Kairo SmartSense

How it works

NO BATTERY
NO CABLES

KAIRO
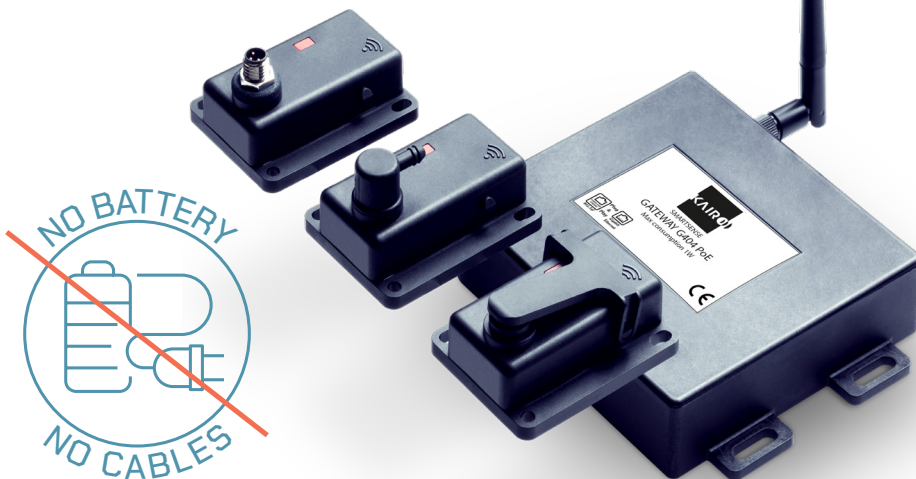
The KSS philosophy: monitoring everything, everywhere, easily

SmartSense system is an innovative solution designed to implement a complete control-monitor system in no-time. Using SmartSense devices you can control **any type of industrial asset**, modern and traditional machines, without batteries and without wires, for an **easy and direct retrofit**

Is my process under control?

Which is the next maintenance?

Where is my asset?

Is the number of cycles declared correct?

Let's find out how answering with Kairo SmartSense system!

Discover KSS in few steps

HARDWARE
Install the wireless sensors...

...by contacting a mechanical movement

Mechanical sensor **S101-ME11-D00**

NO BATTERY
NO CABLES

DOWNLOAD the manual!

...in parallel to a pneumatic valve

Pneumatic sensor **S101-PN11-D00**

NO BATTERY
NO CABLES

DOWNLOAD the manual!

...or in parallel to 24V PNP/NPN digital signal

PLC

Electric sensor **S101-EL11-D00**

Proximity Sensor

DOWNLOAD the manual!

...and connect the gateway to a Power over Ethernet (PoE) socket

KAIRO
SMARTSENSE
GATEWAY G404 PoE
Max consumption 1W
CE

Power Over Ethernet gateway **G404-POE1-D00**

DOWNLOAD the manual!

SOFTWARE
Configure and start the monitoring
Monitoring your assets everywhere │ Set the alarms │ Trigger the actions

Kairo Cloud

Making your process smart in 3 steps

Step 1

Identify assets in process

Analyze your process and identify the strategic assets
SmartSense sensors can be installed directly on specific assets or components of machines that are relevant for the productivity and efficiency of a production process

1

Step 2

HW selection and installation
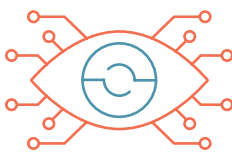
Sensor selection and installation
Select the correct type of SmartSense sensor:
- Mechanical
- Pneumatic
- Electric

NO BATTERY NO CABLES

2

Step 3

System configuration and process monitoring

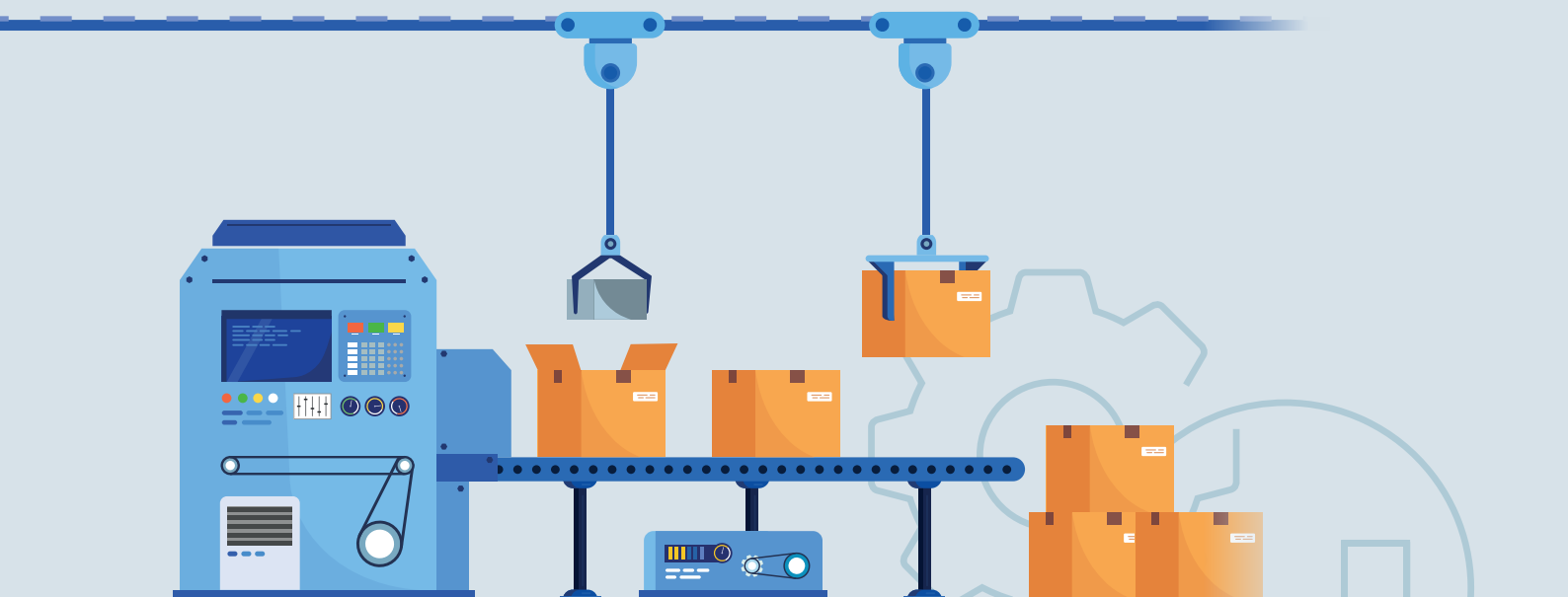**Access the Kairo's Cloud Platform and start monitoring everything, everywhere**
Configure the platform, monitor and optimize your process in real time:
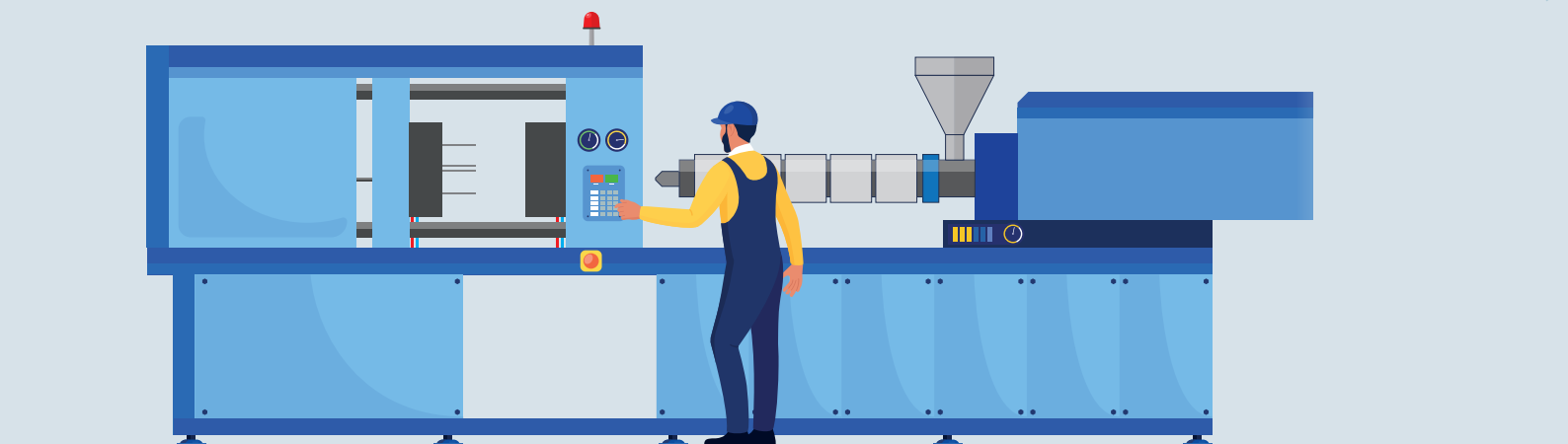- Traceability
- Performance
- Availability
- Maintenance
- Quality

3

Discover how KSS works with practical usecase examples

PACKAGING

INJECTION MOULDING

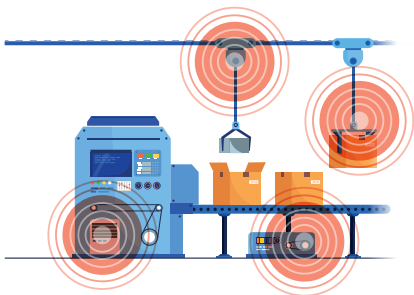# SmartSense system **configuration example**

Packaging process control

Step 1

**Identify assets
in process**

Analyze your process and identify the strategic assets
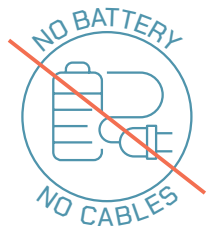

Step 2

**HW selection and
installation**

Select, install and configure SmartSense components

Order

- N° 2 S101-PN11-D00
- N° 1 S101-ME11-D00
- N° 1 S101-EL11-D00
- N° 1 G404-POE1-D00
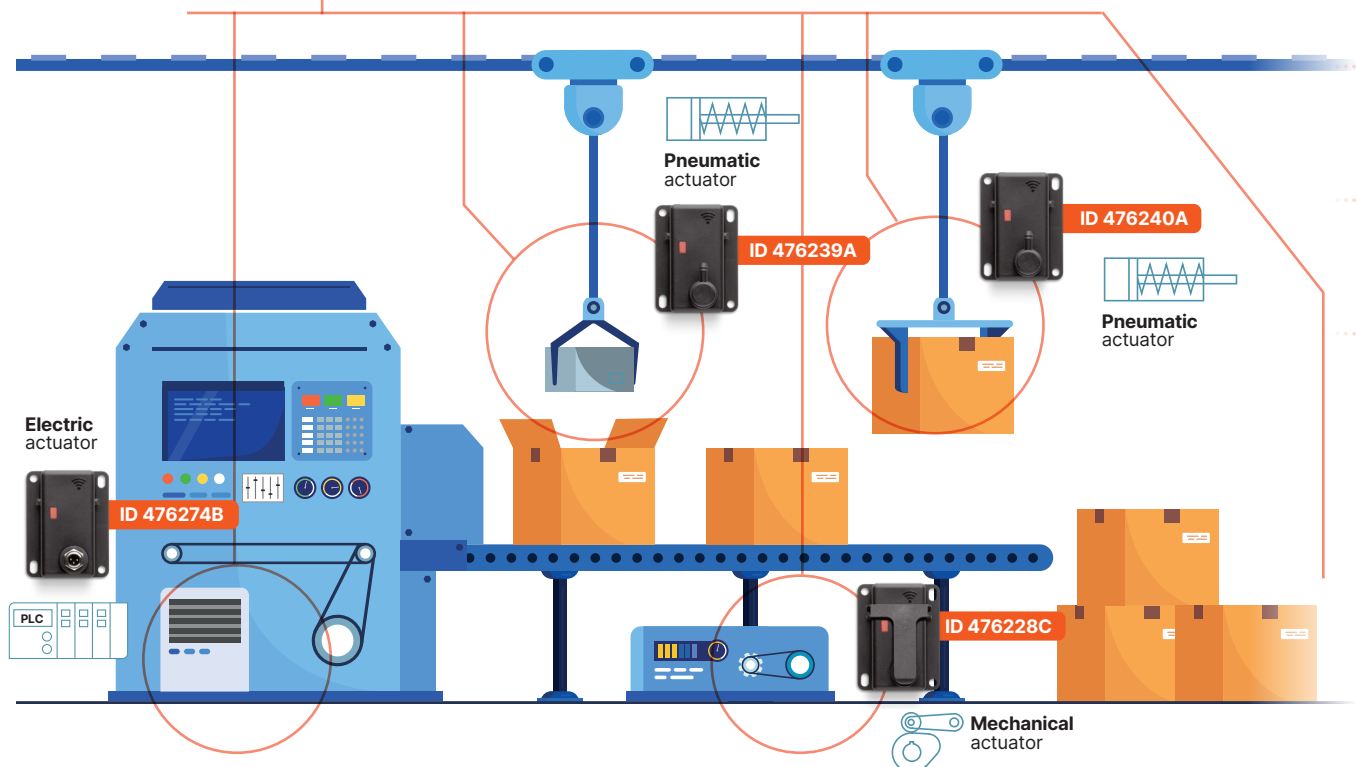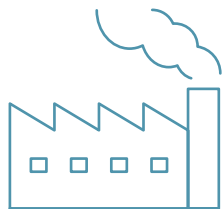
NO BATTERY
NO CABLES

Maintenance

- Number of cycles
- Warning
- Alarm
- Email report

Production

- Quantity
- Cycle time
- Downtime alarm
- Quantity monitor
- Email report

Pneumatic actuator

ID 476239A

ID 476240A

Pneumatic actuator

Electric actuator

ID 476274B

PLC

ID 476228C

Mechanical actuator

The KSS philosophy:
monitoring everything,
everywhere, easily

Step 3

System configuration and process monitoring

Configure SmartSense platform

Data collection

SmartSense gateways transfer information directly to the standard Kairo's Cloud platform (PoE option) or to a PLC (TPC/IP option).

PoE

SMARTSENSE
GATEWAY G404 PoE
Max consumption 1W

KAIRO

LOG INTO YOUR ACCOUNT

Email *

Password *

Login

https://smartsense.kairo.cloud/

Monitoring the asset

Events monitoring

Kairo's Cloud platform monitors the number of cycles and the cycle time of assets and workstations, generating notification emails in case of special events.

- Total cycle: 2'340
- Next maintenance: 4'800
- **Warning: one piece missing**

ID 476239A

- Total cycle: 1'200
- Quantity produced: 2'400
- Cycle time: 26 sec.
- **Duty cycle 80%**

ID 476240A

- Belt cycles: 125'000'000
- **Warning: need maintenance**

ID 476228C

- Machine mode: Automatic
- **Alarms: None**

ID 476274B
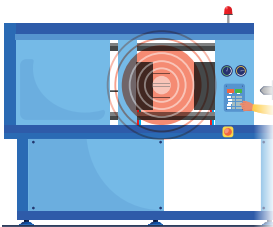
SmartSense system configuration example
Injection moulding process control

Step 1

Identify assets in process

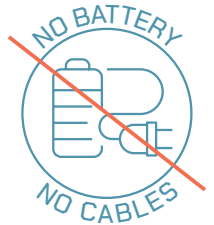**Analyze your process and identify the strategic assets**

Step 2

HW selection and installation
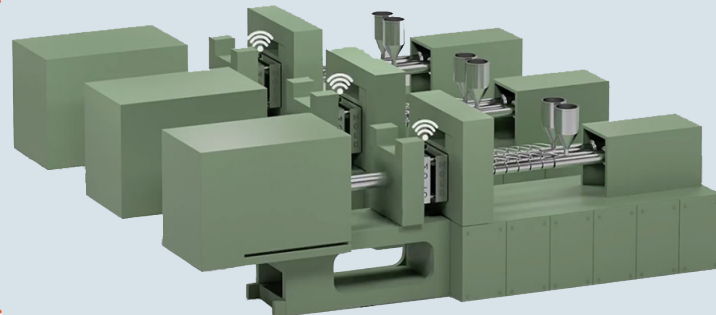
Select, install and configure SmartSense components

Order

- N° 1 S101-ME11-D00
- N° 1 G404-POE1-D00

NO BATTERY NO CABLES

WATCH the Animation!

Maintenance and production

- Number of cycles
- Warning
- Alarm
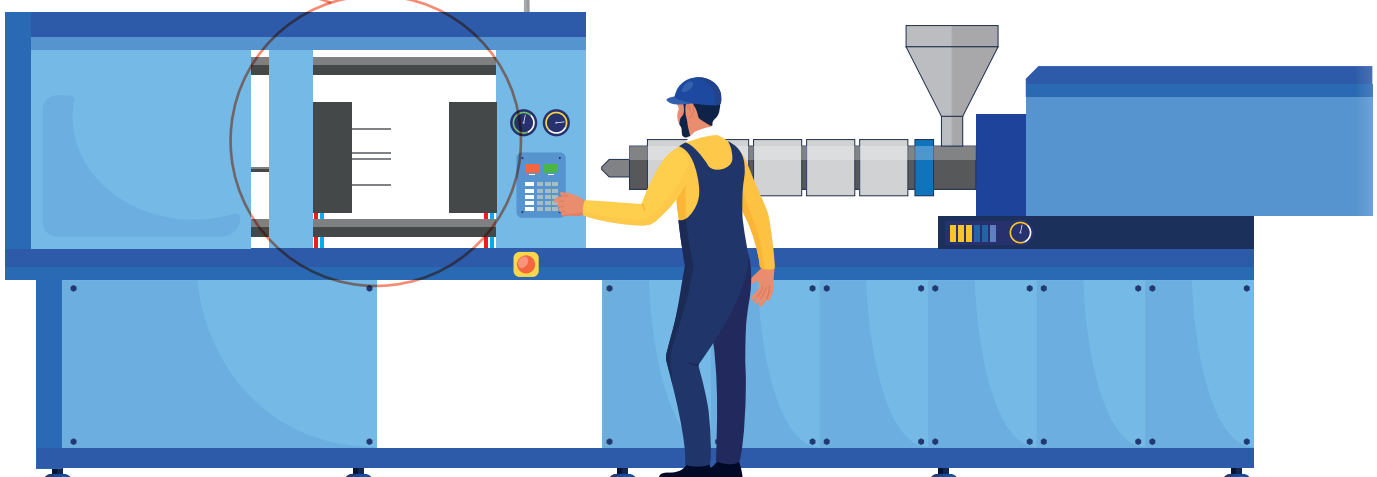- Quantity
- Cycle time
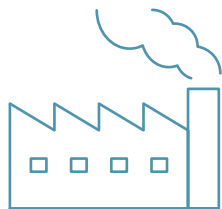- Downtime alarm
- Email report

Mechanical actuator

ID 484339A

The KSS philosophy:
monitoring everything,
everywhere, easily

Step 3

**System configuration
and process
monitoring**

Configure
SmartSense platform

Data collection

SmartSense gateway transfers
information directly to the
standard Kairo's Cloud Platform
or to the customer specific ERP
using dedicated connectors.

Monitoring
the asset

Events monitoring

SmartSense sensors are mounted
directly on the moulds becoming
part of them and enabling the
monitoring of any specific
mould for its entire lifetime.
Performances and total number
of cycles can be tracked in
relation to the specific injection
moulding machine and/or the
production facility allowing also
the geolocation of the production
batch. The Kairo's Cloud Platform
monitors the number of cycles
and the cycle time of every single
mould, generating notification
emails in case of speciale events.

- Mould total cycles: 3'495
- Number of cavities: 3
- Parts produced: 10'485
- **Next maintenance: 3'500**
- Avg cycle time: 5,5 s
- Duty cycle: 65 %
- **Production rate: OK**
- Production site: Site 1

ID 484339A

SMARTSENSE
GATEWAY G404 PoE
Max consumption 1W

CE

PoE

KAIRO

LOG INTO YOUR ACCOUNT

Email *

Password *

Login
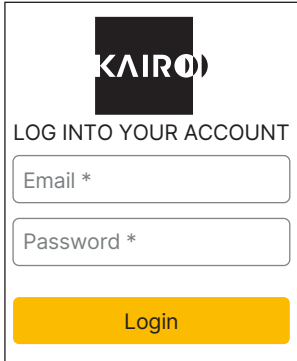
https://smartsense.kairo.cloud/

Choose your favourite software solution

CLOUD

Kairo SmartSense Cloud Platform
Kairo standard solution based on a centralized and subscription based Cloud service for collecting, storing and analyzing your production data.
This solution provides an **ultra fast and affordable data collection system granting a secure and global access** to a service continuously upgraded and optimized by interacting with a simple web user interface.

LOG INTO YOUR ACCOUNT

Email *

Password *

Login

MES
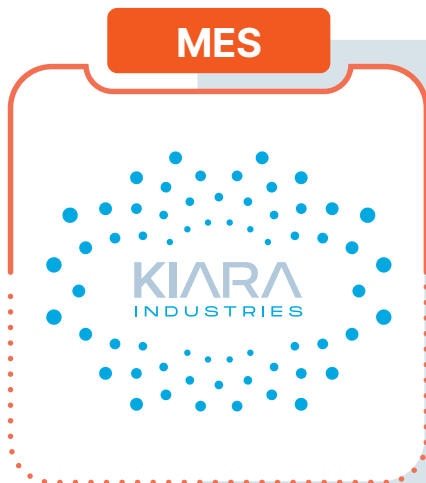
Lightweight and scalable MES with blockchain certification of your data
Data collected by Kairo's sensors are collected by an innovative, lightweight and scalable MES system by Kiara Industries. Status and production **data** of machines **are collected,normalized, encrypted and digitally signed directly at the source** with a **blockchain** cryptographic key.**This process guarantees legal validity to your data**.

KIARA
INDUSTRIES
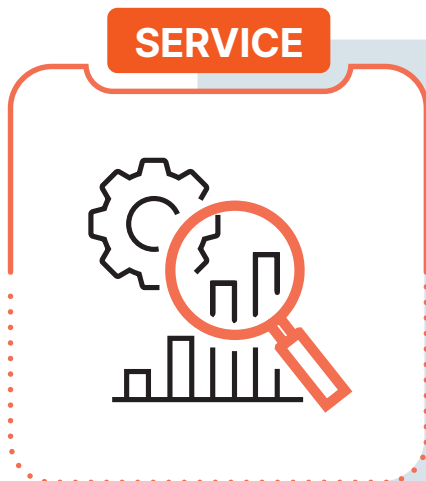
SERVICE

Kairo's local management service or dedicated data connectors
On-premise solutions running as Windows® server services or Docker® containers for the configuration of the hardware, alarm definition and tracking of foundametal KPIs.
Data connectors can also be provided upon request **to transfer data** from the Kairo's Cloud, or **directly** from Kairo's gateways, to pre-existing IT infrastructures (ERP, MES, etc...).

Have all the answers
you need, in real time

Is my process under control?

- Quantity produced: 4'800
- Cycle time: 26 sec.
- **Deviation <5 %**

Which is the next maintenance?

- Total cycle: 87'600
- **Warning:
  Maintenance in 500 cycles**

Where is my asset?

- Asset operation detected
  in Main Production Facility
- **Asset operated correctly**

Is the number of cycles declared correct?

- Total cycle: 1'200
- Quantity produced: 4'800
- Cycle time: 26 sec.
- **Duty cycle 95%**

Kairo SmartSense:
getting data anytime,
everywhere, easily

KAIRO) SMART, CONNECTED.