BAI Best Alarm Illness

Automatic illness detection system

Tonali E.A. proposes BAI (Best Alarm Illness), the system that automatically **detects an illness condition of an operator active in the field and then sends a request for help on a voluntary basis or completely automatically** (detecting prolonged immobility of the person).

Elderly people who live alone or in the nursing homes, technicians who work on unattended plants such as electrical substations, water purification plants, radio links, inspectors of energy transport lines, etc.

Isolated work and life carry potential risks and therefore require a tool for **the safety of people.**

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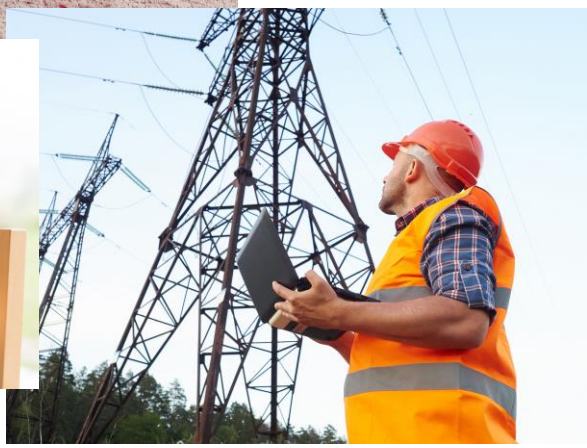
Safety for people alone

There are many plants spread throughout the territory that require constant maintenance or repairs. In most cases, we are talking about jobs that require a single employee who has to work independently in isolated conditions. Company **technicians** sent to third parties for the maintenance of electricity or gas systems, workers in the operation of unmanned systems such as electrical substations, water purification systems, radio links, office cleaning workers who work outside hours, road haulers, **night supervisors**, **inspectors** of energy transport lines (power lines, gas pipelines), etc. There may also be opportunities to work in solitude in places that normally see the presence of numerous employees: control rooms of chemical plants, refineries or thermal power plants, warehouses, deposits, technical rooms, archives, etc. There are also situations in which the **elderly** find themselves **alone in their own home** or in **the nursing homes**. Loneliness is a danger that must be taken into consideration. **Consequently, the most suitable means must be identified to ensure the remote control of the person's status and the immediate alarm signaling in the event of an accident, injury or illness in order to obtain the fastest possible intervention,**



BAI system presented by Tonali E.A. **operates through dedicated devices**:

- **two transmission devices** supplied to the operator (one primary and one spare, clone of the first) to send the message with or without its interaction
- **a receiving apparatus.** The receiver forwards the signals to an intrusion control unit, even an existing one, through voltage-free analog connections using the relays present in the device. The intrusion control unit then sends a report to the remote surveillance Service Centers through the active security technological infrastructure.

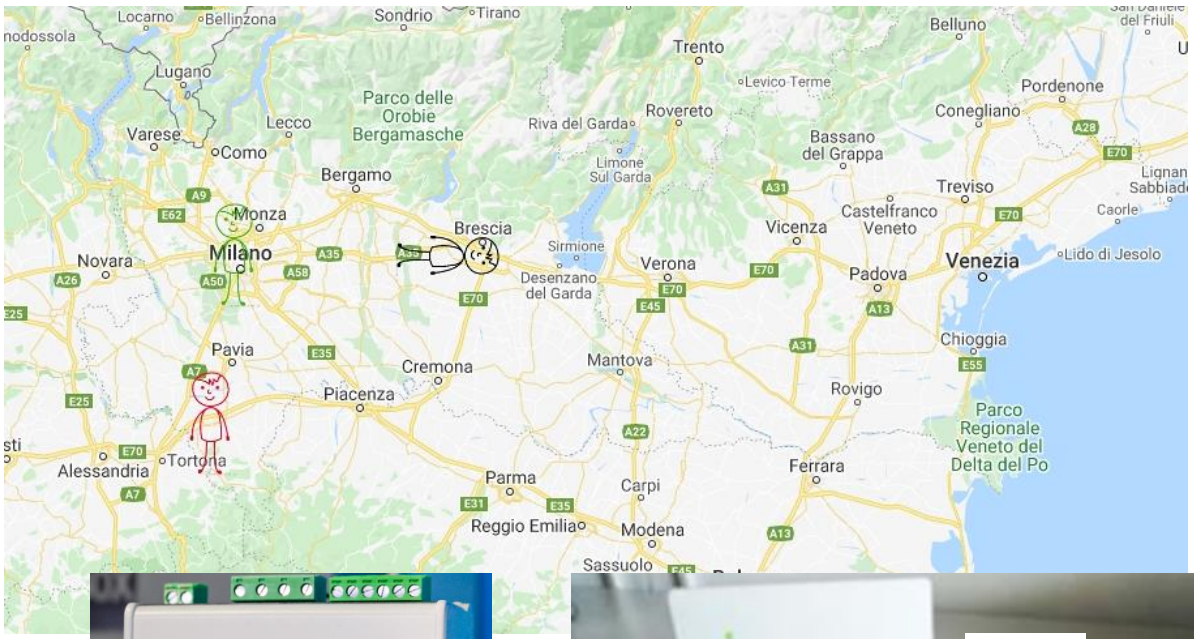
The radio connection between the receiver and transmitter is established both **Peer-to-Peer and through the use of a radio infrastructure** (such as access points or repeaters). The bidirectional radio channel is full duplex with a safety mechanism on the reception of data packets and relative recognition ("acknowledge") to avoid false signals or the repetition of the same alarm.

The detection times of pre-alarms and automatic alarms (loss of verticality and absence of movement) are defined on the receiver and can be configured via the web server supplied with the BAI.

How this system works

The elementary signal, originating from a generic action, is processed in consecutive steps until it assumes the meaning of an event, thus justifying the activation of an action.

The events and consequent actions are reported, via an intelligent gateway, to the web platform that monitors all the BAI devices present in the area. With the image of a human silhouette, the point where the event occurred is also displayed (image shown below).



Gateway BlackBox

The collection of the data that define the events is entrusted to the BlackBox gateway which acquires them via WiFi signal at 2.4 GHz. From the gateway the data reaches the web management platform both in WiFi and in GPRS or TCP / IP mode. Other communication formats are possible upon request (such as the LoRaWAN® protocol).

When the system receives a report of overt risk for the person, an immediate communication is automatically activated to the control center or to the person dedicated to the company security department.

Reliable, always with you

Operating specifications

Radio interface operating on ISM frequency with a minimum range in a free area of at least 80m which can be extended by using repeaters also to ensure coverage in buildings with multiple floors.

The information exchanged between transmitter and receiver is protected by encryption methods based on standard AES algorithms.

The information transmission method is based on modulation techniques capable of guaranteeing high interference rejection: DSSS (Direct SpSequence Spread Spectrum) or OFDM (Ortogonal Frequency Division Multiplexing) are the modulation techniques integrated with collision detection mechanisms such as CDMA / CD.

Reliability tests

Trasmitter: once enclosed in its housing, the transmitter is always powered by its internal battery. The FW has been set up to manage the low-power mode of the Wi-Fi unit called "minimum modem sleep" which saves energy by preventing data loss. The connection with the receiver (AP) is activated at regular intervals to exchange the "beacon" frames; this allows to reduce consumption by guaranteeing the continuity of the connection.

Receiver: the receiver program consists of an application that listens on port 5000 waiting for a TCP connection made by its transmitters. The program listens indefinitely waiting for messages encoded in J-SON.

Transmitter module features

Power	With a standard type rechargeable battery that is widely used (non-proprietary) that guarantees at least 12 hours of operation and full recharge in one hour
Back-up battery	Easily replaceable by opening door
Verticality loss transmission	Automatic over 60"
Transmission for motionless detection	Automatic (configurable pre-alarm and alarm times)
Transmitter push buttons	SOS push button Pre-alarm and alarm reset push button
Pre-alarm and alarm signals	Internal buzzer and vibration
Back-up battery status	Automatic control
Transmitter / receiver connection status	Automatic control
Sizes	H 70 x L 50 x W 20 mm
Weight	Less than 80 g including back-up battery

Charging support features

Fixing	Wall mountable for housing the transmitter module.
Transmitter presence	Able to detect the presence of the transmitter in its housing
Charger	The holder also has a battery charger function
Connection	The battery charging connection is of the non-wearing type

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