

## A step towards achieving error-free production sites with facility visualization

### Necessity of predictive diagnostics/ status monitoring

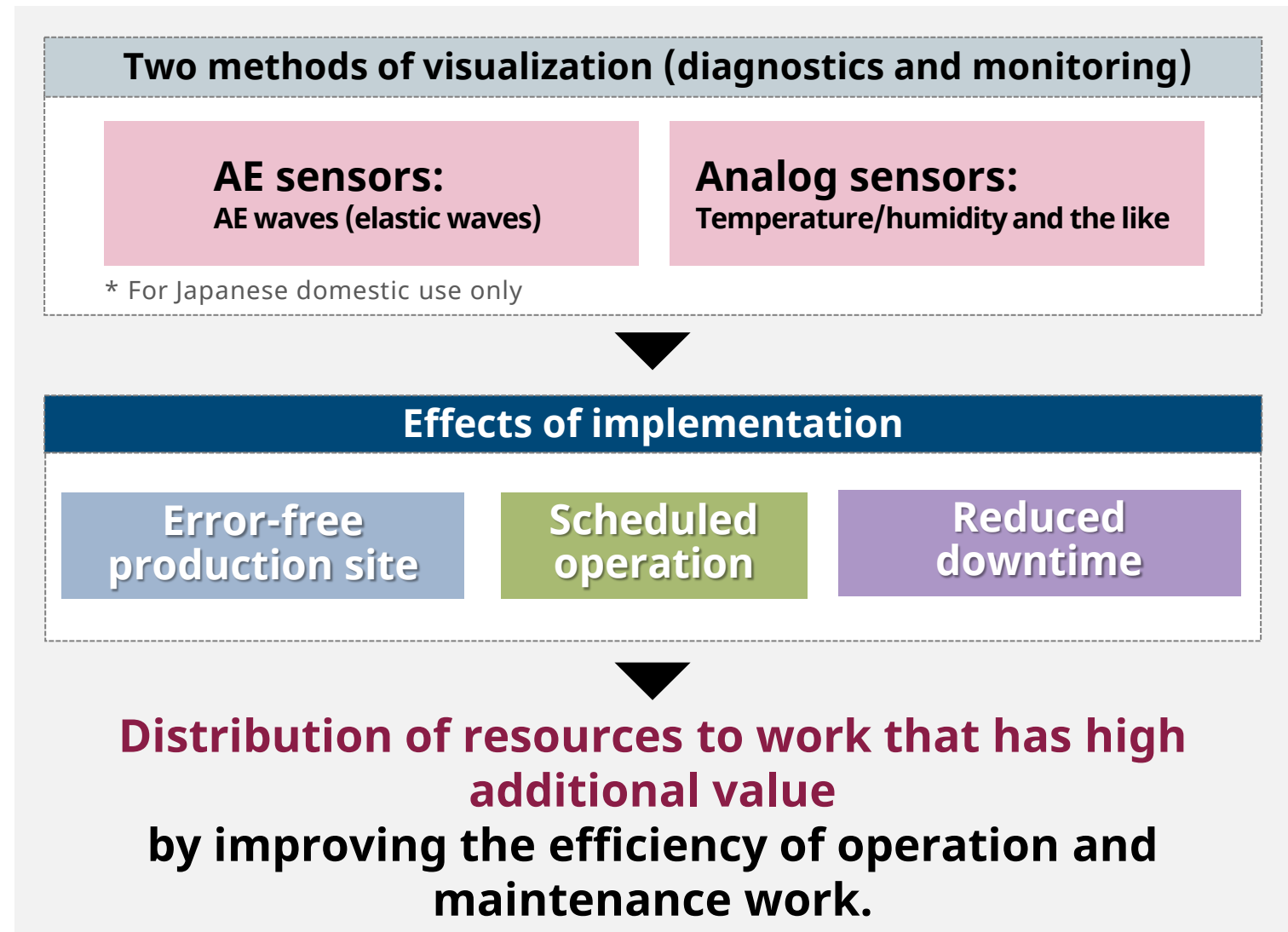
- Automation of facilities is essential to achieve standardized work procedures and improved productivity. However, if the facility stops working, there will be a loss of time and production while the system is restored.

**Identifying facility failures as soon as possible** is a step towards achieving an error-free production site.

### Production site issues

- It is difficult to prevent facility stopping due to sudden failure of consumable parts.
- Loss of time and production while the system is restored due to facility failure.
- It is difficult to streamline investigations into problem causes and minimize impacts on productivity.
- Professional knowledge and experience of skilled maintenance workers are not passed down.

## Concept



## Predictive diagnostics and status monitoring of facilities using two visualization methods

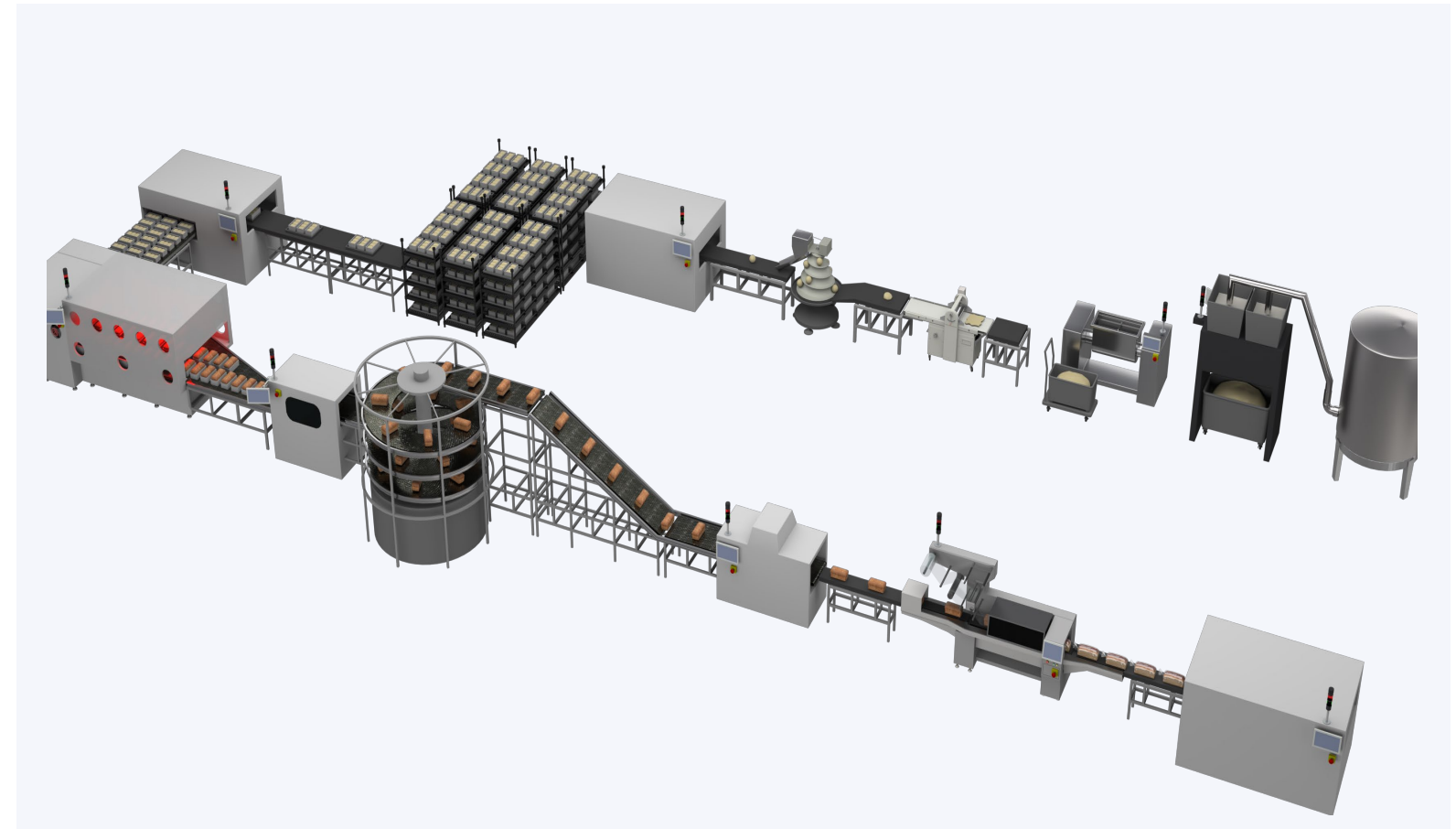
### Sine wave AE sensors

- **Initial errors can be detected** by elastic waves (AE waves) which occur before failures such as those caused by vibrations.
- Remote monitoring with network connection.

### Analog sensors

- Sensor data such as temperature, humidity, and flow rate is collected via network.
- Analog sensors enable **constant monitoring, data accumulation, trend analysis and the decision of measures** possible.

## Example installation at a baking factory



## Point 1: Predictive diagnostics of conveyor speed reducer

### Issues/What you want to achieve

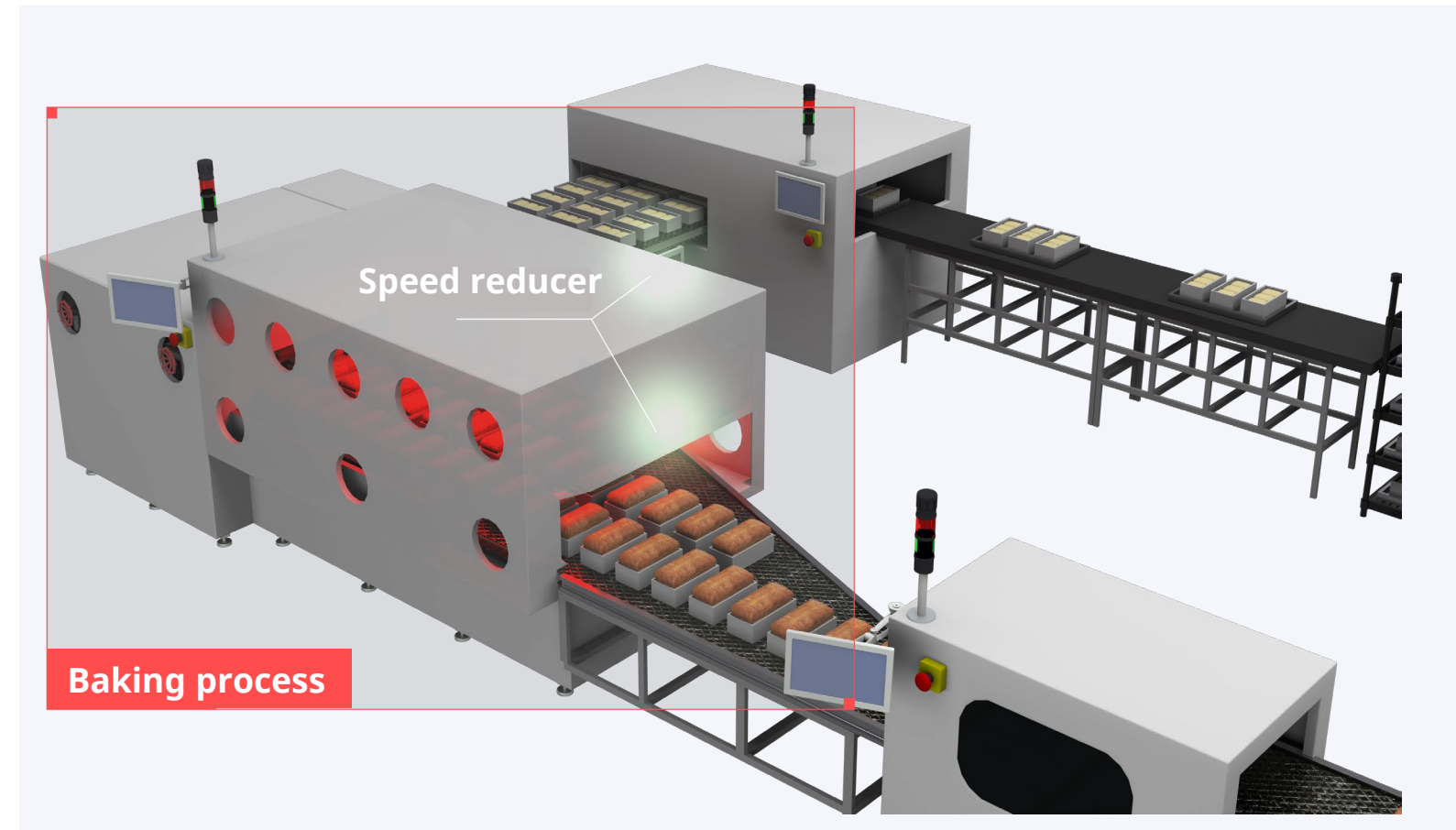
- It is difficult to detect problems with the speed reducers in the baking process conveyor.
- You tried using vibration sensors, but the waveform was not captured well.
- It is difficult to determine when the speed reducer should be lubricated.

### Solutions

- Our AE sensors\*, **which are not easily affected by the surrounding environment**, can detect facility failures and **reduce unnecessary maintenance**.
- An MD value is calculated from the AE sensor (AE value) and the analog sensor (current value) **to judge whether facility is working normally or abnormally using the MT method**.

\* The AE sensor is for Japanese domestic use only.

## Concept



## Point 2: Collecting analog sensor information

### Issues/What you want to achieve

- Only sensor data collection and visualization are possible.
- Reduce the load of inspecting sensor-related devices that are installed around the production line.
- Easy installation of additional sensors

### Solutions

- **Log, analyze, and investigate** sensor data collected on the network to reduce downtime.
- Automatically collect and send real-time actual values to the control room **to improve visual inspections and reduce human errors.**
- Leave unused points in the analog signal converter to which sensors are connected so that **additional sensors can be easily installed.**

## Concept

### Quality control based on temperature and humidity data in all processes



Integrated management of actual values



Quick response is possible in case of emergency

