad designs and builds customized solutions for manufacturers of concrete products. The company focuses on design/build equipment solutions for dry-cast and wet-cast production. Their equipment offers their customers a high-level of automation that in turn improves efficiency, increases uptime and creates a greater output on their customers' production lines.

One of Automacad's flagship machines is called the Split-Impact® which is considered one of the fastest concrete splitters in the industry. One-hundred-percent pneumatic, the machine mounts in-line directly over an existing conveyor. As large slabs of dry-cast concrete move down the conveyor, the powerful Split-Impact® machine cuts the concrete in one pass, producing ready-to-tumble products. The machine's in-line design eliminates the need to de-pallet the slabs which increases production time and output.

Controlling the force of the machine is a skid of pneumatic heads that each contains a blade that is driven down into the concrete for precise cutting while leaving a "natural" finish on the edges. Depending on the customers' cutting patterns, the machine can be custom designed to include virtually any number of pneumatic heads. Customers usually specify eight to 25 heads.

Wiring the pneumatic cabling and tubing back to a control panel can be time consuming. On one Split-Impact® machine, more than 300 wires can be connected from the skid to the main control panel which can lead to wire bundles that are cumbersome and messy. For a company that has high standards for quality and appearance, Automacad considered the wire bundles unsightly and did not make a clean presentation to their customer.

In the search to reduce wiring complexity, installation time and panel builds intricacy, Automacad looked to ifm efector North America for their expertise in providing networking solutions for actuators and sensors.



AS-i is a simple alternative to conventional wiring. The networking system is currently the most cost-effective open network available for sensors and actuators. AS-i was founded in 1990 as a non-profit independent organization by a consortium consisting mainly of sensor manufacturers, including ifm, and is now supported by more than 100 vendors worldwide.

The philosophy behind the AS-i network is its simplicity. A

basic AS-i system consists of four main components: a controller, power supply, standard I/O modules and a trapezoidal “flat” cable that carries both power and data. The system can be compared to electrical building blocks – almost “Lego” like in structure.

To setup a system, the flat cable is positioned along the path of the I/O points. The I/Os are then connected to the cable using AS-i’s snap-and-go piercing technology. One cable can connect an entire network of I/O points. If needed, a user can connect additional splitter modules to branch and lengthen the network as well as add safety functionality. The controller monitors all communication over the AS-i cable without the need for special software. A power supply feeds a symmetrical supply voltage into the AS-i cable which provides communication and power to the sensors.

Automacad fixed the top of each pneumatic head with an ifm ClassicLine Airbox that controls the digital inputs and pneumatic outputs. The Airboxes are daisy-chained through all of the heads of the Split-Impact® machine. One AS-i cable brings in all digital inputs and drives out all of the outputs. One pneumatic tube supplies the air to each Airbox.

A selling feature for Automacad is the compact, simple-to-mount housing. The low-profile Airbox has a smaller form factor than most and fits easily on top of the pneumatic head. A 8mm push-fit tube connection is easily inserted and removed without any special tools. A quick-mount slide enables the flat cable to be sandwiched between the upper module and its base without the need for mounting screws.

The module can rotate in three directions with a simple twist to accept the cable vertically or horizontally. This allows Automacad to stock fewer parts. Highly visible LEDs on the upper module indicate signal status.

One of the biggest benefits of the AS-i network is the ease of adding and subtracting components. The AS-i network is not limited by topology and structure. AS-i has no restrictions in terms of adding or subtracting components. Comparable systems can be very regimented and complex. “The AS-i network helps make our machine a modular system. We can easily replace a head wherever we want,” says Hébert. Using the AS-i network and the decentralized ifm Airboxes doesn’t complicate the pneumatics according to Hébert. The ifm Airbox is robust enough to handle shock and vibration that occurs when splitting concrete.

Automacad has found that the time saved by using AS-i is considerable. Their team has reduced the amount of installation and setup by days. According to Hébert, Automacad saves three days in wiring and three days in pneumatic setup. If a customer needs to add a pneumatic head, Automacad simply ships the head with the Airbox attached to the top. The customer plugs it into AS-i cable and they can see it remotely.

While there are many advantages to the simplicity of networking I/O points, Automacad found the ease of programming an added benefit. Since the actual program is a function of the main PLC, Automacad’s control engineers found it simple to address the blocks during initial setup. AS-i’s simple format allowed their staff to understand and incorporate it immediately.

In cases of troubleshooting, the AS-i system is very intuitive. The system indicates when a fault occurs. If there is a problem on the machine, the AS-i network applies its auto-addressing feature to locate the issue. The Automacad team has also found that the “plug-and-play” aspect of AS-i is

now faster and easier when dismantling in their shop and re-building on-site. “AS-i networking is actually helping my customers long-term,” says Hébert.

For more information about Automacad, visit www.automacadconcrete.com. For more information about ifm efector, visit www.ifm.com/us

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