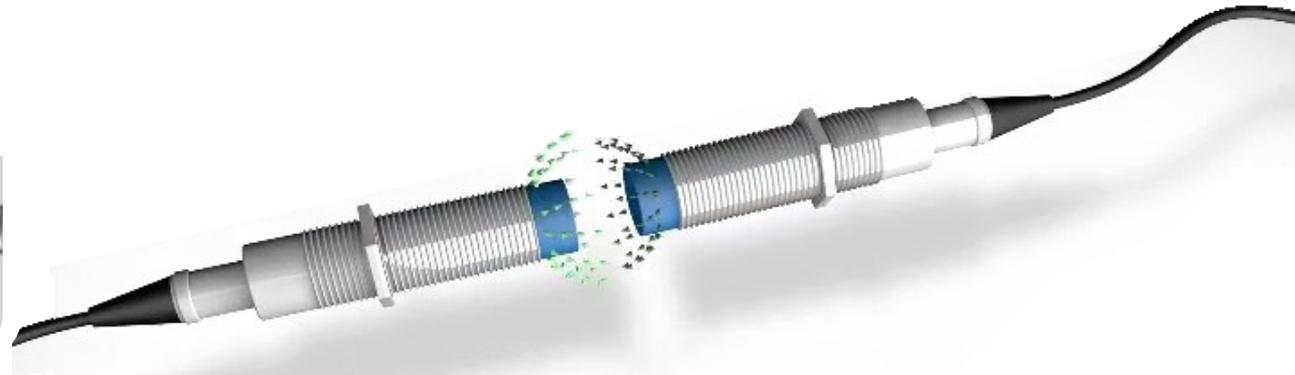


Tyco Electronics EC Trutnov s.r.o.
(TE Connectivity)
Komenského 821
CZ 541 83, TRUTNOV



ARISO PILOT SOLAR

Implementation in automation Z-Rail Line



TE ARISO Contactless Connectivity Technology

Overview Summary

Where traditional connectivity reaches its limits due to space restrictions, vibrations, dust and dirt, contactless connectivity can provide highest design flexibility and help reduce maintenance and installation efforts. ARISO Contactless Connectivity can replace complex and expensive harness constructions and slip rings – enabling connectivity where connections were not possible before. With ARISO Contactless Connectivity, issues typically affecting connectivity in harsh environments, such as water, dust or vibrations, will no longer impact the reliable delivery of power, data and signal.

Contactless Connectivity – A Definition

A hybrid interconnection system, based on both contactless power and contactless data technology, which can easily connect over a short distance without any mechanical contact.

This allows for example the stationary pieces (Transmitter) in an application, such as a robot arm, to transfer power inductively to a rotating, indexing, or fixed mobile (Receiver) part, like a gripper. The mobile part makes the power available to power sensors, valves or other actuators while it also feeds the data back to the stationary piece.



ARISO in PRACTICE

TE Trutnov, Cz - SOLAR Z-Rail automation line



ARISO

TE ARISO Contactless Connectivity Technology

Putting Technology into Practice

**Manufacturing engineering TE Trutnov (Jan Coubal, Jan Licka, Lotar Grundmann)
Tomas Ehrenberger – ARISO Production Manager TE Trutnov.**

There is no better way to display to customer and the business the potential of a new product than to demonstrate it in practice. The ARISO contactless connectivity for the volume market is relatively new, and while contactless connectivity solutions have been around in the market for some time, TE is the first leader in the market to offer a solution that will meet the volume needs of the market equipment manufacturers.

Like all new product technology launches there is a learning curve to go through once the product is being used in application. This was a key driver for the TE ARISO team to meet and understand their customer need. The ARISO and SOLAR team considered what better way to demonstrate our belief and confidence in our products, than by using it in our own serial production. This would potentially not only give cost benefits to TE, but equally important would provide faster feedback on the system performances and reliability to the development and design teams.

It would also offers to TE sales and customer support teams, the opportunity to invite TE customers to TE Trutnov to see the product in use within a serial environment, thus giving a high profile and confidence than what could otherwise be demonstrated through a video, brochure or magazine.

Putting Technology Into Practice - ARISO

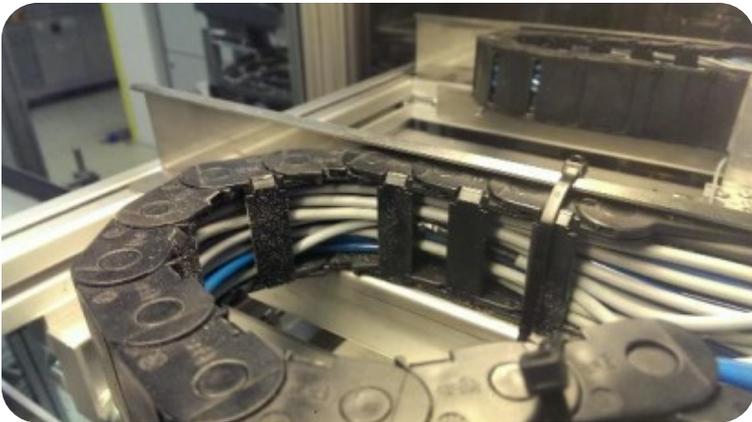


The Opportunity

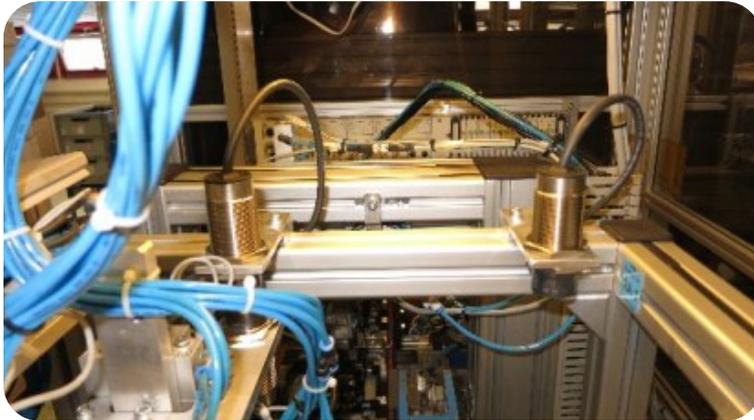
The Solar production line is one of the most highly automated processes in TE Trutnov, producing **670 fully assembled junction boxes** per hour. Production uptime is a critical component to ensure that productivity and lead-time meet TE customers demand.

The ARISO and SOLAR teams identified that the signal and power cables for each of the sensors and the power management system for the transfer management system for the junction box transfer station were a major opportunity for the installation of the ARISO contactless system.

There were **8 cables** in the cable assembly that were moving and bending approximately once every **5 second**. This continual movement caused **cables** to become naturally worn and **damaged** over time. Each time a cable was damaged, it resulted in approximately **1 hour** of down-time (to be replaced), resulting in loss of production opportunity.



Translating the Opportunity



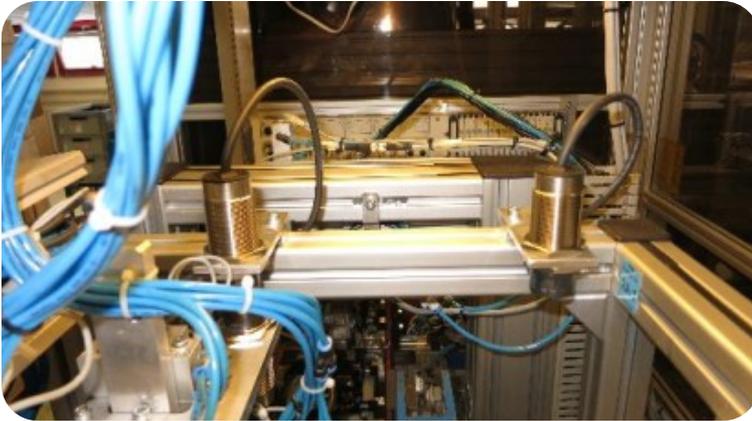
Using TE's new ARISO contactless connectivity system the team were able to remove the need for the 8 cables on the transfer station cable manager

By installing the ARISO transmitter and receiver unit the team were able to replace the need for all 8 cables used to supply both sensory and power signal transmissions. This resulted in the all the high risk cables being removed and the only hoses that remained were those used to supply compressed air remained, for which the risk of damage due to movement is very minimal.



This resulted in a significant reduction in down time (see following slides) improving the MTTR & MTBF and reduced maintenance cost (material + labor) as well as increasing output. All achieved using the new TE ARISO Technology at very low Total Cost of Ownership and rapid ROI.

Translating the Opportunity – The X Factor



The results from the pilot installation of the ARISO system in TE SOLAR manufacturing show that there is not only a significant technological advantage in using the TE ARISO system, but also a major gain for manufacturers who use automated system that use power and signal transfer systems.

Consider that within TE global manufacturing alone that the following processes could potentially benefit from installing the TE ARISO system;

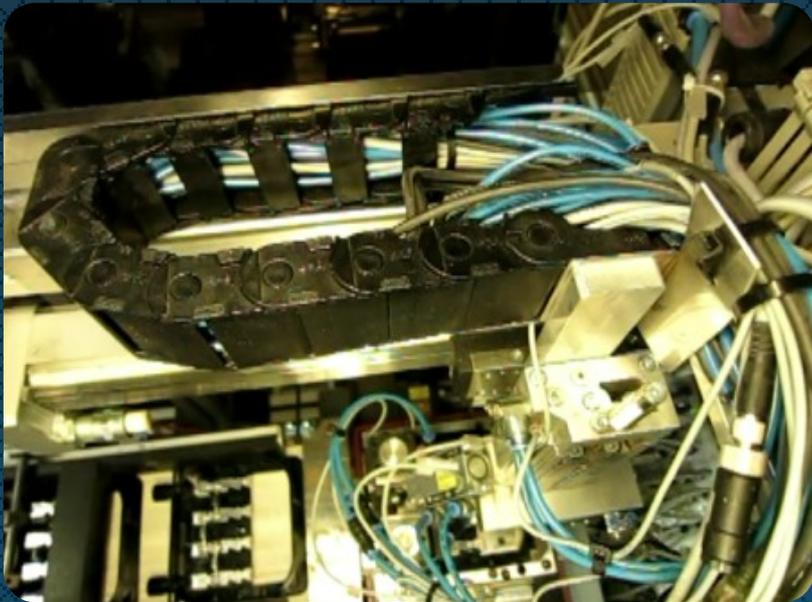
- Auto Assembly
- Relay Manufacturing
- Machine Shops, CNC
- Molding
- Reeling
- Auto Packing



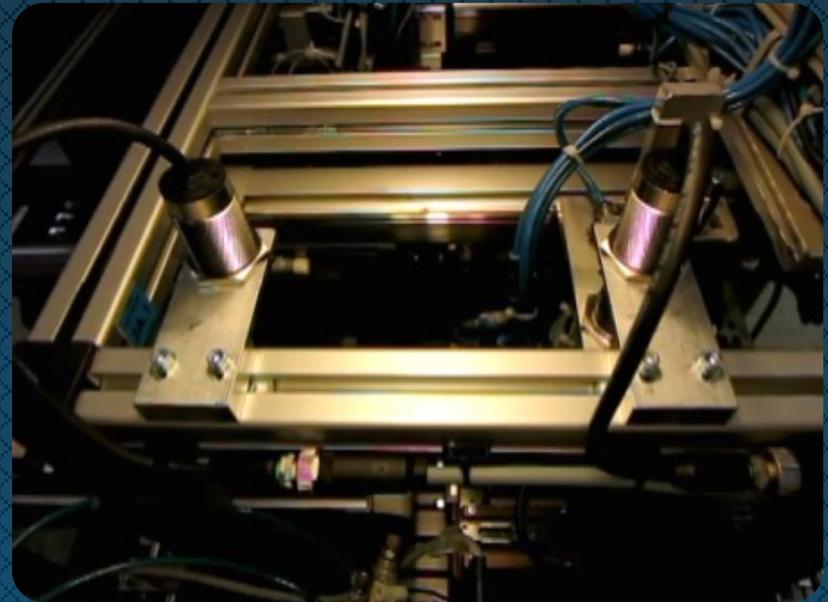
Translating the cost an efficiency benefits can be modelled using the cost benefit calculated for Solar shown on the next slide. More importantly, the benefits to TE customers with improved output and efficiency from all of these process, would clearly show the market that TE is the leader in connectivity systems.

Videos

BEFORE

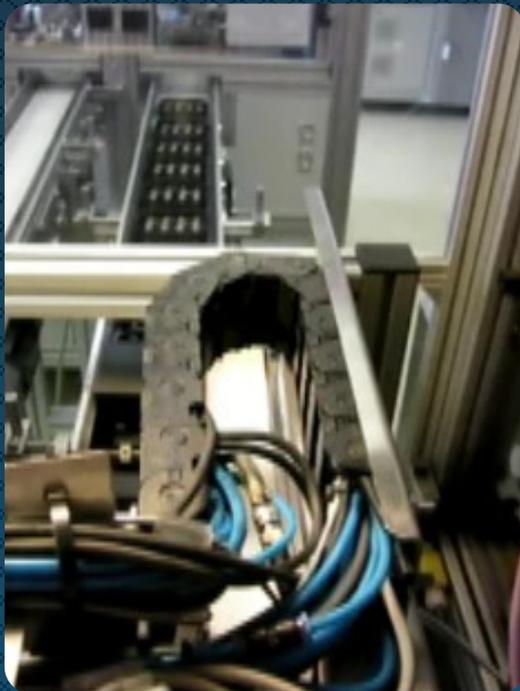


AFTER



Videos

BEFORE



AFTER



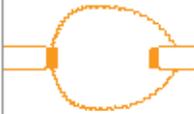
ARISO in figures



Contactless Connectivity - A Definition

A hybrid interconnection system, based on both contactless power and contactless data technology, which can easily connect over a short distance without physical contact.



PN	Description	Power level	Number of Outputs - Connector	Size (w/o Cable)	Operational freedom	Specifications	Features
2287598-1	ARISO TxM030S012PNP2a; Transmitter, 12 W, 2 PNP	12 Watt - Operating voltage: 24VDC - Output current: 500mA	2 PNP Signals - M12, male a-coded, 4 pos.	M30 x 80 mm		<ul style="list-style-type: none"> • IP67 • Ambient temp.: -20°C to 55°C • Storage temp.: -25°C - 100°C • Housing material: Ni-Plated Brass • Switching frequency f: 500 Hz • CE, RoHS 	<ul style="list-style-type: none"> • Power input reverse polarity protection • Power output short circuit protection/ Data output short circuit protection • Data input/output reverse polarity protection • Over-temperature protection • Foreign Object Protection • Dynamic Pairing • In operating range/ Status OK Indication (12 Pos. versions)
2287598-2	ARISO RxM030S012PNP2a; Receiver, 12 W, 2 PNP		2 PNP Signals - M12, female a-coded, 4 pos.	M30 x 80 mm			
2287598-3	ARISO TxM030S012PNP8a; Transmitter, 12 W, 8 PNP	8 PNP Signals, M12, male, 12 pos	M30 x 80 mm				
2287598-4	ARISO RxM030S012PNP8a; Receiver, 12 W, 8 PNP	8 PNP Signals, M12, female, 12 pos Pinning option 1. For details please check the data sheet.	M30 x 80 mm				
2287598-5	ARISO RxM030S012PNP8b; Receiver, 12 W, 8 PNP	8 PNP Signals, M12, female, 12 pos Pinning option 2. For details please check the data sheet.	M30 x 80 mm				