

A diagram showing two cylindrical metal components with copper rings and carbon brushes. A blue beam of light passes through the center, and a cluster of green triangles represents the contactless connectivity between the two components.

ARISO CONTACTLESS CONNECTIVITY CHANGES THE GAME.



INNOVATIVE TECHNOLOGY REMOVES MECHANICAL LIMITATIONS, OPENING UP A NEW WORLD OF POSSIBILITIES FOR THE ROBOTICS INDUSTRY.

The field of robotics has evolved dramatically, from the rudimentary industrial robots first introduced in the 1960's, to the ultra-sophisticated intelligent robots of today. Whether for hazardous environments too dangerous for humans, like radioactive clean up or bomb disarmament, or routine industrial settings, including automobile manufacturing or the food and beverage industry, robots can perform a wide range of tasks in diverse situations. Despite rapid advancements, mechanical limitations remained the primary challenge for the robotics industry. That is, until now.

With the introduction of TE Connectivity's ARISO contactless connectivity platform, innovations never before imagined, are now possible—innovations that improve productivity, enable greater efficiency, and create a safer world.

MECHANICAL CONSTRUCTION HAS ITS LIMITS.

Robots are a good example of mechanically constructed objects that use motors to generate movement. These motors power the cables that run either beside a robotic arm or are fed through it. There are several downsides to the mechanical aspects of this construction. Not only do the cables limit range of motion, but the constant movement and friction of the mechanical parts also create wear and tear. This leads to frequent breakage and connector failure, as well as downtime, when operators must replace the worn cables with new ones.



In addition to linear movement, robots also need to move rotationally to perform complex tasks. Traditionally, rotation is achieved with rotating connectors, or slip rings, which are mechanically connected to stationary rings via brushes. Cables are used to position

these copper rings in close proximity to enable physical contact with the carbon brushes. Carbon then transfers the electrical current to the ring, thus creating rotation. This constant friction creates wear and tear on the brushes, which must be replaced frequently—causing downtime and affecting productivity.

CONTACTLESS CONNECTIVITY REMOVES THE BARRIERS.

With the ARISO platform, TE has transformed the world of robotics in many ways.

We turn downtime into uptime: Without friction as the byproduct of mechanically constructed parts, the deterioration of moving components is no longer a limiting factor. Not only does this increase machine availability, it also decreases the cost to operate those machines—with less moving parts to replace, and lower maintenance fees.



We give engineers 360 degrees of

flexibility: When a mechanically constructed robotic hand rotates to its fullest extent, it reaches 270°. When

returning to the point of origination, it is faster and more efficient to rotate the additional 90° *forward*; however, due to the mechanical limitations of the cable, it must go back 270°. This process increases production time by a factor of three. Using contactless couplers enables manufacturers to triple their throughput, generating three times more product within the same time period.

Not every process requires increased productivity; sometimes you need greater precision.



We offer just the right touch and endless

flexibility: When picking and packing certain products or handling sensitive materials, a minimal amount of force is

required not to damage the items. The intelligence required to perform at such precise specifications is inherent in a contactless coupler. With ARISO couplers, the gripper or robotic hand can be equipped with electronic, or contactless, sensors that limit the force exerted and stop automatically before exceeding those levels. In addition to data transmission, contactless sensors offer additional improvements over pneumatic sensors. Pneumatic grippers are less energy efficient, not as sensitive, and require air pressure that is not always available in certain applications. Most impressively, contactless couplers enable greater flexibility, allowing various grippers or end detectors to be used with the same robot. And since the process is automated, there is no need for an operator to physically change the gripper.

Just because we're a light touch, doesn't mean we can't get tough.



We perform in the harshest

environments: Oil and gas are among the most challenging environments. Robotic friction can

cause even the smallest arc, which could generate a very costly—or deadly—explosion. While not life-threatening, using mechanical couplers in harsh environments, such as underwater or within lubricants or coolants, is extremely challenging due to corrosion. Rather than using contact to operate in these conditions, hermetically sealed and galvanically isolated contactless couplers use magnetic fields to achieve connectivity.

SO, WHAT IS POSSIBLE?

With so many limitations removed, we have only begun to see what may be possible. Certainly, robots in the near future will be constructed differently, and most likely less expensively. Set up and design will be easier and simpler. At the very least, robots will have greater freedom of movement; productivity will improve; and total cost of ownership will be reduced.

So much power and imagination lay in future applications of the ARISO platform. So much power lies in what's possible.

EXPERIENCE THE ARISO PLATFORM FOR YOURSELF. ORDER YOUR EVALUATION KIT TODAY.

These evaluation kits give you the freedom to experiment with this technology in your own environment. Integrate TE's Contactless Connectivity technology into current, real-world scenarios of your own or share it with your customers. You never know what possibilities may develop with ARISO contactless connectivity at your fingertips. Contact us today at ARISO@TE.com.

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