

**tera**  
**4Energy**



## **IoT Solutions for Industry 4.0**

ENERGY MONITORING AND BUSINESS INTELLIGENCE SYSTEM



# ENERGY MONITORING SYSTEM

## Ensure compliance with Legislative Decree 102/2014

Monitoring energy consumption and being in compliance with the national energy efficiency action plan is a challenge for companies. In compliance with Legislative Decree n. 102 of 04/07/2014 all the subjects obliged to the diagnosis, will have to carry out complete **energy audits** every four years, carried out through measuring instruments dedicated to reporting the energy consumption of the departments and company services. Moreover, in addition to the subjects defined by law as "**energy-consuming**", those who have **ISO50001** certification, they have to continuously and accurately monitor energy consumption, which nowadays it's a must for any sustainability approach.

Electricity consumption monitoring and production can be carried out with «IoT» logic systems, installed on site and remotely monitored, which offer **real-time knowledge** of costs and company performance. With this information, in addition to fulfilling the obligations of diagnosis and energy monitoring, users are able to carry out **preventive maintenance of industrial machinery** and to act promptly before any overloads or breaks down.

# TERA4ENERGY

## Energy monitoring and efficiency solution for energy companies

Tera4Energy is an **energy management platform** for monitoring energy consumption in a capillary way, giving a synoptic overview in real time.

The system offers display and storage of information through a **dynamic 24/7 operational dashboard** containing detailed insights related to the types of consumption (production, general, auxiliary) and to the individual plants and machinery. In addition, the system generates **customizable alarms**.

Tera4Energy can be integrated **with third-party SW** or customization to implement automatic control functionality.







## HOW IT WORKS

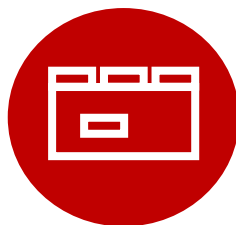


### Sensors and Actuators

Various types of sensors and actuators, available from third parties, are installed in situ to monitor and send information in real time to the peripheral computer. The ideal approach to reduce vendor lock-in for the benefit of the investor.

### GloE – Edge computer

The multiprotocol edge computer (control unit) interacts with the configured sensors, detects and processes the data received, and sends them to the *Tera4Energy* platform, or to any third-party SW, both on the physical server and on the Cloud. Being multiprotocol, it is compatible with any third party HW device and SW. This approach reduces the problem of the vendor-lock-in and allows modularity (start from one department and then extend to another) and scalability (increase to the capillarity of the solution at a later time by reducing the impact of the initial investment)



### Tera4Energy

Tera4Energy is an analytical platform that provides detailed analysis of energy consumption from the production site level to the individual device, in real time, identifying anomalies and providing users useful alerts. It can be integrated with third party SW.

## CONNECTED DEVICES CAN MEASURE:

### CONSUMPTION



- General consumption of production line / building;
- consumption of individual machinery and parts thereof;
- production line consumption;
- consumption of thermal machines (heat pumps, other thermal plants);
- production of photovoltaic systems;
- thermal energy in fluid systems (calorie), measuring fuel consumption.

### PROCESSES



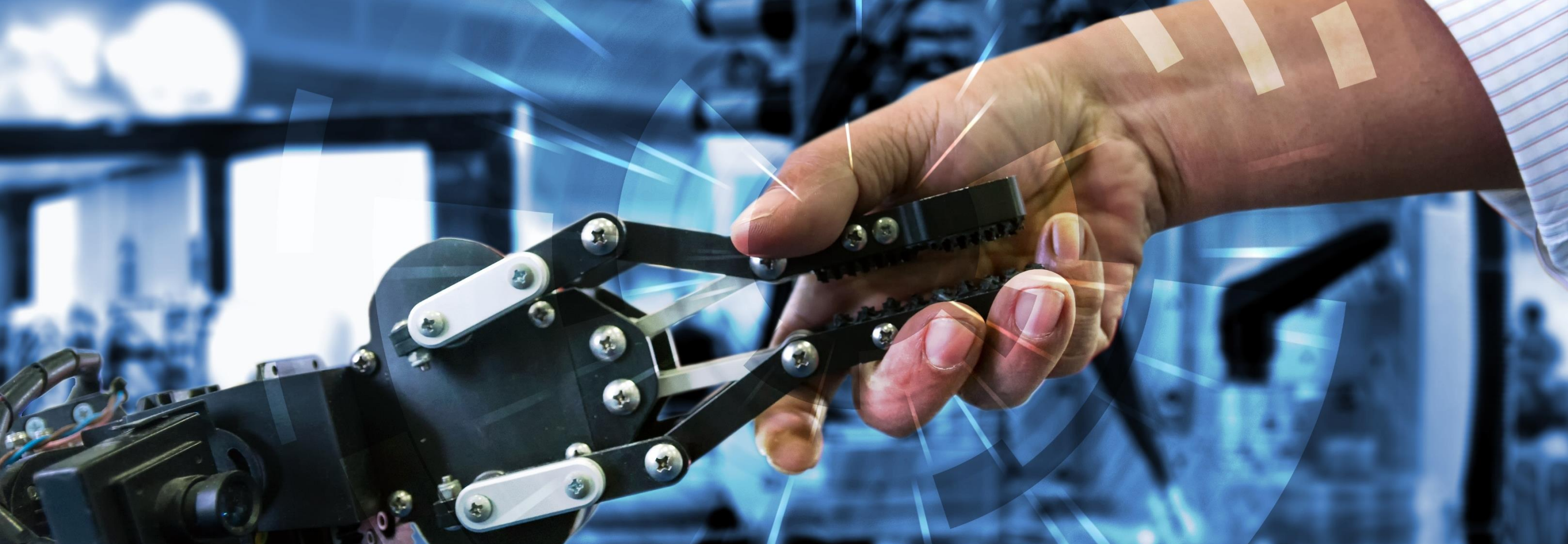
- Air temperature / humidity;
- presence of the operator on the machine;
- brightness in the work area;
- air quality in the work area;
- surface temperature, in contact and not (on machinery, production lines, manholes, tools of work centers, etc ..);
- gas / liquid pressures; force (load cells); liquid level; number of pieces produced / rejected
- Positions of people and objects

### ENVIRONMENT



- Soil moisture;
- soil water potential;
- leaf wetting;
- wind direction and speed;
- rainfall;
- solar radiation / brightness;
- atmospheric pressure;
- Various types of gas





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Thanks to Tera4Energy, we have saved 30% more in the bill. After evaluating the equipment and sites to be monitored and installing the sensors, we were immediately able to monitor energy production and consumption and prevent potential machinery breakdowns. Tera's experts supported us during the whole process and for the energy audit, allowing us to be in compliance with the regulations and improve business productivity.

*M.L. - Sachim*

# THE GLOBAL BENEFITS OF THE IoT APPROACH

- ✓ Optimization of corporate performances;
- ✓ Energy consumption saving;
- ✓ Updated and immediate knowledge of the state of health of the machinery;
- ✓ Production waste reduction;
- ✓ Product quality improvement;
- ✓ Costs saving and greater efficiency in maintenance operations;



Original Solutions for Energy Efficiency

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