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New PROX sensors generation

E2E Next

OMRON

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New PROX Generation Concept

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- 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.



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Vertical Integration Concept Overview

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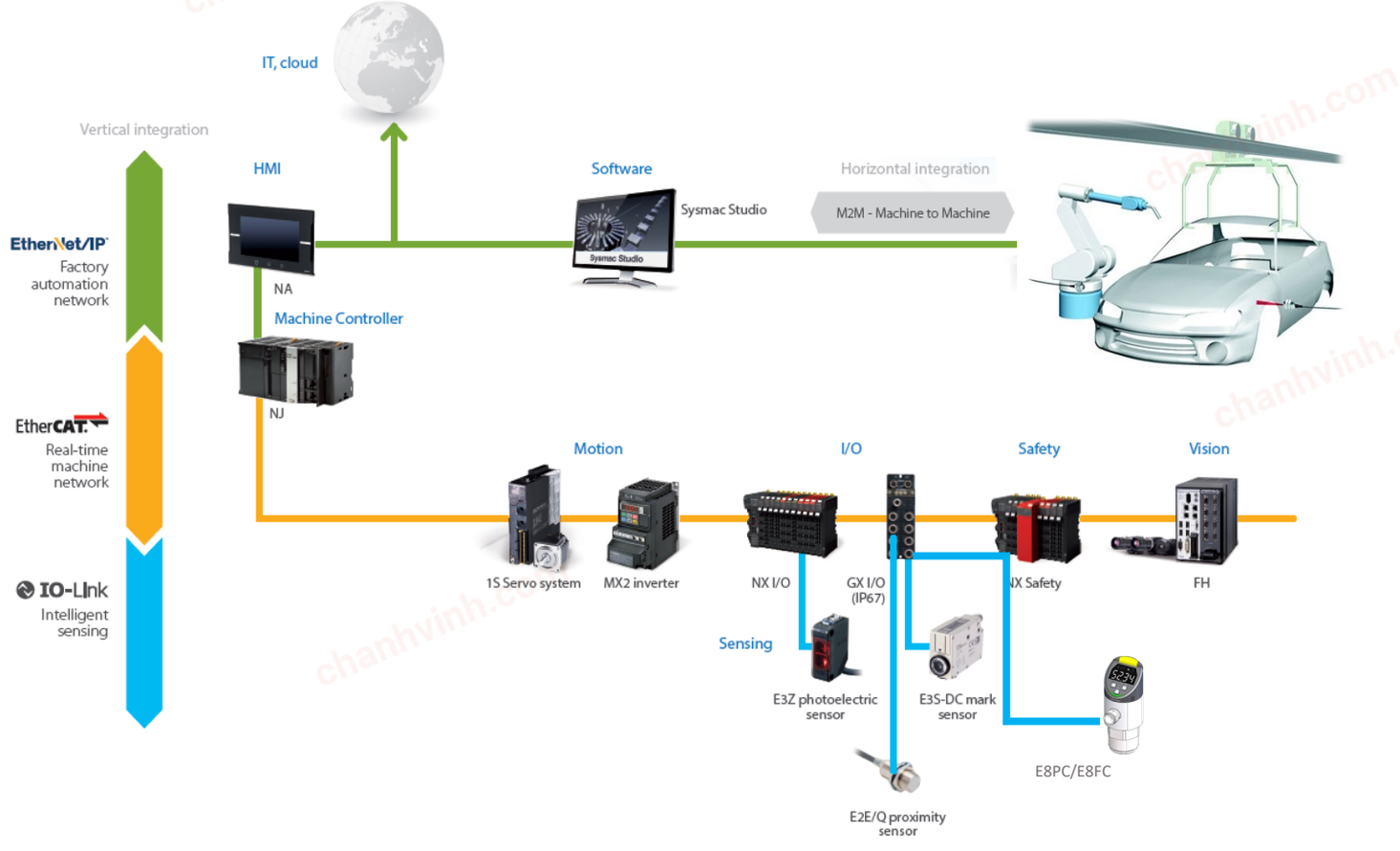
- New PROX generation is an additional tool for our "**Vertical Integration Concept**" that allows to transfer monitored processing data from the lowest level of the automation pyramid and transfer settings parameters from the top to down to each sensor.



E2E



E2EW



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Vertical Integration Benefits

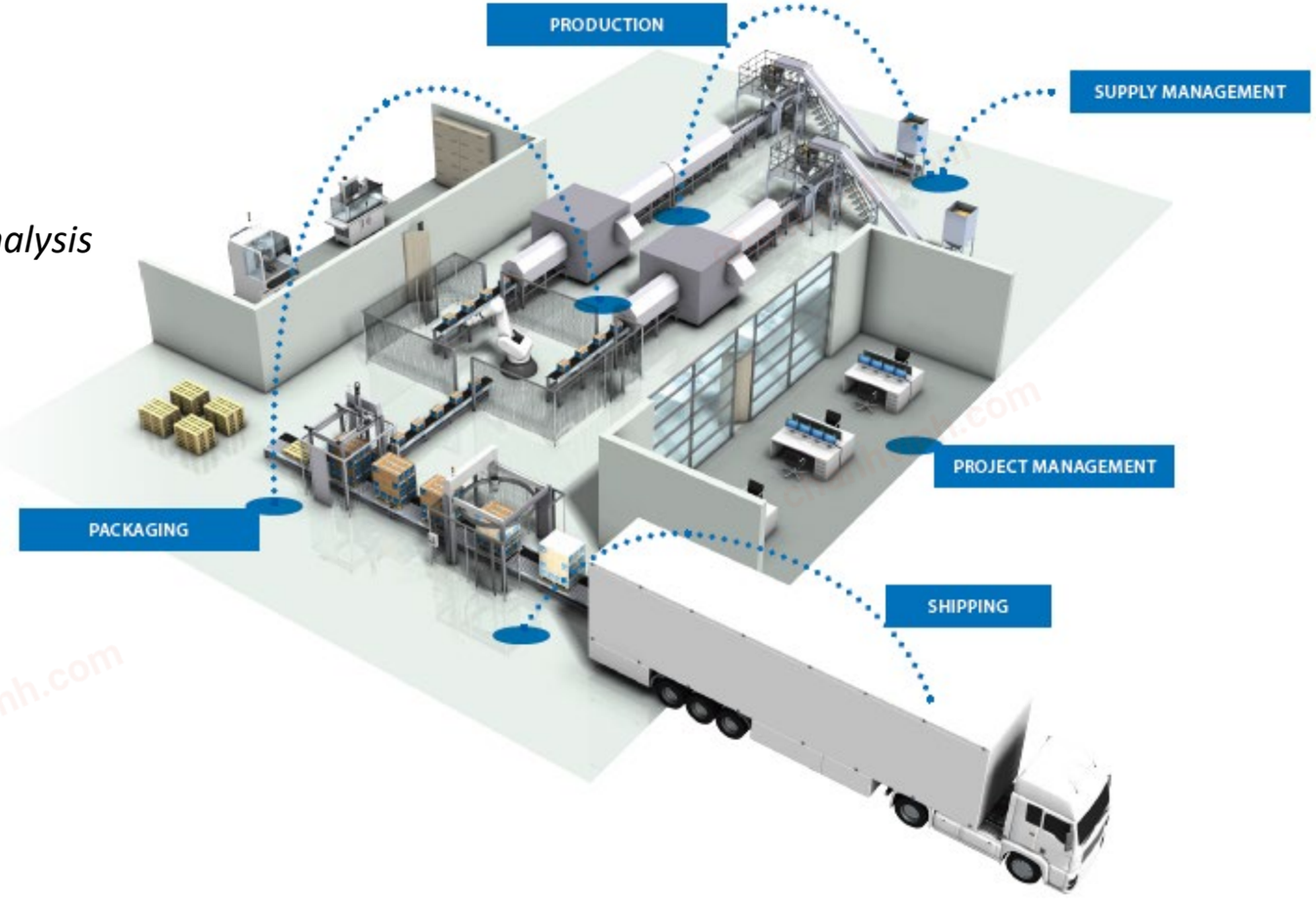
Omron Provides the Full Solution for Smart factories

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*



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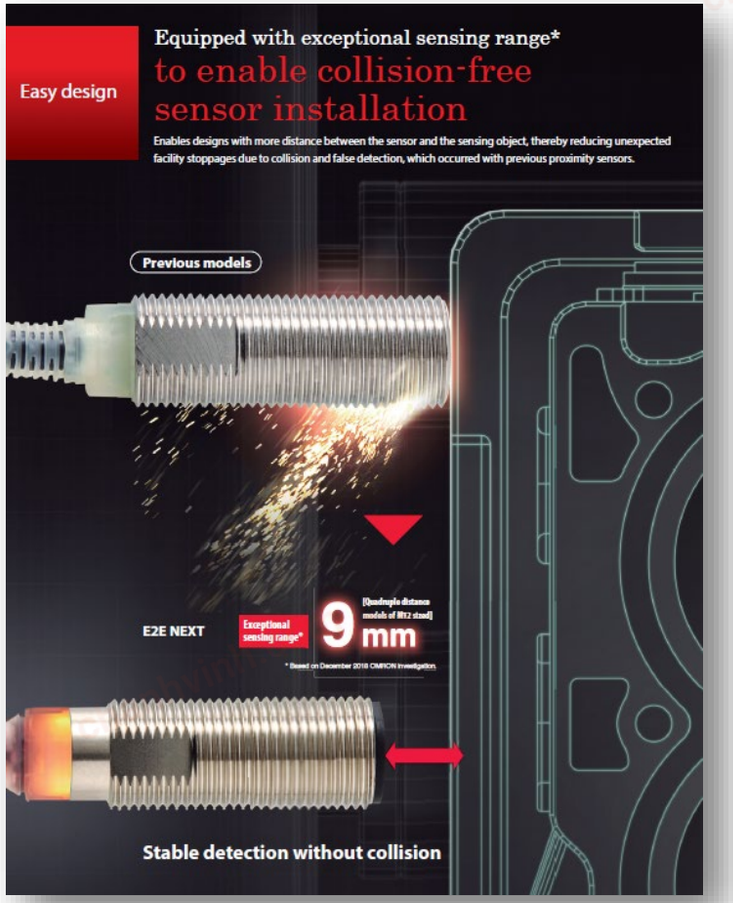
E2E Next – In detail

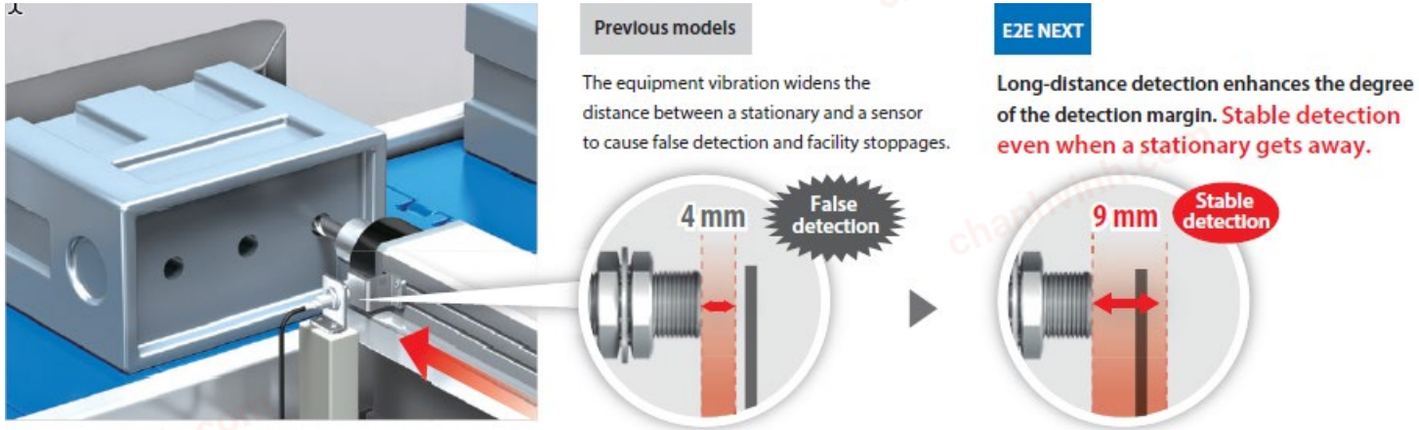
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Solution Details

Main Features: Longest Sensing Range

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





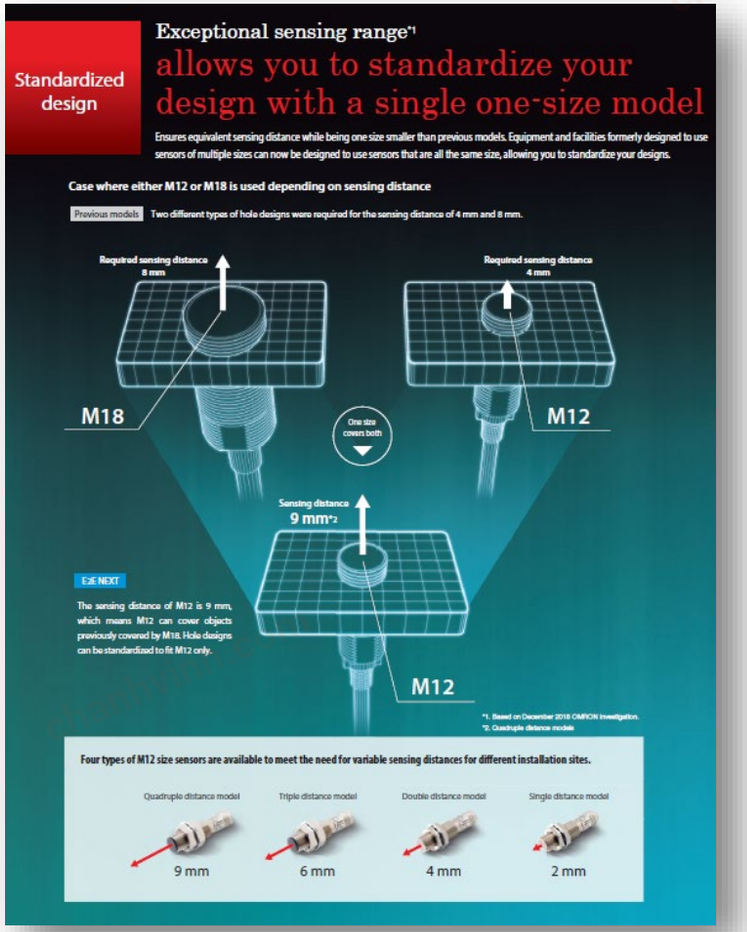
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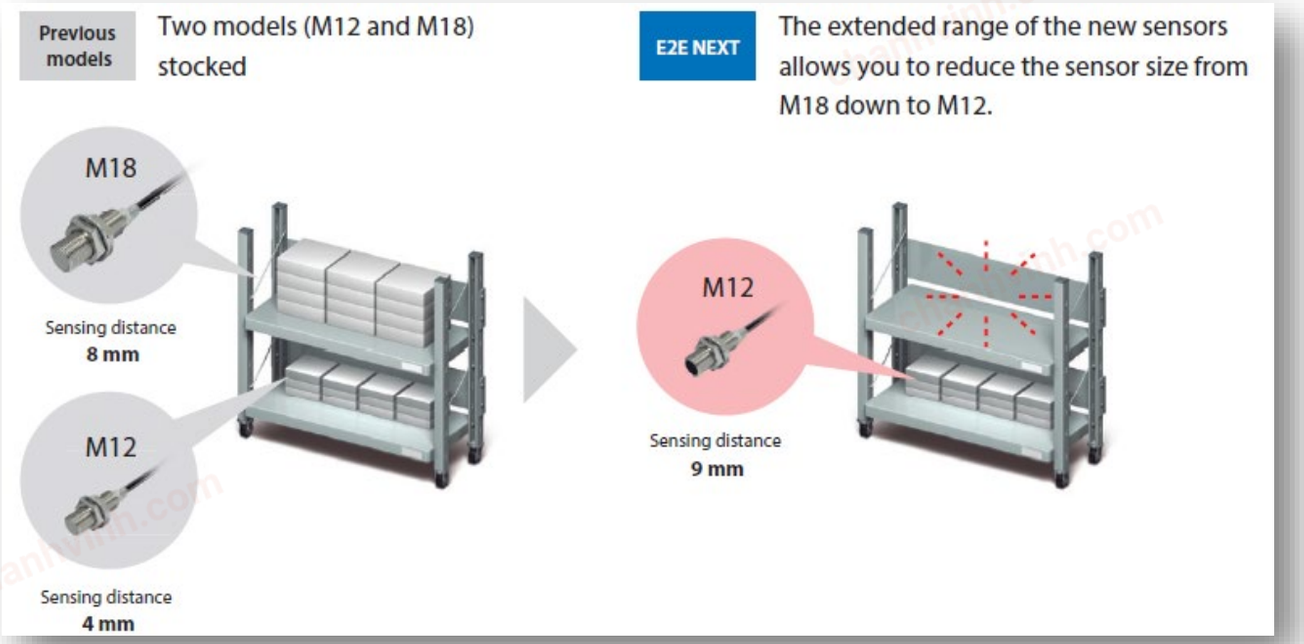
Solution Details

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Main Features: Standardized Design

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





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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.

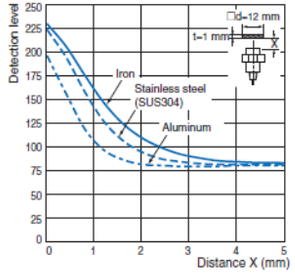
IO-Link V1.1

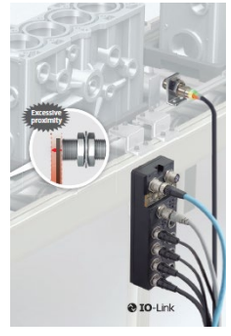
Value

Real time information > Excessive Proximity / Remoteness

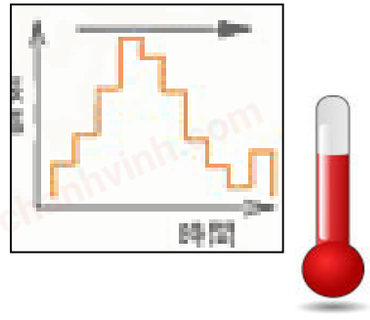
Trend monitoring

Sensing data (not linear)





Temperature inside



Planned maintenance

Accumulated Operation Time

Less stock

Selectable to NO or NC

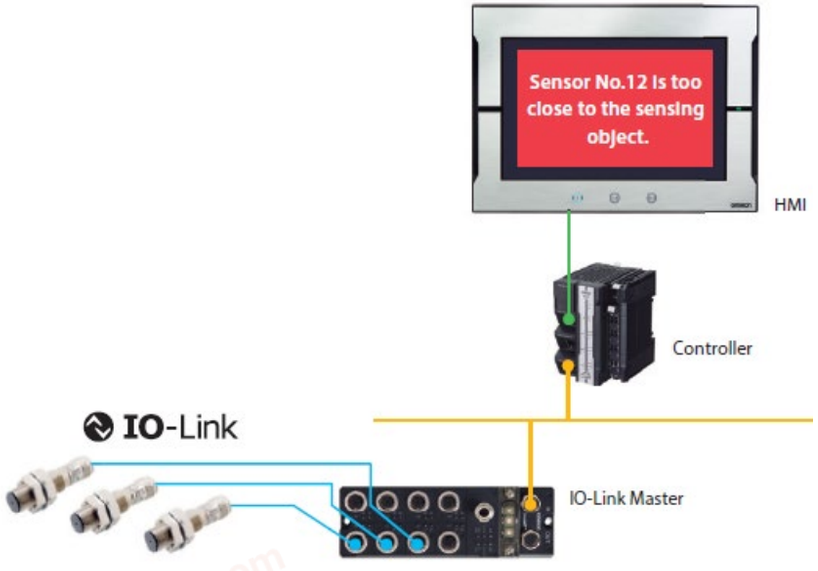
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Solution Details

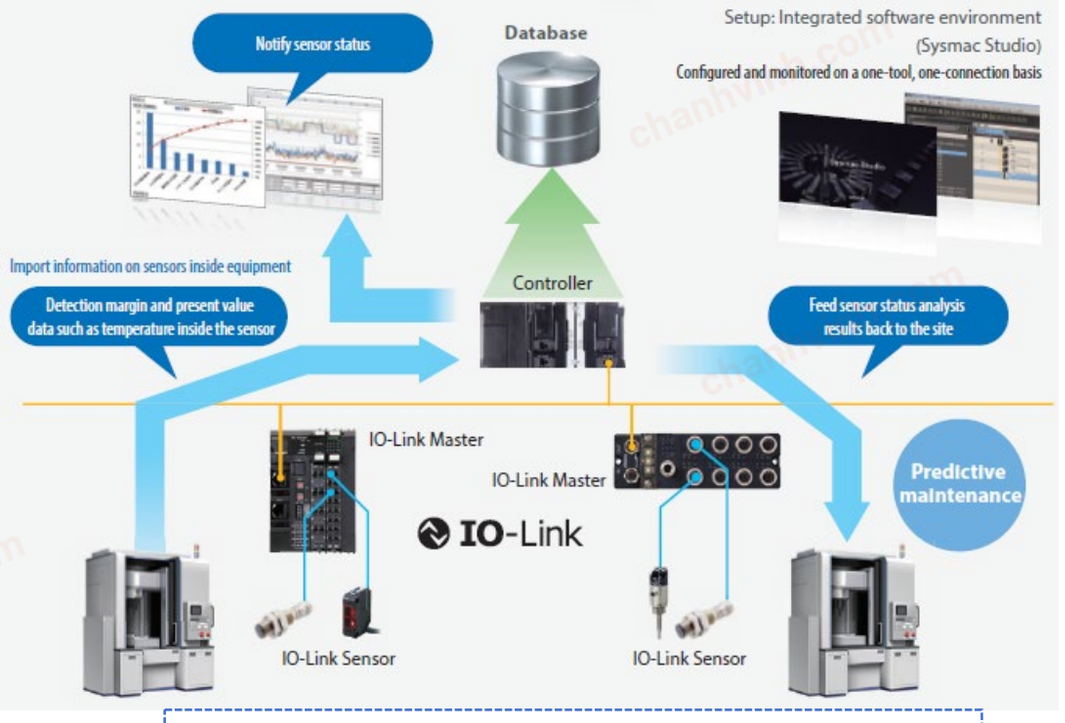
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Reduce Machine Down Time

- 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

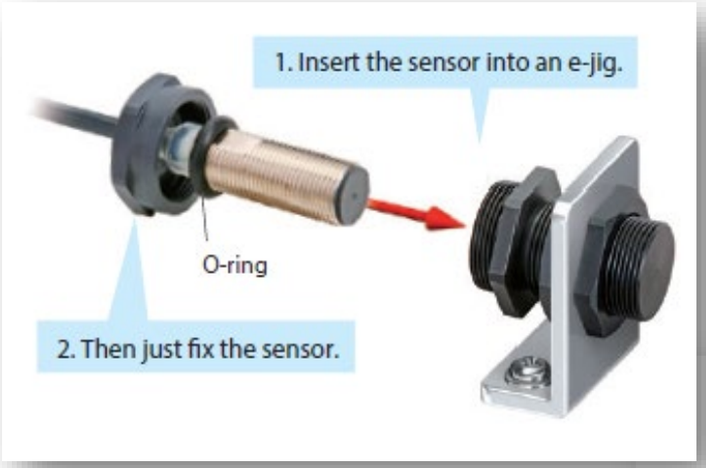
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Solution Details

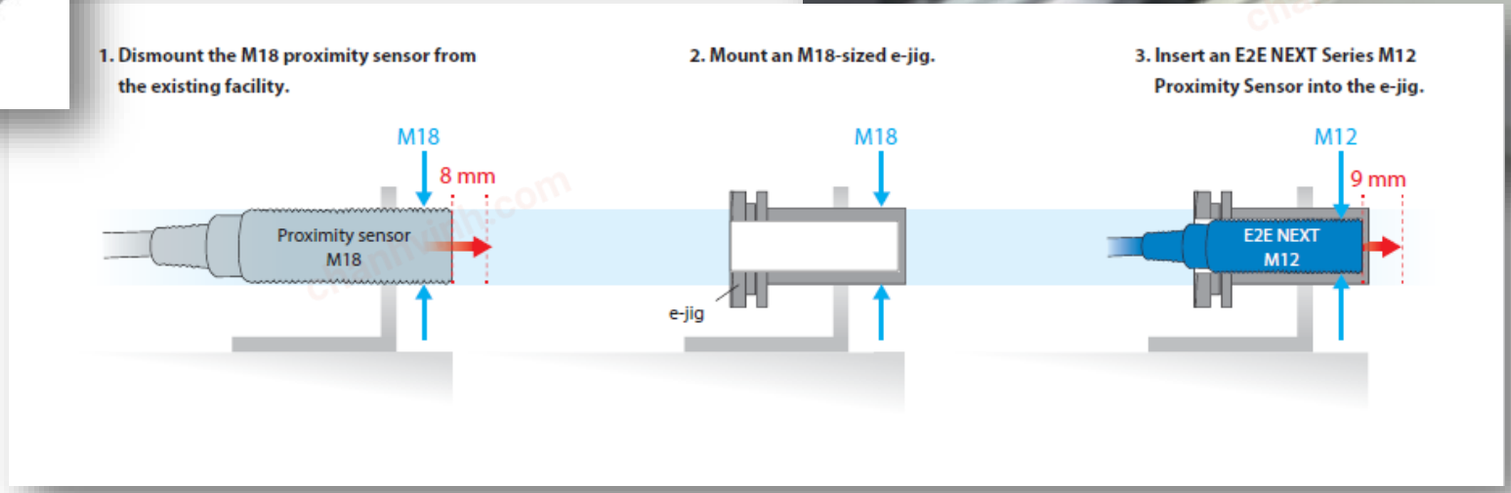
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Reduce Machine Down Time

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







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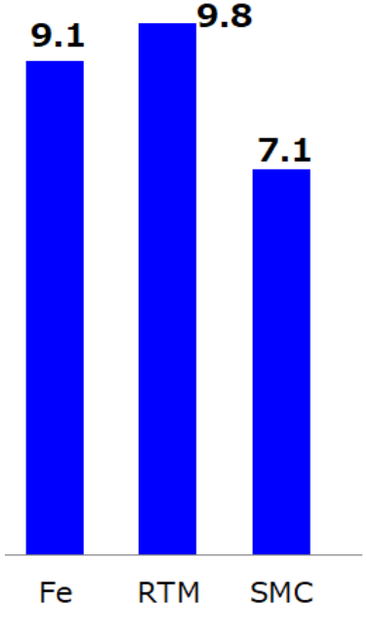
Solution Details

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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.

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Solution Details

Robust & Versatile Housing

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

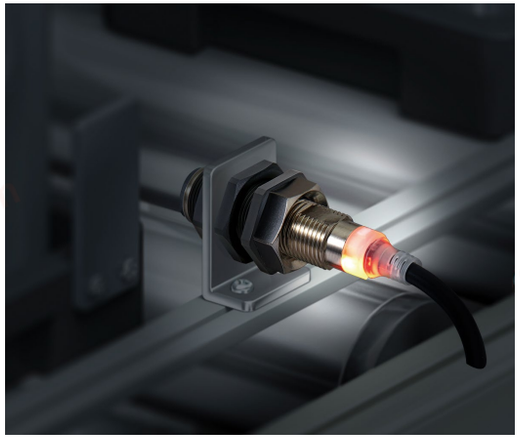
IP67G	
Oil type	N3 (water-insoluble cutting oil)
Evaluation time	48 hours
Evaluation temperature	Room temperature
Dilution concentration	———
Criteria	Appearance and performance



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



- 360º visible high-brightness LED indicator





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E2E Next – Product Line

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Product Line

OMRON

New E2E 3-wire Overview

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





	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**

E2EQ Series – Flourish-coated			
Size/Sn, mm	X1	X2	X3
M8	1.5	2	**3**
M12	2	4	**6**
M18	5	8	**12**
M30	10	15	**22**



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

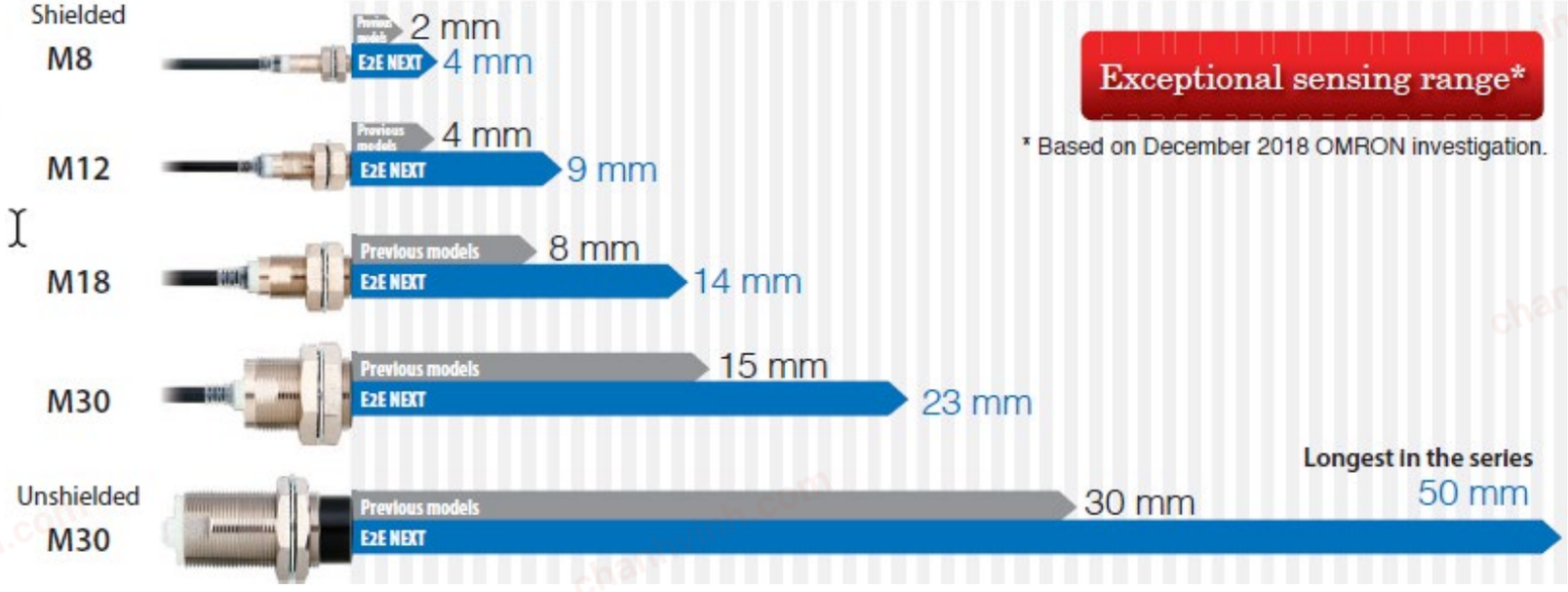
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Product Line

New E2E 3-wire Overview

- Sensing distance comparison (Quadruple distance models)









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Product Line

OMRON

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

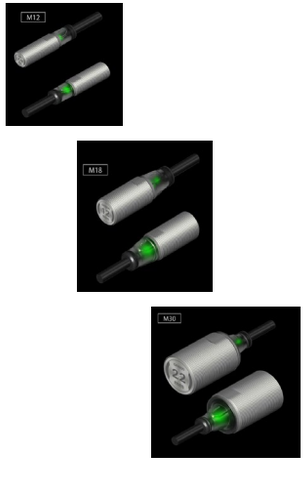


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Product Line

OMRON

New E2E 3-wire Metal Face



Shielded Only

IO-Link

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.



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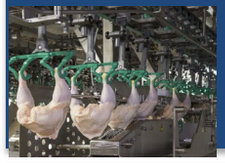
Markets & Applications

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Markets & Applications

Customer Demands (Ideal vs. Real)

- OEMs looks for "**Planned machine delivery**" & EU1/EU2 wants to "**keep machines running**"

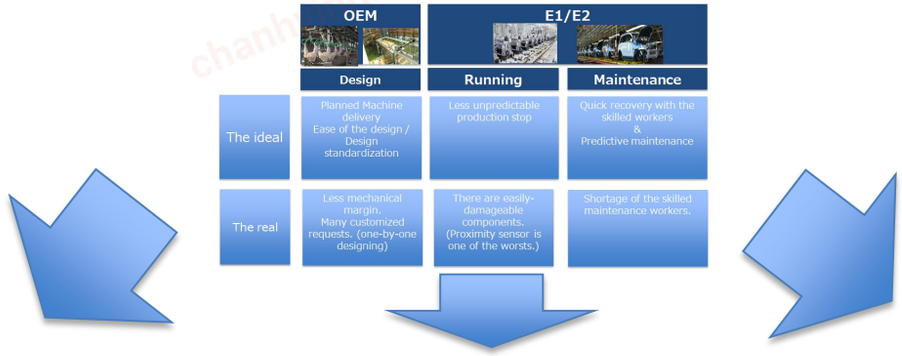
	OEM	EU1/EU2	
	 	 	
	Design	**Running**	**Maintenance**
The ideal	Planned Machine delivery Ease of design / Design standardization	Less unpredictable production stop	Quick recovery with the skilled workers & Predictive maintenance
The real	Less mechanical margin. Many customized requests. (one-by-one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

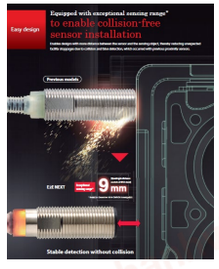
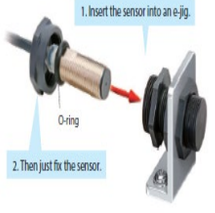
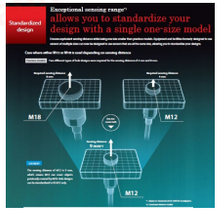
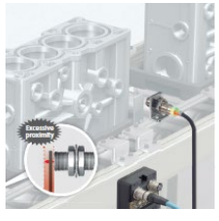
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Markets & Applications

Customer Demands (Ideal vs. Real)

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



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

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Markets & Applications

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

Auto

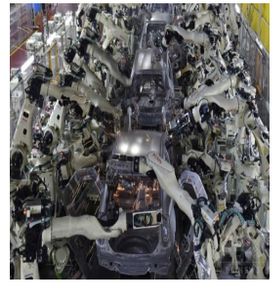
Machining





E2E Plastic

Welding





Metal



E2EQ Plastic Flourish coated

Assembly





E2E Plastic

Stable detection even though small or complex parts.

F&C

Digital

Others

Conveying / Processing





E2E Plastic

Conveying / Packing





E2E Plastic

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Advantages

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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

External environments



Growing Market and Locally manufactured and consumed

Tougher Global Competition



Industrie 4.0

Company Issues



Very few skilled maintenance worker to cover global manufacturing

Efficient run using limited production equipment



Value Proposition

Keep Machine Running

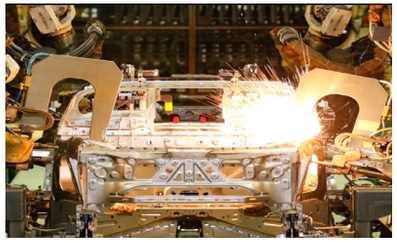


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Advantages

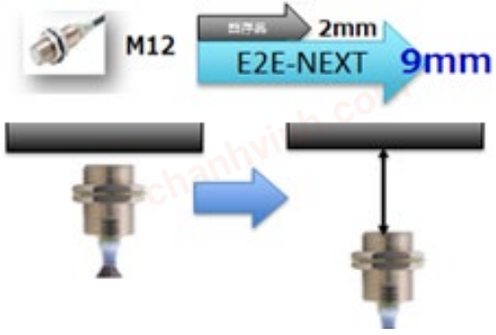
- Issues for “**Up-Time ratio**”

Coolant/Mechanical hits/Spatter





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





Difficult to find causes for failures



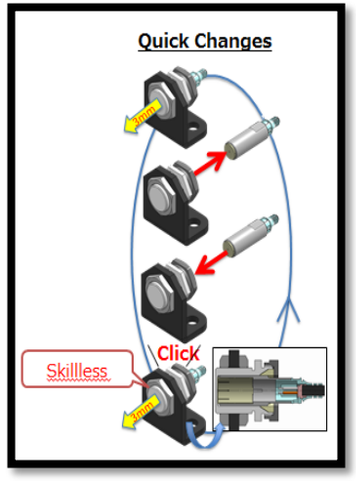
Shortest Recovery: due early recognition trouble & ID with IO-Link



Need expertise for maintenance



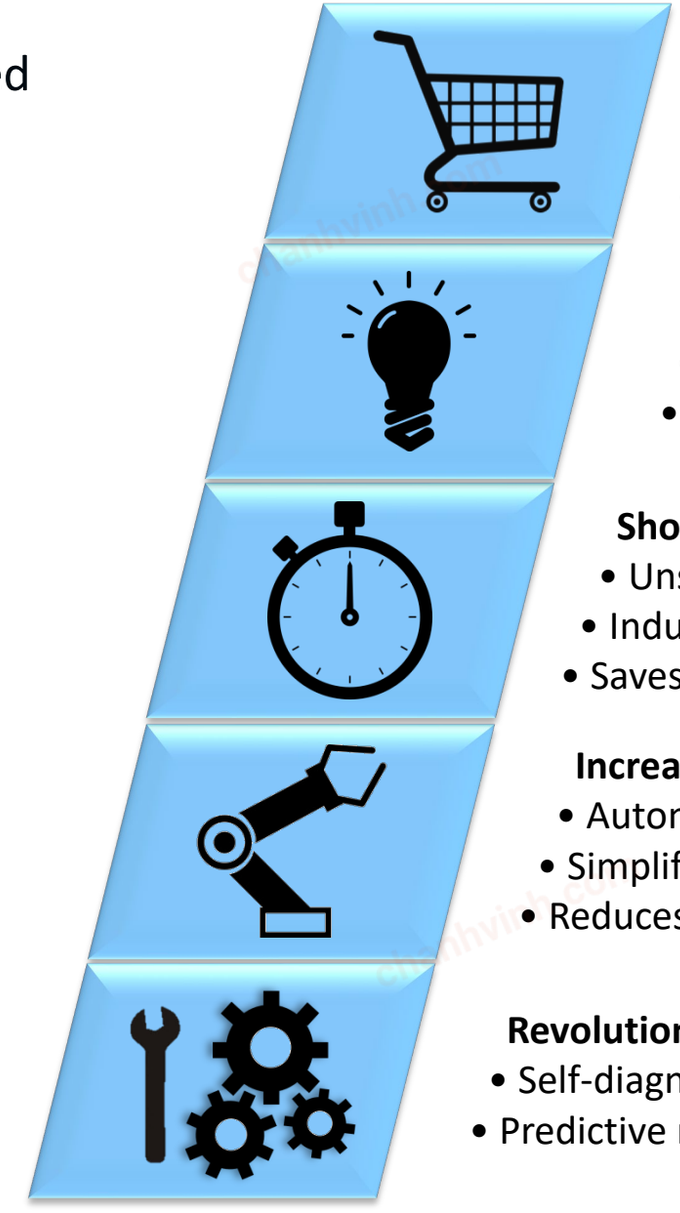
No skillful workers needed: Easy and fast to mount in 10 sec. vs of 10 min.



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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