



New PROX sensors generation

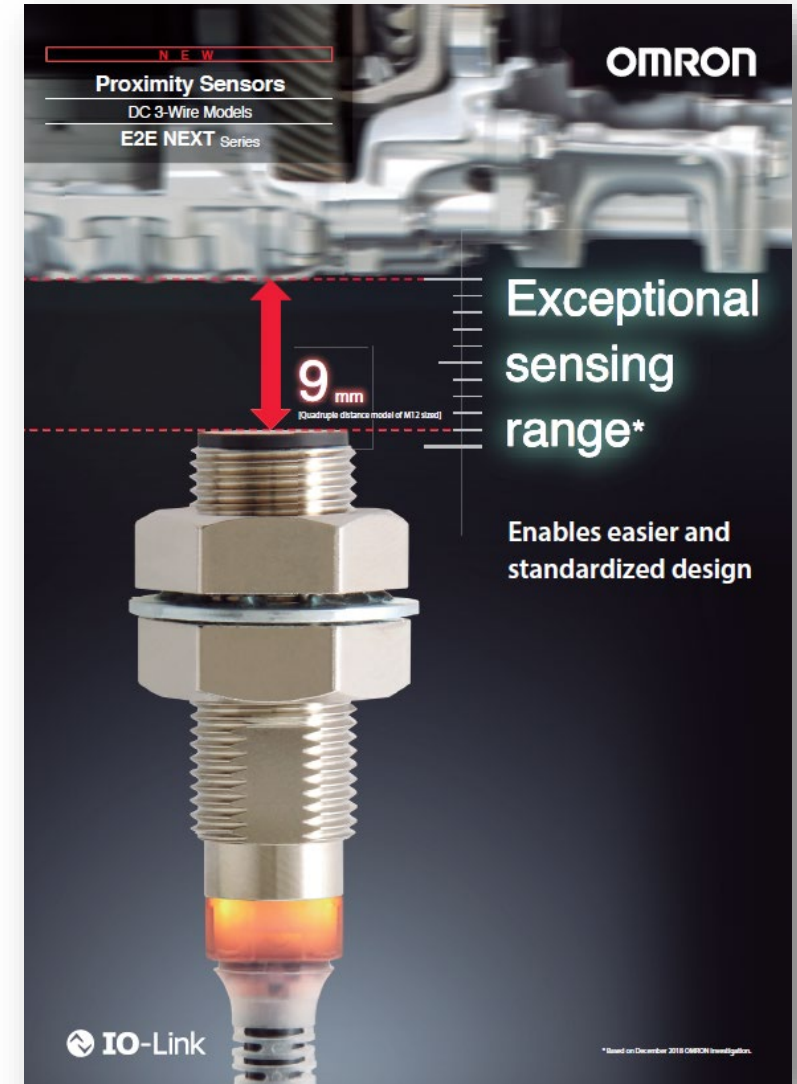
E2E Next

OMRON

New PROX Generation Concept



- New PROX family **E2E/E2EQ** is a new generation of innovative **smart sensors**.
- Providing the **longest detection range in the world**. The new family will help to design applications faster, easier and safer.
- New PROX family are equipped with IO-Link V1.1 **providing intelligence into the field level**. That helps to improve production efficiency, thanks to predictive maintenance & data acquisition, in addition to reduce stock and handling cost.



Vertical Integration Concept Overview



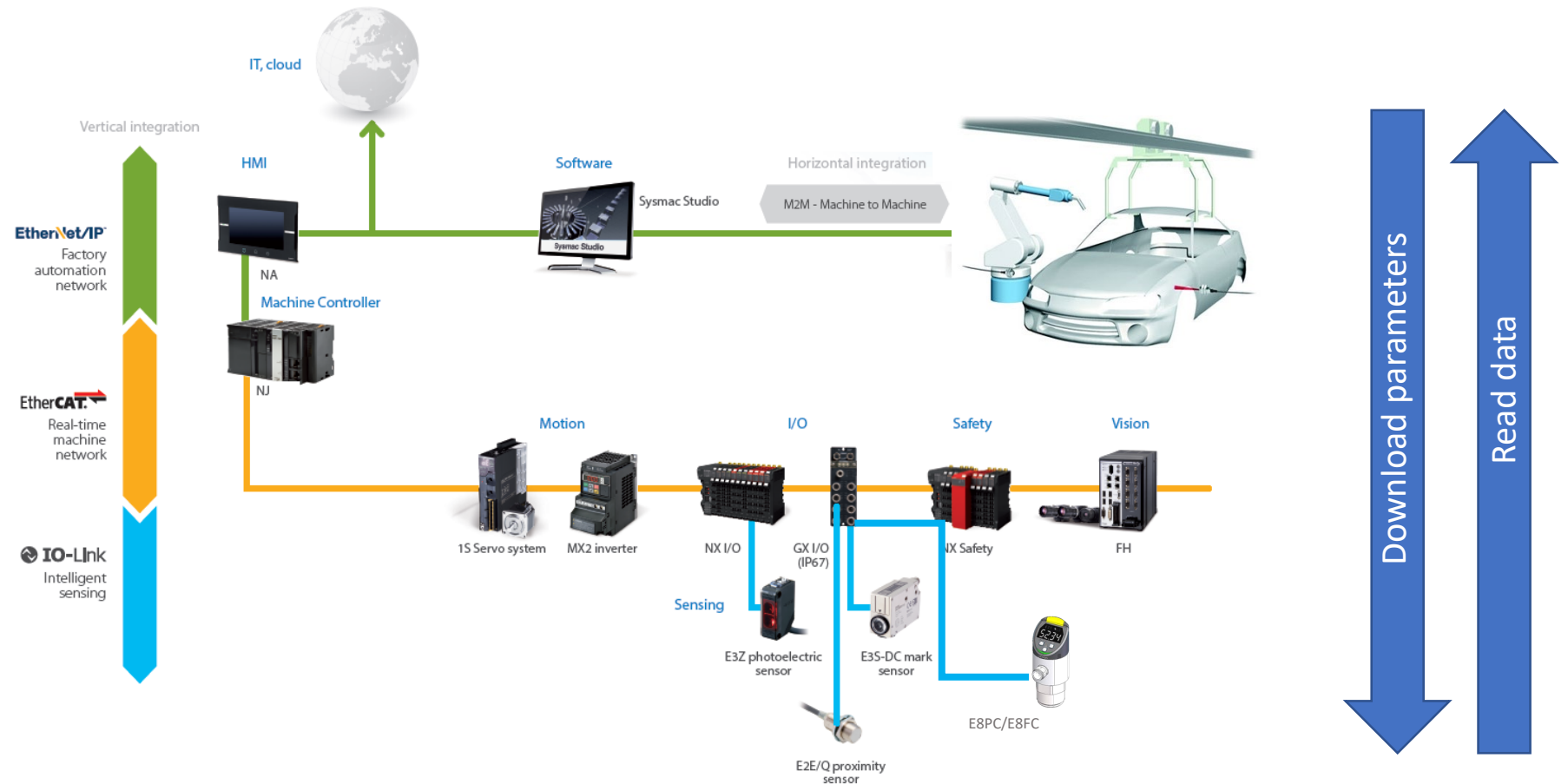
- New PROX generation is an additional tool for our "**Vertical Integration Concept**" that allows to transfer monitored processing data from the lowest level of the automation pyramid and transfer settings parameters from the top to down to each sensor.



E2E



E2EW



Vertical Integration Benefits



Omron Provides the Full Solution for Smart factories

Direct benefits:

- **Improve productivity**

 - Flexible and customized production*

 - Data collection from the lowest level*

 - Communication and escalation of the data for its analysis*

 - OEE calculation*

- **Reduce machine downtime**

 - Automatic alert when maintenance is needed*

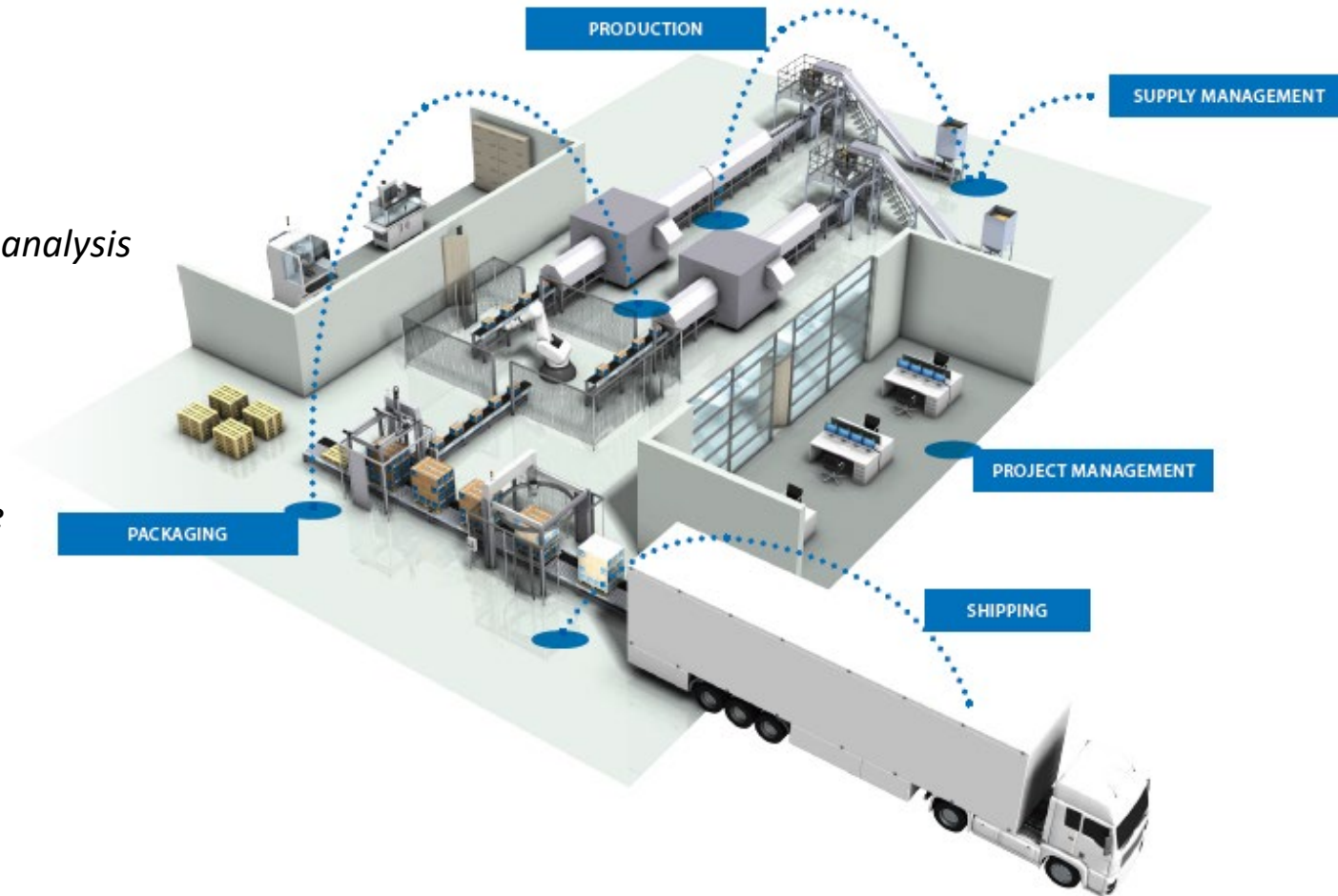
 - Automatic location and identification of the issue*

- **Simple engineering**

 - Error free installation*

 - Remote troubleshooting*

 - Simplified cabling*





E2E Next – In detail

Solution Details



Main Features: Longest Sensing Range

- Global No.1 extended sensing range will deliver the value of “**Stable detection**” and “**Design standardization**”.

Easy design

Equipped with exceptional sensing range*
to enable collision-free sensor installation

Enables designs with more distance between the sensor and the sensing object, thereby reducing unexpected facility stoppages due to collision and false detection, which occurred with previous proximity sensors.

Previous models

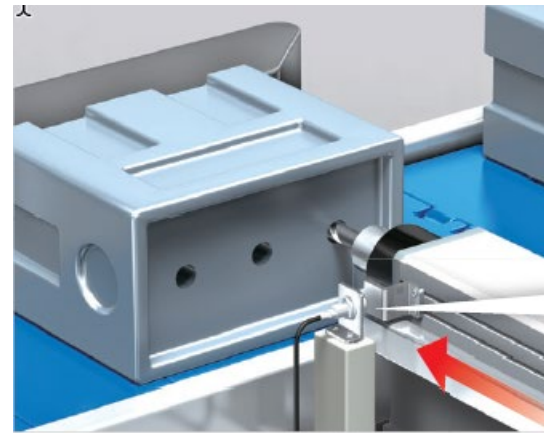
EZE NEXT

Exceptional sensing range*
9 mm

[Sensing distance models of M12 stand]

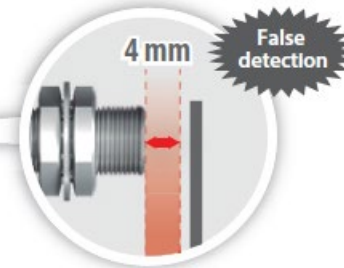
*Based on December 2018 CIMRICH investigation

Stable detection without collision



Previous models

The equipment vibration widens the distance between a stationary and a sensor to cause false detection and facility stoppages.



EZE NEXT

Long-distance detection enhances the degree of the detection margin. **Stable detection even when a stationary gets away.**



Solution Details



Main Features: Standardized Design

- **One size smaller** than previous models.
- Unifying the model types to **reduce the number of parts kept in inventory**.

Standardized design

Exceptional sensing range¹
allows you to standardize your design with a single one-size model

Ensures equivalent sensing distance while being one size smaller than previous models. Equipment and facilities formerly designed to use sensors of multiple sizes can now be designed to use sensors that are all the same size, allowing you to standardize your designs.

Case where either M12 or M18 is used depending on sensing distance

Previous models: Two different types of hole designs were required for the sensing distance of 4 mm and 8 mm.

E2E NEXT

The sensing distance of M12 is 9 mm, which means M12 can cover objects previously covered by M18. Hole designs can be standardized to fit M12 only.

*1. Based on December 2018 OMRON investigation.
*2. Quadruple distance model.

Four types of M12 size sensors are available to meet the need for variable sensing distances for different installation sites.

Model	Sensing Distance
Quadruple distance model	9 mm
Triple distance model	6 mm
Double distance model	4 mm
Single distance model	2 mm

Previous models Two models (M12 and M18) stocked

E2E NEXT The extended range of the new sensors allows you to reduce the sensor size from M18 down to M12.

*1. Based on December 2018 OMRON investigation.
*2. Quadruple distance model.

Solution Details



Main Features: IO-Link for all models

- IO-Link standardized in all Omron new sensors, thanks to an unique ASIC we are able to provide IO-Link from M8 up to M30-sized



Can be mounted in M8 body



Analog-Digital hybrid ASIC named "PROX3" includes IO-link capability.

IO-Link V1.1

Value

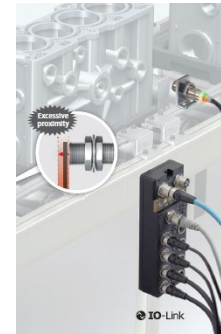
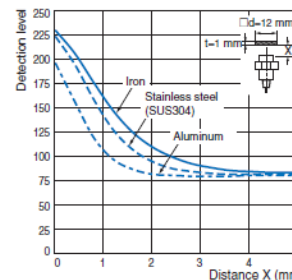
Trend monitoring

Planned maintenance

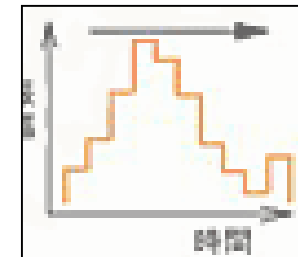
Less stock

Real time information > Excessive Proximity / Remoteness

Sensing data (not linear)



Temperature inside



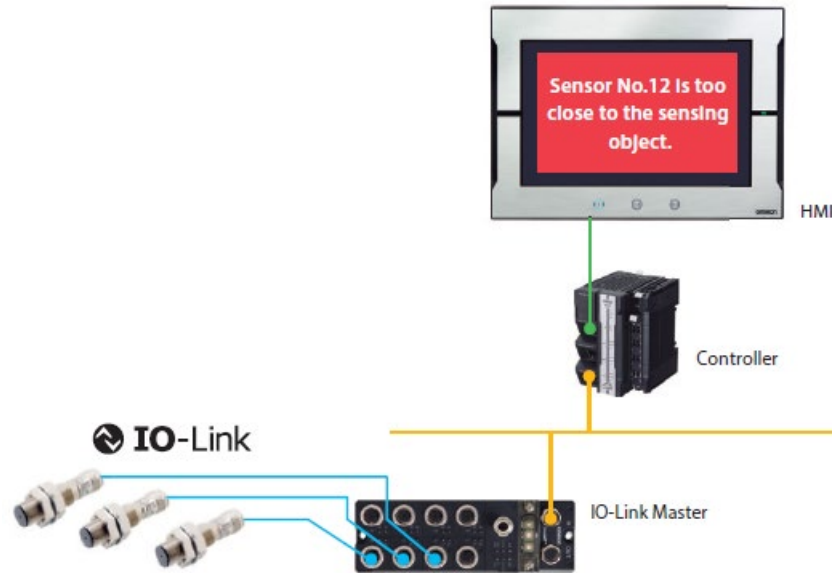
Accumulated Operation Time

Selectable to NO or NC

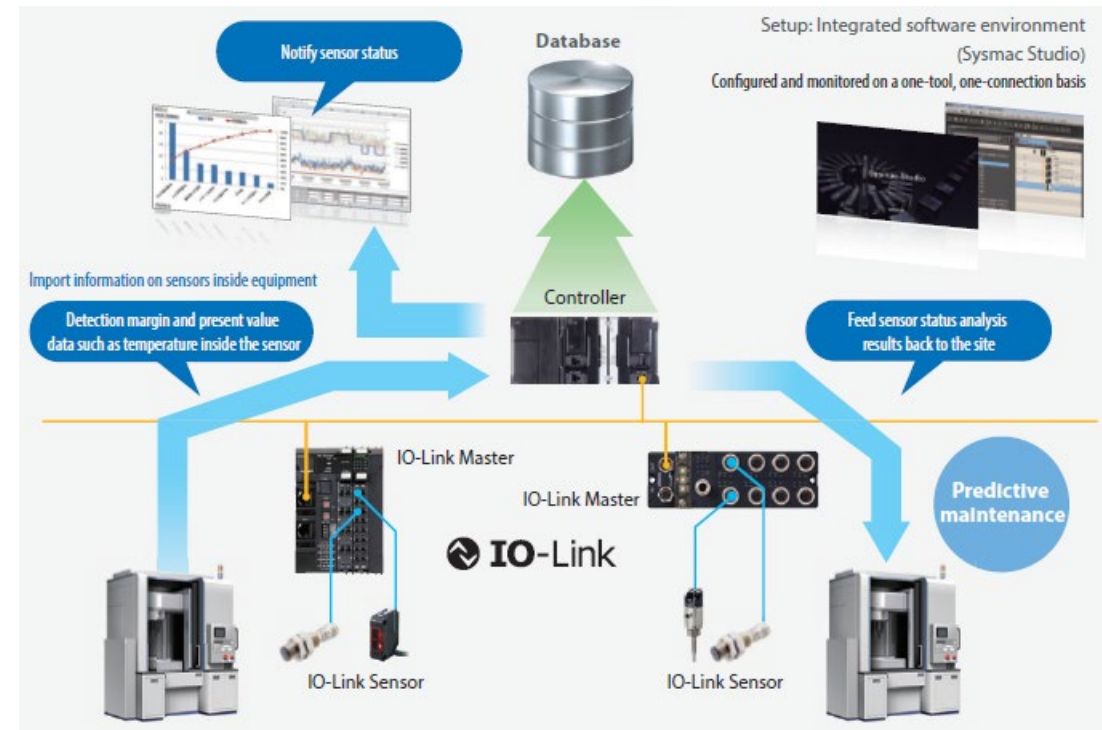
Solution Details

Reduce Machine Down Time

- Thanks to IO-Link communication we can access to diagnosis status, and autonomously send notification when signs of a connection error or a malfunction appears.



Enables real-time identification of the site and substance of sensor failure



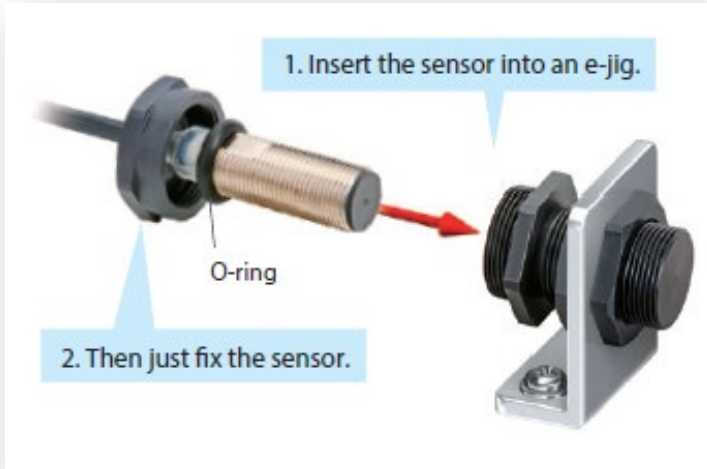
Enables predictive maintenance through condition monitoring

Solution Details



Reduce Machine Down Time

- New PROX generation allow to upgrade the machine to be recovered in short time thanks to **e-jig** accessory.



Enables facility designs that allow for quick recovery in case of failure

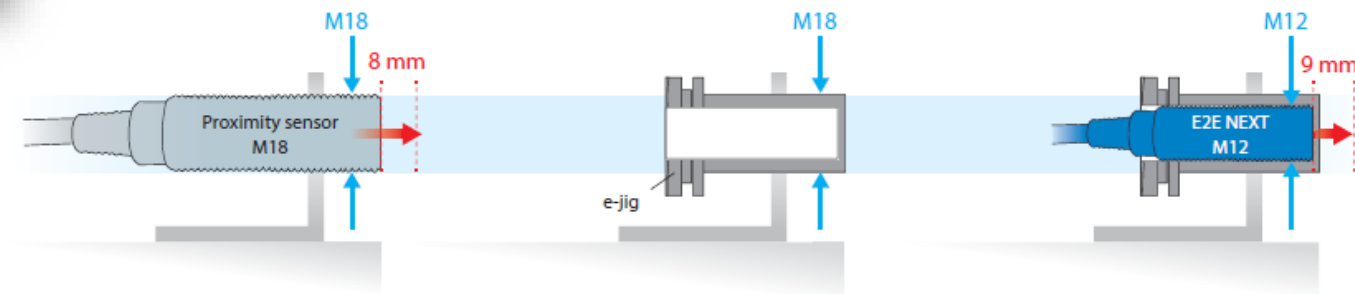
Less time required from failure to recovery
(MTTR: Mean Time To Recovery).



1. Dismount the M18 proximity sensor from the existing facility.

2. Mount an M18-sized e-jig.

3. Insert an E2E NEXT Series M12 Proximity Sensor into the e-jig.

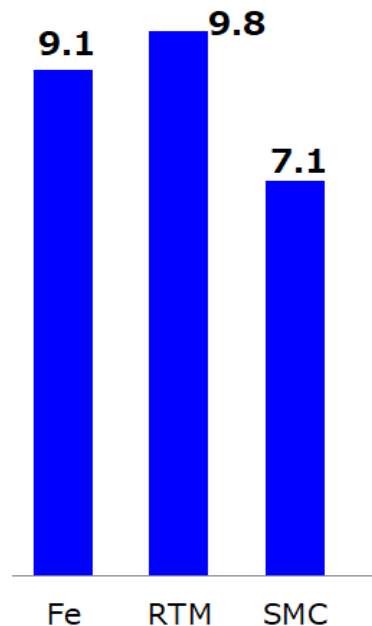


Solution Details

Main Features: Unique behaviour with CFRP material

- CFRP (Carbon Fiber-Reinforced Polymer) is one of the booming solution for lighter body.
- As an example BMW “i3” series body is completely build with CFRP.

Sensing capability M12-sized
(unit; mm)



E2E Next
X4 sensing type



Remarks:

There are variety kinds of CFRP, such as **RTM, SMC, etc...**

A test in advance should be recommended.

Solution Details

Robust & Versatile Housing

- Robust housing style for hard environment: IP67, IP67g oil resistance and IP69K

IP67G	
Oil type	N3 (water-insoluble cutting oil)
Evaluation time	48 hours
Evaluation temperature	Room temperature
Dilution concentration	—
Criteria	Appearance and performance



OMRON's Oil-resistant Component Evaluation Standards	
Oil type	A1 (water-soluble cutting oil)
Evaluation time	1,000 hours of machining
Evaluation temperature	55 °C
Dilution concentration	Undiluted
Criteria	Appearance, performance, and no label text loss



- 360° visible high-brightness LED indicator





E2E Next – Product Line

Product Line



New E2E 3-wire Overview

- Wide variety of lineup covers many applications, which gives the freedom of choice



		E2E Series - Plastic face				E2EQ Series – Flourish-coated				
		Size/Sn, mm	X1	X2	X3	X4*	Size/Sn, mm	X1	X2	X3
Shielded	M8		1.5	2	3	4	M8	1.5	2	3
	M12		2	4	6	9	M12	2	4	6
	M18		5	8	12	14	M18	5	8	12
	M30		10	15	22	23	M30	10	15	22
Non-Shielded	M8		2	4	6	8				
	M12		5	8	10	16				
	M18		10	16	20	30				
	M30		18	30	40	50				



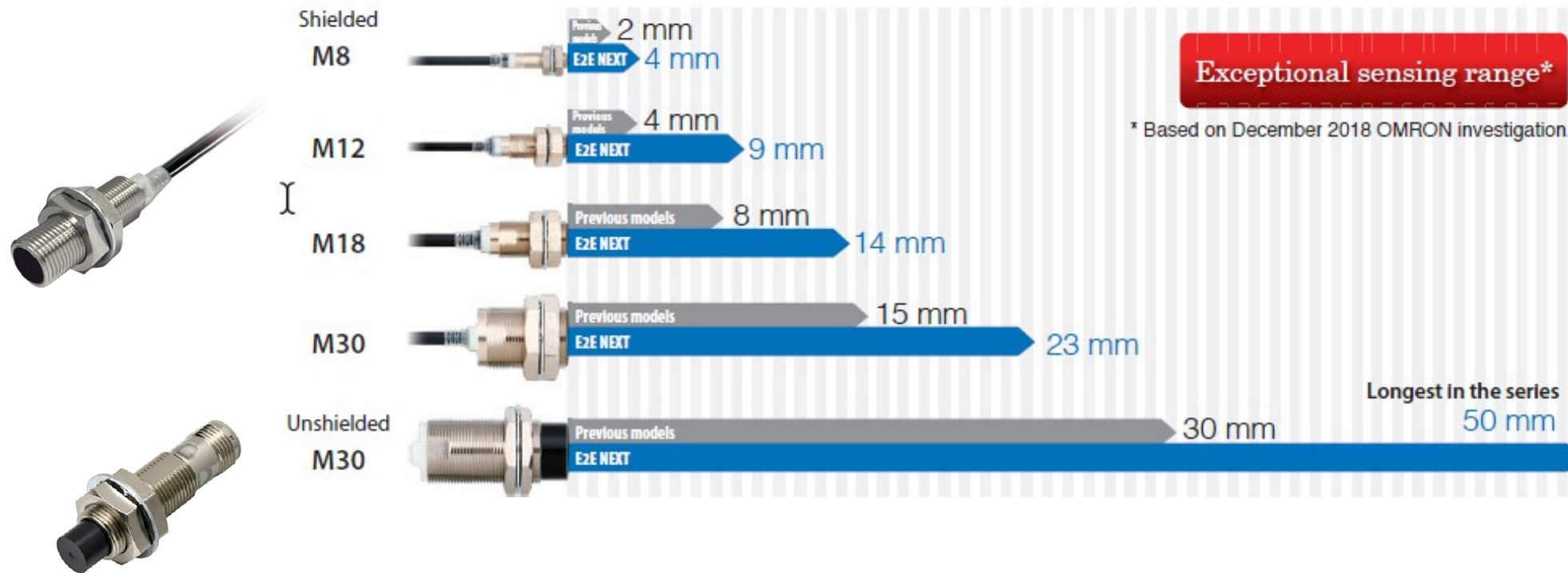
- ***Red-colored** means “Global No.1” in Sensing distance
- **IO-Link** standardized for all PNP items

Product Line



New E2E 3-wire Overview

- Sensing distance comparison (Quadruple distance models)



Product Line



2 Brands : Premium & Basic

- Basically, we promote x3/x4 type as Premium colored “Black” and x1/x2 as Basic colored “Gray”.

		New E2E Series - Plastic face				
		Size/Sn, mm	X1	X2	X3	X4*
Shielded	M8		1.5	2	3	4
	M12		2	4	6	9
	M18		5	8	12	14
	M30		10	15	22	23
Non-Shielded	M8		2	4	6	8
	M12		5	8	10	16
	M18		10	16	20	30
	M30		18	30	40	50

Enables easier and standardized designs previously not possible

PREMIUM Model
Easy design Standardized design

Exceptional sensing range¹ **9** mm² [M12]

The PREMIUM Model, which has a longer detection range compared to previous models, allows for more spacious designs with less risk of contact. It also enables you to standardize your designs by letting you adopt a single one-size model instead of multiple models of different sizes.

¹: Based on December 2010 CMVICH investigation.
²: Quadruple distance models of M12 sized

P.4-7



BASIC Model

In addition to our HIGH SPEC Models, we also offer mid/short-distance BASIC Models, to meet various facility design requirement specifications.

Double distance model
4 mm [M12]

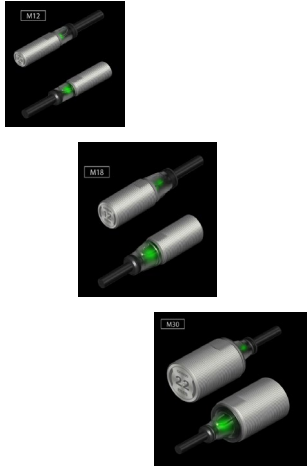
Single distance model
2 mm [M12]



Product Line



New E2E 3-wire Metal Face



Shielded
Only

E2EW Series - Metal face				
Size/Sn, mm	X1	X2	X3*	X4*
M8	1.5	2	3	3.5
M12	2	4	6	7
M18	5	7	10	12
M30	10	12	20	22



- **x3 & x4** have the same sensing range for Steel and Aluminum.
- **X3 & x4 are Weld-field immune**
- ***Red-colored** means “Global No.1” in Sensing distance
- **IO-Link** standardized for all PNP items

Target is welding process.






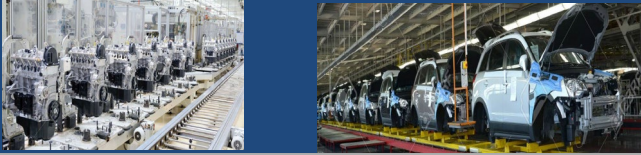
Markets & Applications

Markets & Applications



Customer Demands (Ideal vs. Real)

- OEMs look for “**Planned machine delivery**” & EU1/EU2 wants to “**keep machines running**”

	OEM 	EU1/EU2 	
	Design	Running	Maintenance
The ideal	Planned Machine delivery Ease of design / Design standardization	Less unpredictable production stop	Quick recovery with the skilled workers & Predictive maintenance
The real	Less mechanical margin. Many customized requests. (one-by-one designing)	There are easily-damageable components. (Proximity sensor is one of the worsts.)	Shortage of the skilled maintenance workers.

Markets & Applications



Customer Demands (Ideal vs. Real)

- Extended sensing distance will create the value to fill the gap.



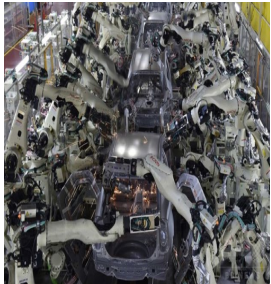








	OEM	E1/E2	
	Design	Running	Maintenance
The ideal	Planned Machine delivery Ease of the design / Design standardization	Less unpredictable production stop	Quick recovery with the skilled workers & Predictive maintenance
The real	Less mechanical margin Many customized requests, (one-by-one designing)	There are easily-damagable components. (Proximity sensor is one of the worsts.)	Shortage of the skilled maintenance workers.



Design	Running	Maintenance
 <p>Easy design with huge mechanical margin</p>	 <p>Keep machines running with stable detection</p>	 <p>Much ease of fixing in short time with e-jig</p>
 <p>Standardization of design with down-sizing</p>	 <p>Less break against coolant and watering</p>	 <p>Upgrade the machine with data transparency</p>

Markets & Applications

- New PROXs cover wide range of applications, plastic face models are a generic type.

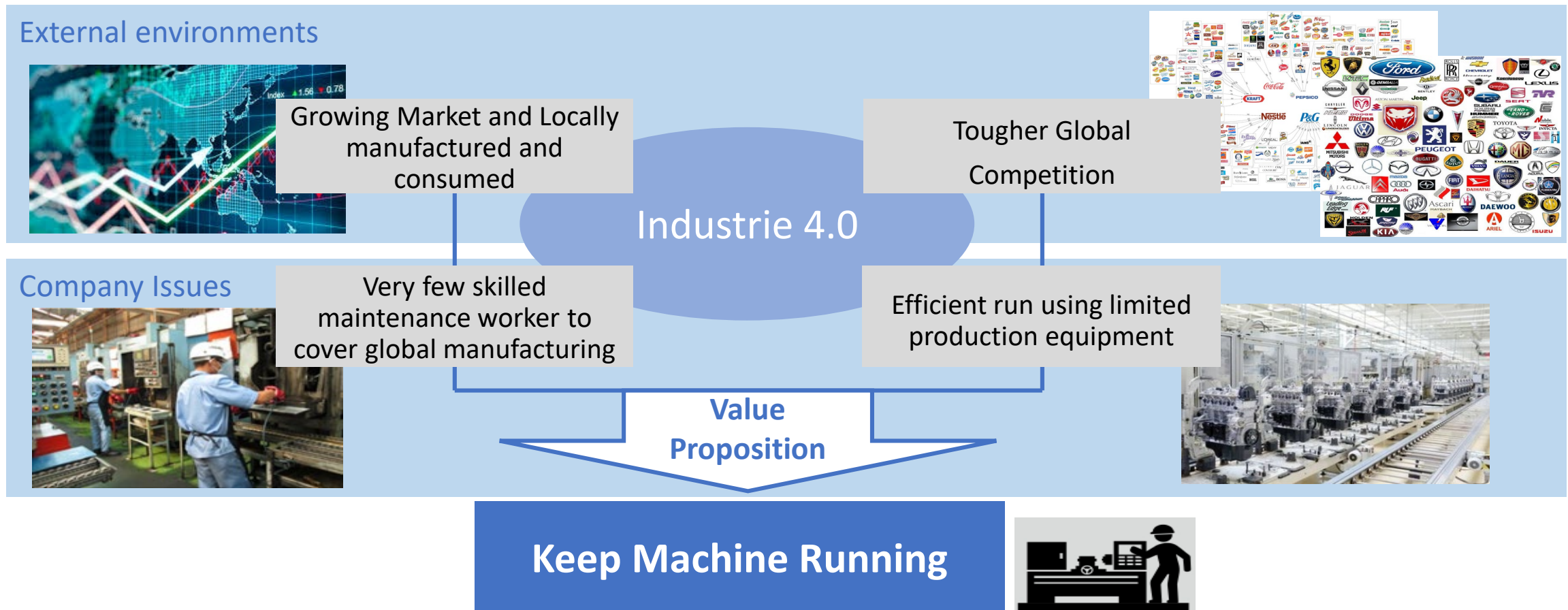
Auto	Machining	Welding	Assembly
	  E2E Plastic	  Metal  E2EQ Plastic <i>Flourish coated</i>	  E2E Plastic
	Stable detection even though small or complex parts.		
F&C	Conveying / Processing	Conveying / Packing	
	  E2E Plastic	  E2E Plastic	
Digital Others			



Advantages

Advantages

- **“Up-Time ratio”** is considered a critical criteria for successful competition and for continuous improvement of productivity and quality, with considering “Growing Global Manufacturing”, “Tough Global Competitions” and new opportunities with Industry 4.0



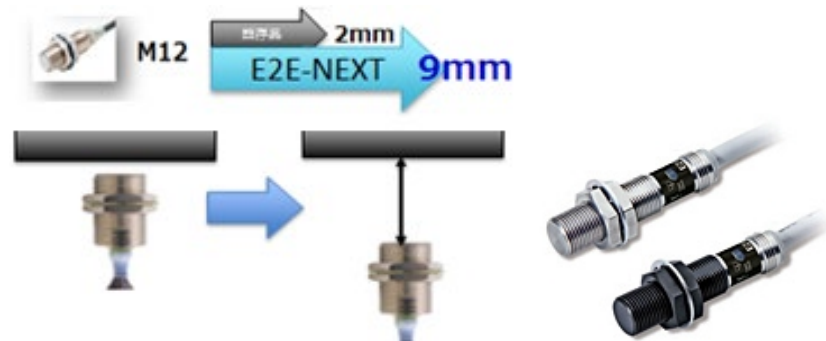
Advantages

- Issues for “**Up-Time ratio**”

Coolant/Mechanical hits/Spatter



Less Crush: Extended sensing range
Against Crush/Spatter: Metal Head



Difficult to find causes for failures



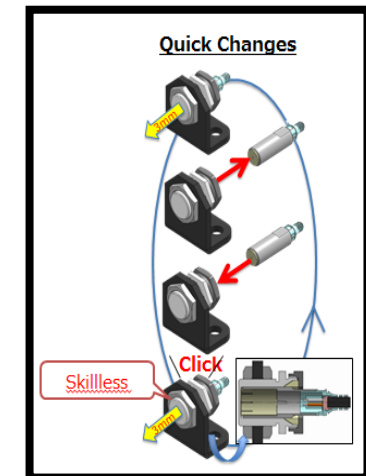
Shortest Recovery: due early recognition trouble & ID with IO-Link



Need expertise for maintenance

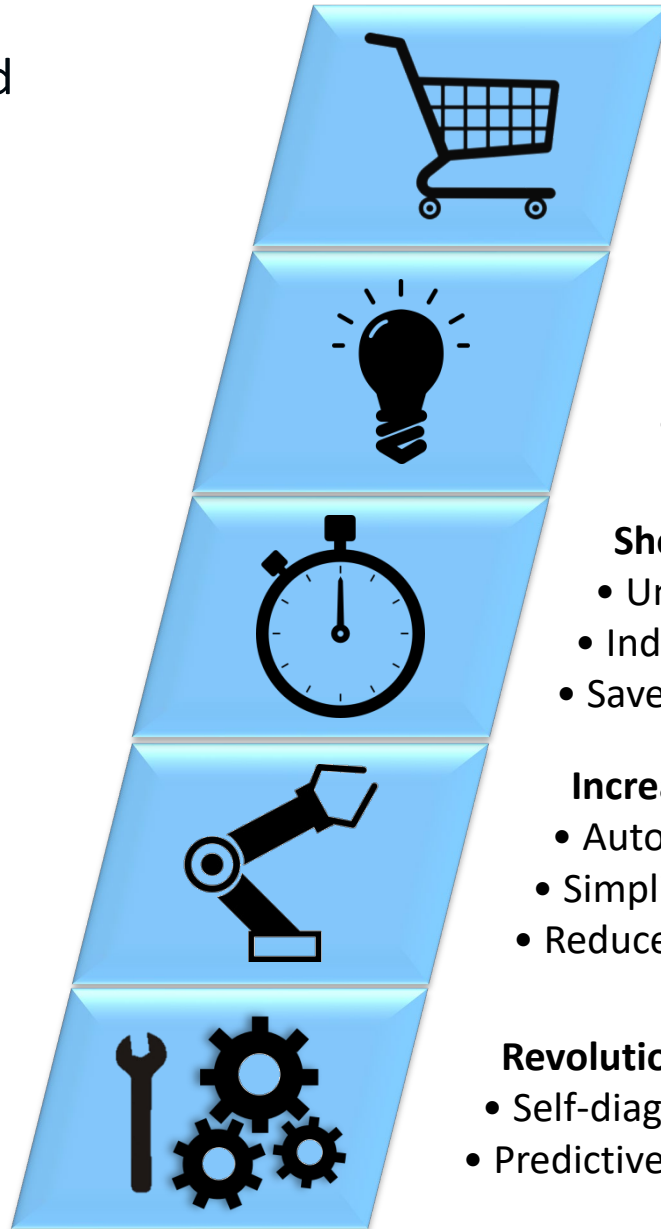


No skillful workers needed: Easy and fast to mount in 10 sec. vs of 10 min.



Advantages

- **IO-Link** value provided



Reduce customers costs

- Configurability reduces products
- Less complexity when purchasing
- Saves warehouse space

Realize innovative machine concepts

- Continuous communication
- Developing innovative machinery and systems

Shorten commissioning times

- Unshielded cables
- Industry-standard plugs
- Saves time

Increase the productivity of your machinery

- Automatic identification and configuration
- Simplifies replacement
- Reduces downtime

Revolutionize customer maintenance and repairs

- Self-diagnostics
- Predictive repair and maintenance