



SAFE
work sense

**The solution to manage safety,
energy saving and working hours
in manufacturing and industry.**

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Production environments

The lights are on also when you aren't working, a lot of working hours are lost in repetitive proceedings, The fume extractors are off also where there are harmful gases; these are just a few problems in the production environments.

The purpose of SAFE is to innovate in line with the strict prevention and safety regulations at work.

SAFE is realized by Auroras s.r.l. upon specific requirements of customers.

To implement SAFE means to reduce energy costs, to control production processes and product delivery in the company, to make secure and comfortable the working environment, to avoid intrusions and unauthorized accesses.

SAFE is an instrument with which to work better and it's accessible to all businesses and totally customizable.

SAFE, to make secure

SAFE is a IWSAN (intelligent wireless sensors and actuators network) system which allows to monitor and automate different operations in industrial and manufacturing environments.

SAFE makes it possible to constantly control the environmental conditions for:

- **energy saving** of light and temperature: SAFE will ensure that all of the lights are off at the time indicated or intervene when doors and windows are left open;

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- the environmental **safety** and **health**: sensors reveal high-accuracy values of fumes, harmful gases, fine particulate, noise or fire;
- the **protection** of the company: sensors detect any intrusions by people or animals;
- the machinery **maintenance**: sensors monitor the vibration levels or the current absorption value;
- the product **quality**: monitoring hygrothermal values, for example, in food industries.

How SAFE works

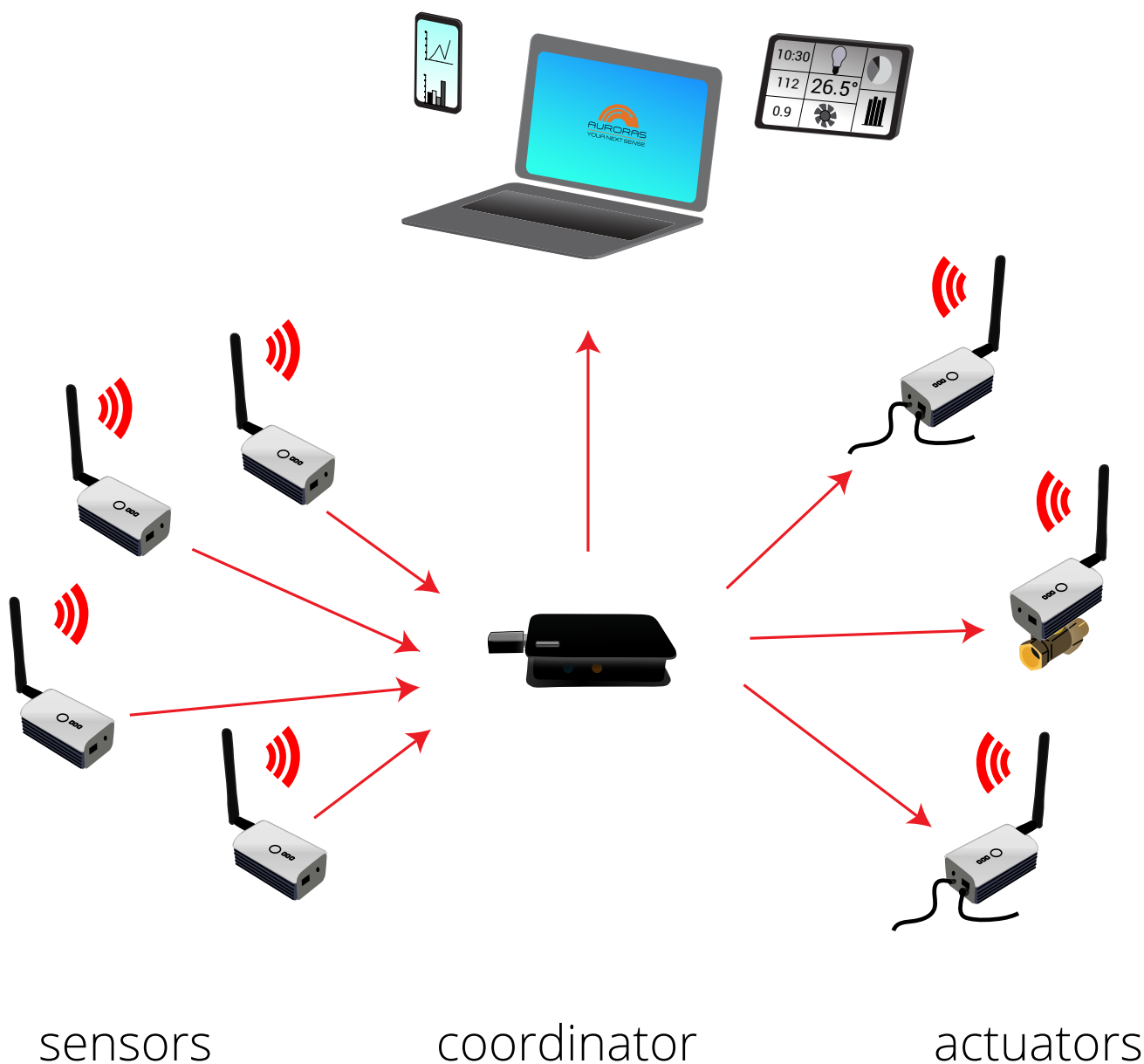
The flexible and modular SAFE architecture consists of **different wireless sensors and actuators placed in strategic locations** of the production unit that they constantly reveal critical conditions of interest.

The data are sent to motor of automation motor which drives in real time connected actuators on the basis of verified rules. The powerful automation engine makes it possible

to drive different types of actuators: switches, motors, sirens, fumes extractors, air conditioners, doors, curtains. It's possible to program the most appropriate action for each revealed trigger condition.

Other wireless sensors and actuators can be added later without reprogramming the system: it's enough to buy an accessory, to connect it to the SAFE network and it will be ready for use.

All the data can be consulted in real time by personal computer, smartphone or tablet.



Practical applications

The coordinator of SAFE creates actions and events on the basis of customizable conditions. (triggers).

A multitude of processes can be automated such as: energy saving, the health of workers, organization, logistics, safety, fire protection, process monitoring, warehouse management and air-conditioning (from micro to macro climatic areas).

SAFE can drive hardware and software actuators, hydraulic pumps, motors, switches, audible and visible signals and more.

All the data revealed by SAFE are included in a database. Diagnostic alerts are sent via email and/or sms. All operations are totally automated.

If you want to change the system or intervene manually, you can do it by an intuitive and easy management interface of a personal computer, tablet or smartphone.

EXAMPLE 1 (LIGHT MANAGEMENT):

(Working hours = True) & (Human Presence = True):

Result = **TURN ON ALL OF THE LIGHTS**



(Working hours = True) & (Human Presence = False):

Result = **TURN ON ALL OF THE DOWNLIGHTS**



(Working hours = False) & (Human Presence = False):

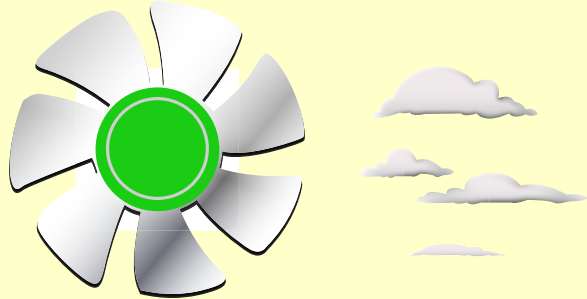
Result = **TURN OFF ALL OF THE LIGHTS**



EXAMPLE 2 (FUMES MANAGEMENT):

(Working hours = True) & (Human Presence = True) & (Above the fume threshold = True):

Result = **TURN ON THE FUME EXTRACTORS**



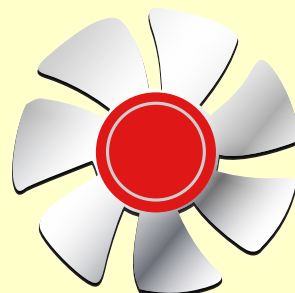
(Working Hours = False) & (Human Presence = False) & (Above the fume threshold = True) :

Result = **SEND SMS ALERT**
"UNEXPECTED PRESENCE OF FUME"



(Working Hours = False) & (Human Presence = False) & (Return below the fume threshold = True) :

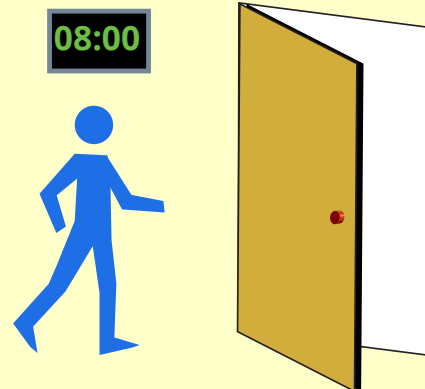
Result = **TURN OFF THE FUME EXTRACTORS**



EXAMPLE 3 (PRESENCE MANAGEMENT):

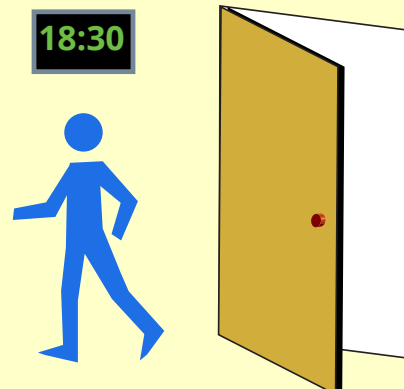
(Working Hours = True) & (Presence of Worker n 101 = True):

Result = **ENTER LOCATION, DATE AND TIME OF WORKER'S ENTRY INTO THE DATABASE.**



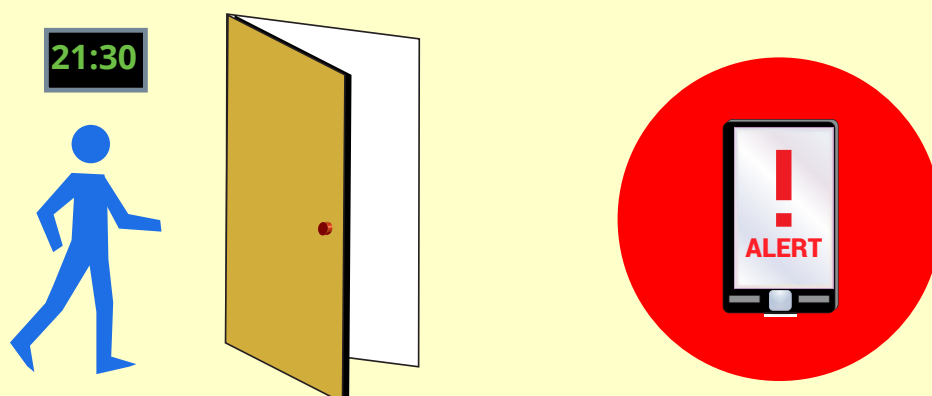
(Working Hours = True) & (Presence of Worker n 101 = False):

Result = **ENTER LOCATION, DATE AND TIME OF WORKER'S EXIT INTO THE DATABASE.**



(Working Hours = False) & (Presence of Worker n 101 = True):

Result = **(SEND A SMS ALERT "WORKER PRESENCE OUT OF THE WORKING HOURS") & (ENTER LOCATION, DATE AND TIME OF WORKER'S ENTRY INTO THE DATABASE).**



Available sensors

The range of wireless sensors is considerable and is constantly being expanded.

Other devices can be added on request at any time.

Sensors communicate with the coordinator by means of wireless network, thus avoiding expensive wirings, the sensors can be moved at any time. They have low consumption and small size.

SOME OF THE MOST REQUESTED SENSORS

Environmental Conditions

BRIGHTNESS

TEMPERATURE

HUMIDITY

FLOODING

FLUID LEVELS

Safety

FUMES PRESENCE

DUST & FINE PARTICULATE

CO (CARBON MONOXIDE)

CO₂ (CARBON DIOXIDE)

CH₄ (METHANE)

SOUND LEVEL

ULTRASOUNDS

BUTANE

ALCOHOL

HYDROGEN

LPG

Unauthorized Presence

VIDEO CAMERA

TERMO CAMERA

MOTION

Maintenance

CURRENT ABSORPTION

TILT/VIBRATIONS

PH

Organization

ACCELEROMETER

GYROSCOPE

DISTANCE

SWITCH

POTENTIOMETER

NFC

RDIF

PROXIMITY

The list could go on to include biometric sensors, color detection and more.

Actuators

The actuators perform the programmed actions. They allow to do operations via hardware and via software on the basis of collected data by sensors.

They can drive servo motors, lights and audible warning devices. They substitute the manual work and they operate autonomously when necessary.

The supplied actuators are solid and flexible

INSTALLATION

INSTALLATION

The installation is preceded by a brief analysis and, optionally, by a look at the premises where sensors and actuators will be installed.

The next step is to program the requested rules of engagement. Then, the sensors and actuators are located on the selected premises.

SIZE AND POWER SUPPLY

SAFE includes very low consumption wireless sensors and actuators. They can be powered by mains or long-life battery.

The batteries can be optionally recharged by by small-sized photovoltaic panels.

ASSISTANCE

Auroras provides the remote assistance and maintenance.

SAFE is equipped with a self-diagnosis system: it's able to warn of the malfunctions and exclude the defective sensors and actuators.

in relation to their use. As sensors, other actuators can be added on request.

Available actuators:

Relays
Switches
Shutters
Sirens
Flashers
Displays
IR transmitter
Radio transmitter
Sms sending
Email sending

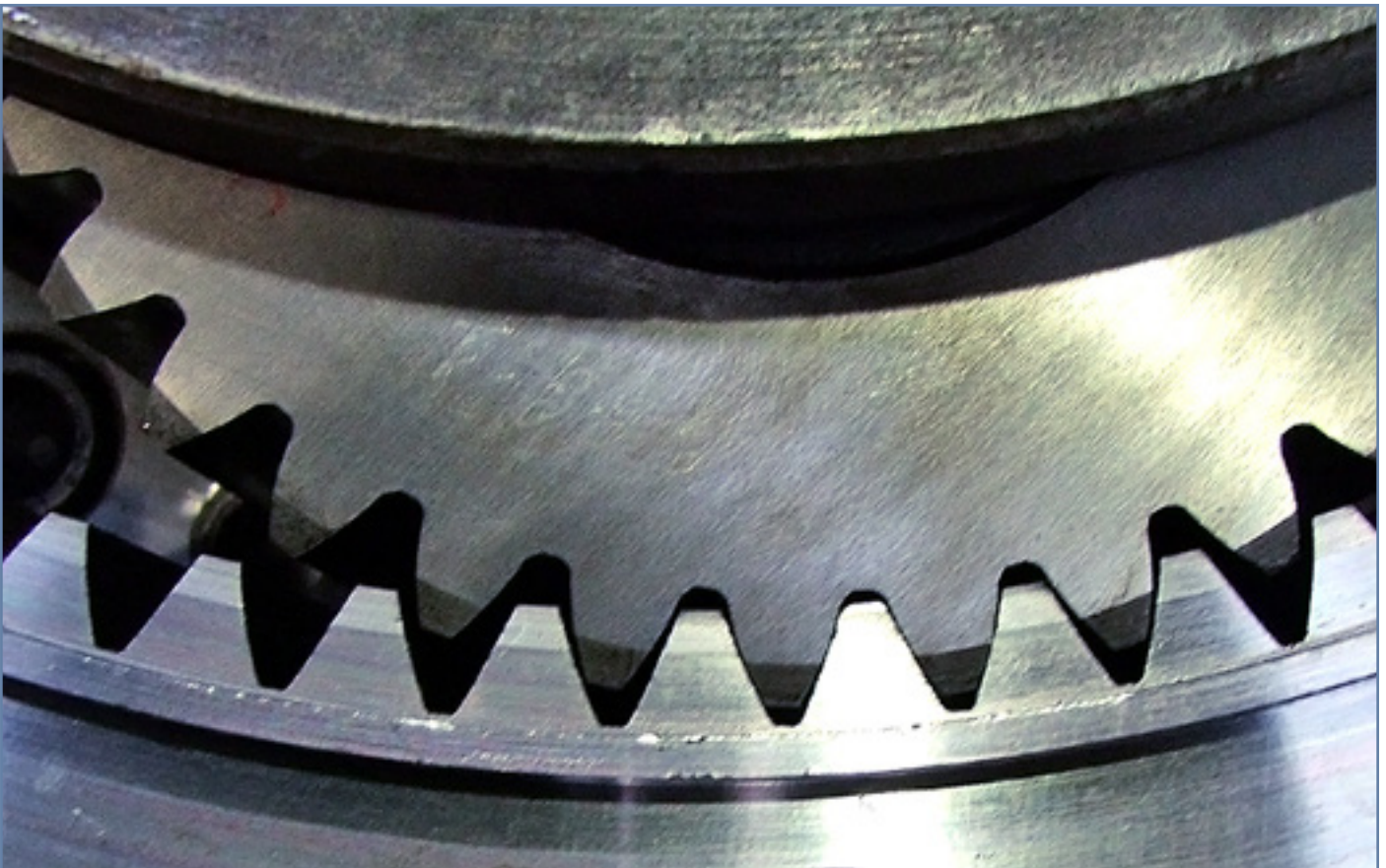


- **it takes a picture of the environment in real time**
- **it reveals the hygrothermal data**
- **it collects the requested information**
- **it processes data**
- **it sends alerts**
- **it plans actions**

- **it is modular**
- **it is flexible in relation its use**
- **it can be implemented in different workplace**

- **wireless data transmission**
- **equipped with advanced technology**
- **easy to use**
- **self-diagnosis malfunctions**

- **energy saving**
- **saved working hours**
- **safety**
- **high accuracy**
- **control**



**SAFE,
technology for
efficiency, saving and safety**

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