4 July 2018 Hotel Casuarina @ Meru



Topic 2

"Energy Monitoring System" and system Software/Hardware technology for EMV that would function in any kinds of site and application

## **Facts & Figures**

#### **Innovative Services and Integrated Solutions for Energy Consumption**

- ✓ Energy Team Spa was **founded in 1996** in Milan, Italy, by young passionate professionals with an intuitive idea to develop efficient solutions for the effective use and monitoring of energy resources
- ✓ Over **20 years' experience** in providing energy management solutions
- √ 80 employees 30 of which in the R&D area
- About 9.000 customers worldwide
- ✓ Meeting the needs of operators from all sectors, from large factories to the service industry
- ✓ All products are entirely **designed and created in Italy**, <u>MADE IN ITALY</u> distributed by our own sales network and distributors worldwide
- A constantly growing and developing Company

- ✓ ISO 9001:2008 certified since 2009
- ✓ ISO 50001:2011 certified since 2011

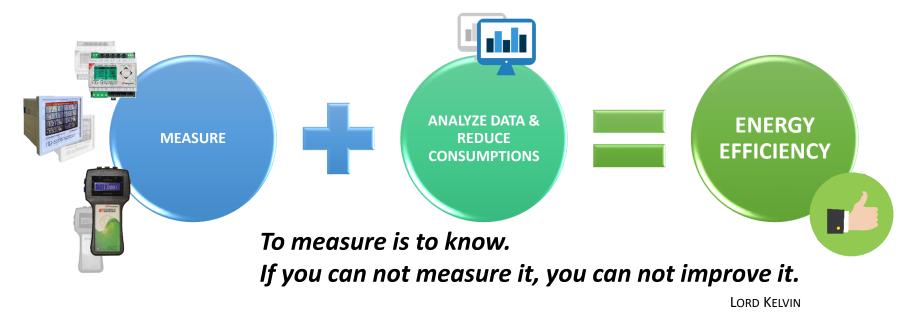




## **Mission**

#### **Innovative Services and Integrated Solutions for Energy Consumption**

- ✓ We bring innovation to life!
- ✓ We create innovative solutions from designing the concept to bringing innovative ideas to life.
- ✓ We develop products and services to exploit the most important, ecological and economical available resource that is energy efficiency, often hidden in our unconscious daily wastes.





### What we do

#### **Innovative Services and Integrated Solutions for Energy Consumption**

## ELECTRICITY, WATER, COMPRESSED AIR, GAS, THERMAL ENERGY etc.

- ✓ The right monitoring solution for all energy utilities.
- ✓ Innovative hardware + software integrated solutions to achieve high Energy Efficiency levels.



## WEB

#### DATA PUBLICATION

- ✓ Your energy data just a click away.
- Powerful web based software to collect precious information from all your measuring devices.
- ✓ Online data publication and analysis.

#### **ENERGY ANALYSIS**

- ✓ Analyze all data acquired by the monitoring system.
- ✓ Evaluate potential savings and improve your energy performance.
- ✓ Upgrading your monitoring solutions.



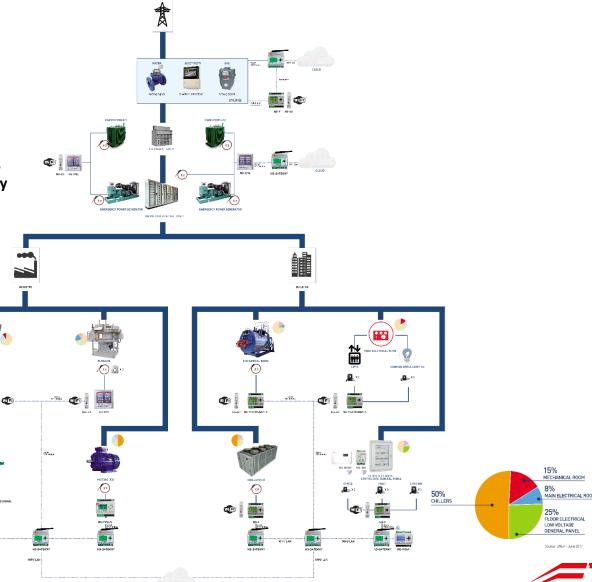


## **Our Solutions**

#### Precious tools for all users operating in the field of Energy Efficiency

- ✓ Energy Managers
- ✓ Facility Managers
- ✓ Production Managers
- ✓ Energy Consulting firms
- ✓ ESCO's (Energy Saving Company)
- ✓ Energy Certifications Diagnosis, Audit, ISO 50001 and White Certificates in Italy

50% MOTORS



## **Benefits**

Energy Efficiency can be a strong factor of competitiveness on the global market



Energy management interventions following the identification of energy waste areas



Better management of the Energy cost center



Replacement of old technology with updated efficient solutions



One monitoring system for all subsidiaries



Employees' awareness on a responsible use of energy



## **Our worldwide Partners**

Extremely versatile solutions that can be employed in many different situations as shown by our customers from many different sectors.













































































MICHELIN











**#** Heineken





















To see more visit our web: http://www.energyteam.it/en/customer-portfolio/



## **Internationalization Project**



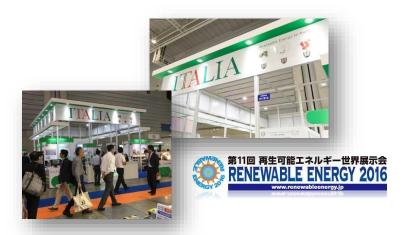
**Energy Team at Hannover Messe - Germany** 2013 to 2018



Energy Team at Light+Building 2018 - Frankfurt



Energy Team at Middle East Electricity 2017 - Dubai



**Energy Team at Renewable Energy 2016 - Yokohama** 





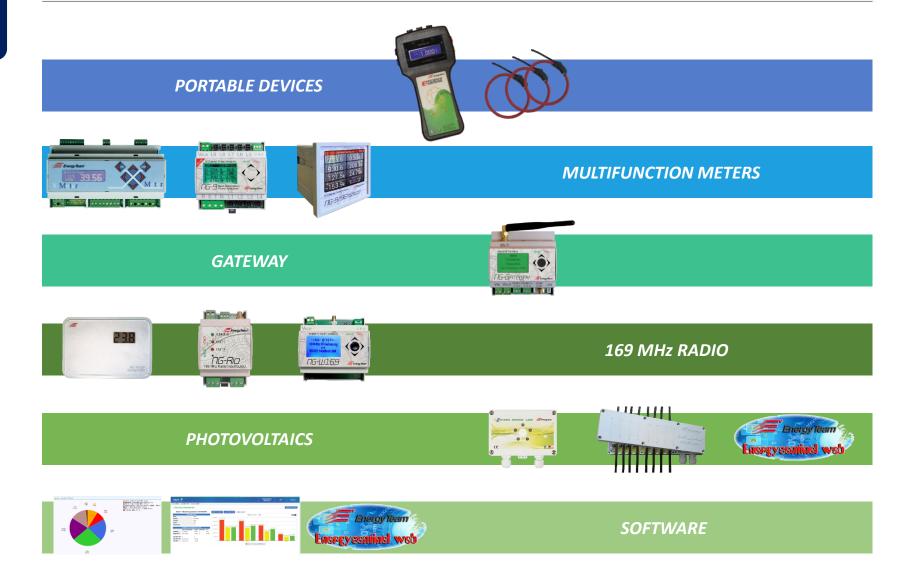


**Chapter 2** 

Our best selling Products – Hardware & Software



## Our best selling Products – Hardware & Software





## Products - Hardware • • • •

#### **X-Meter**

**Electrical Network Analyser** 







Electrical mains analyzer.

Data logger

- Electrical mains analyzer and Data logger
   in a single instrument
- A wide range of modules is available to cover any needs from extended Memory to Digital Inputs, Temperature measurement and Loads' Management.



Expansion and modularity (memory, digital inputs, GSM/GPRS modem, Ethernet, power quality).



Many features, 1 instrument



## Products - Hardware • • • •

#### NG-9

9 lines network analyser









Save 85% on installation costs

160 parameters via RTU Modbus

The world' smallest analyser



Special probes with 1 to 8000A range



Combine split CT's and Rogowski coils



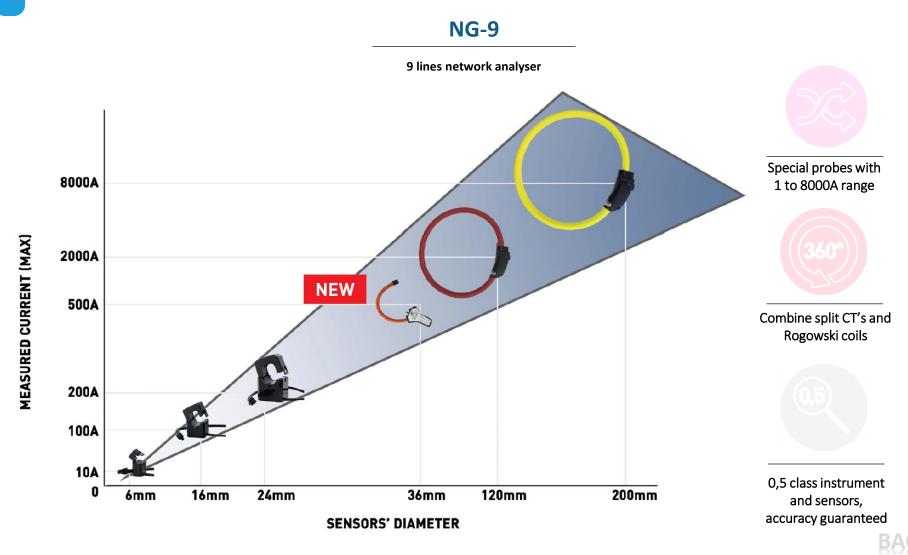
0,5 class instrument and sensors, accuracy guaranteed



**New Generation** sensors to acquire **Temperature**, **Status**, and **Digital signals** 



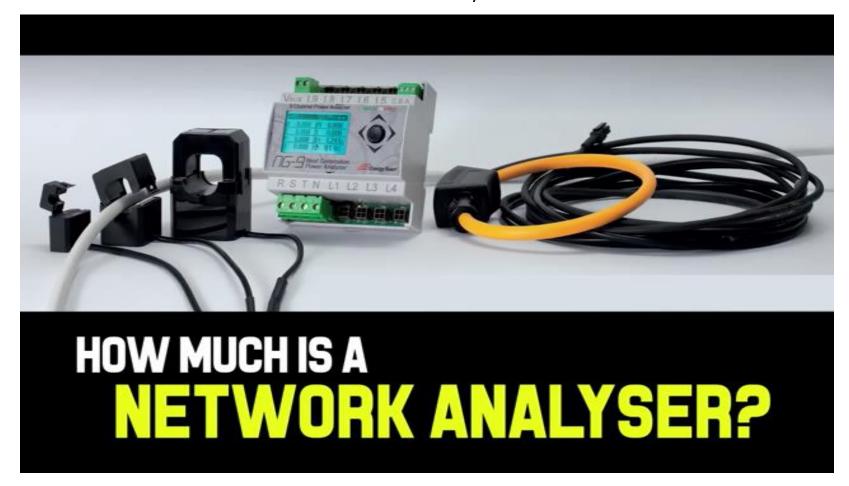
## Products - Hardware • • • • •



## Products - Hardware • • • •

#### NG-9

9 lines network analyser

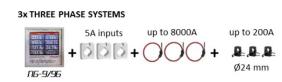


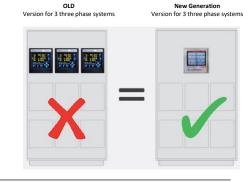
## Products - Hardware • • • • •

#### NG-9/96

Colour Touchscreen LCD Display
Multifunction meter





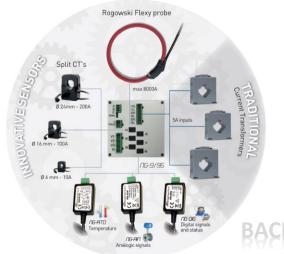


Measure 3 three-phase lines with a single instrument

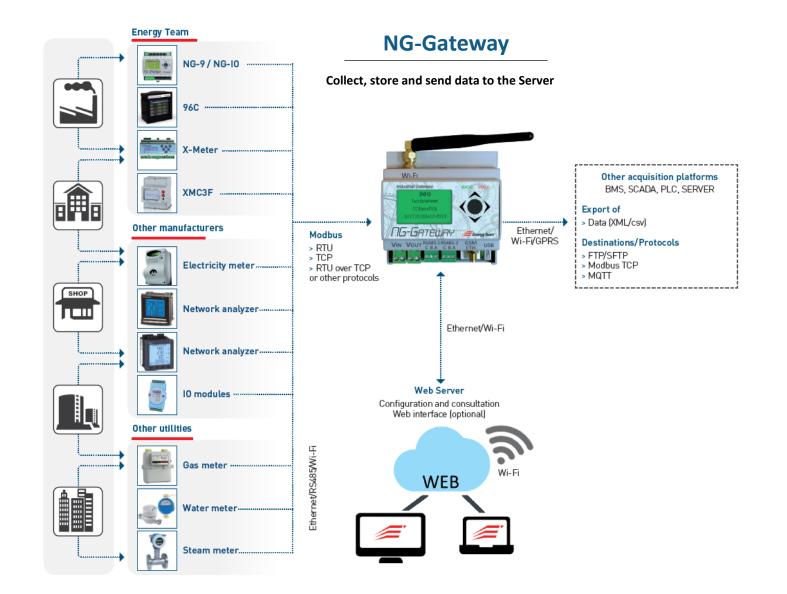


Easy sensors Plug in

## Three Multifunction Meters in only 1 device



## Products - Hardware • • • • •



## Products - Hardware • • • •

#### 169 MHz Radio

**Sensors and Gateway** 



**NG-TH169** 

Room Temperature and Humidity 169MHz radio sensor



NG-Rio

Loads' remote control



**NG-W169** 

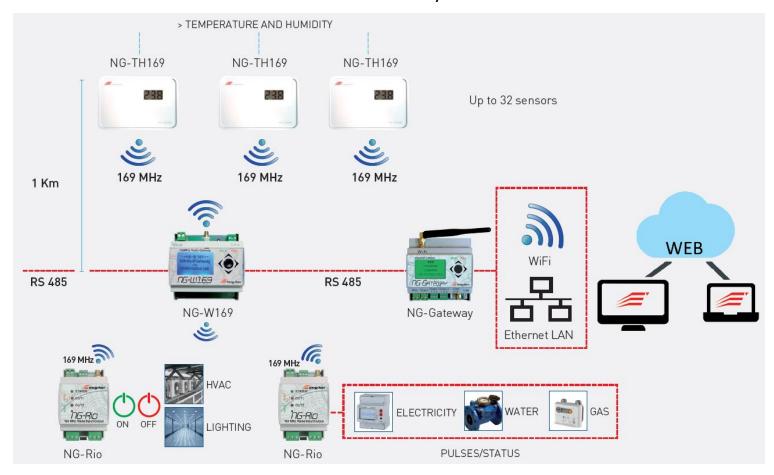
Radio receiving module



## Products - Hardware • • • • •

#### 169 MHz Radio

#### **Sensors and Gateway**



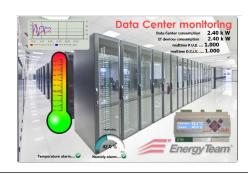
## Products - Software • • • •

#### **Energy Sentinel Web**

**Energy management and monitoring** software







Your energy data online, anywhere, simple.

Data analysis

Personalised Dashboard



for the Photovoltaics

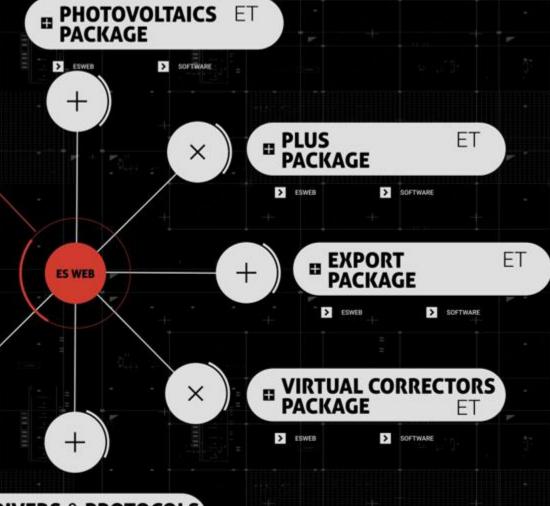


# ES WEB STANDARD PACKAGE

DASHBOARD PACKAGE

> SOFTWARE

> ESWEB

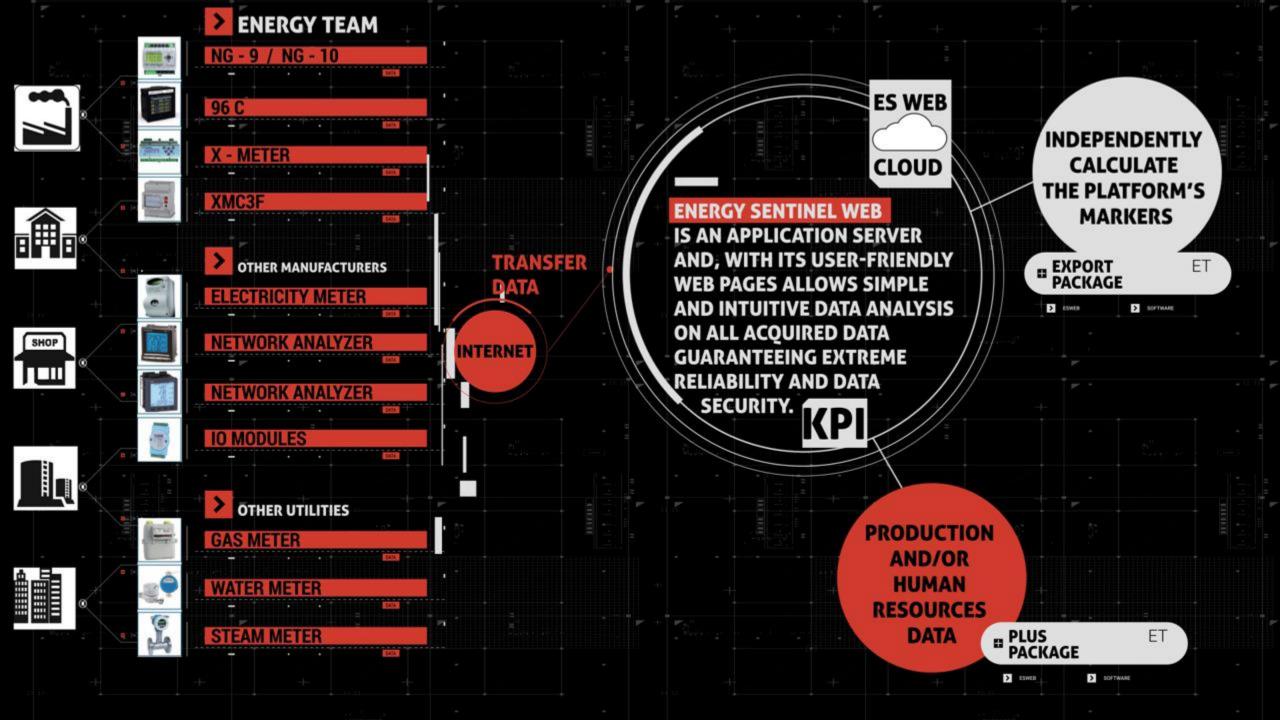


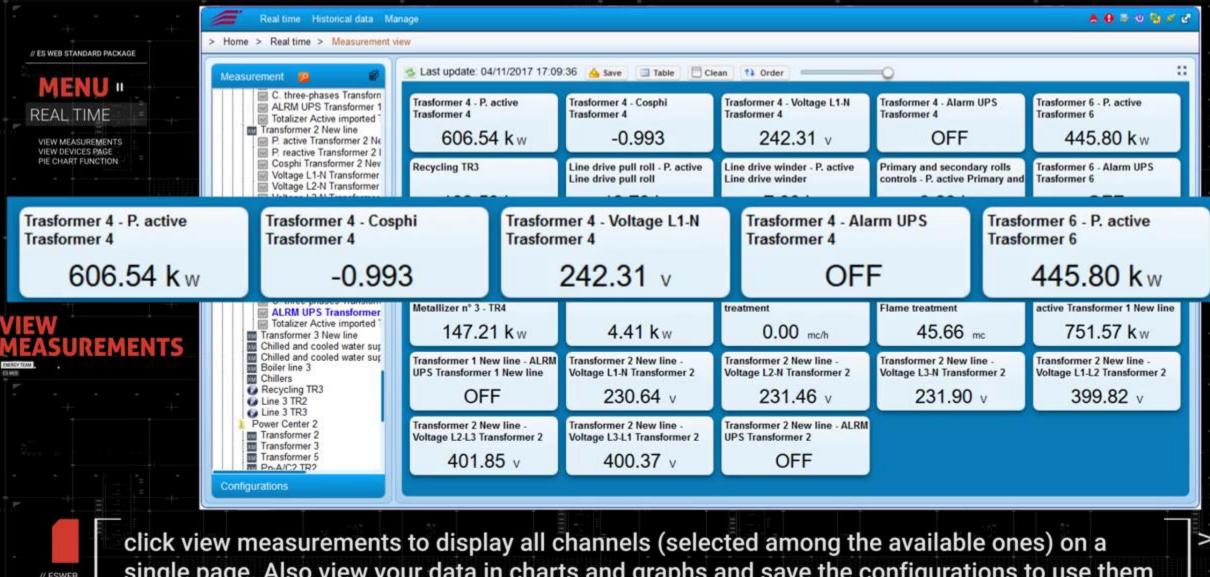
DRIVERS & PROTOCOLS PACKAGE

> ESWEB

X

> SOFTWARE

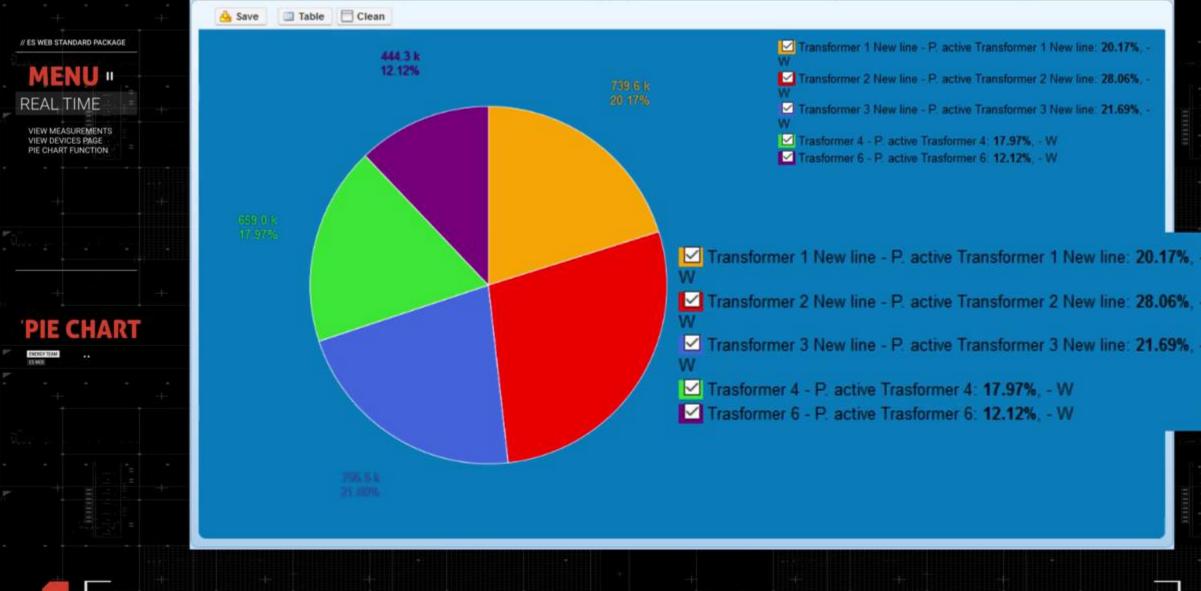




// ESWEB

single page. Also view your data in charts and graphs and save the configurations to use them afterwards.

Control the predisposed instruments' outputs such as X Meter and X R W U with Energy Sentinel Web.





Use the pie chart function to view your data in a circular chart with the values and percentage values of the total.

MENU II

HISTORICAL DATA

HISTORICAL DATA
PERIODS COMPARISON
PILE GRAPH
BANDS CHARTS
PIE CHART
PERIODS SUMMARY
REPORT
SCATTER PLOT
CARPET PLOT
EVENTS LOG
HARMONICS
ALARMS LOG
EXPORT
MANAGEMENT PROFILES

PILE GRAPH

CHEMICAL TRANS



03/14/2017

Total 7.306 M

LV Factory Total [W] 4.462 M (61.08%)

Extrusion Line 2 [W] 1.370 M (18.75%)

Extrusion Line 3 [W] 1.238 M (16.94%)

Atlas Slitter PS02 [W] 15.47 k (0.21%)

Cost Center - Kampf Slitter PS03 [W] 12.89 k (0.18%)

> Metallization [W] 207.5 k (2.84%)



The pile graph function allows historical data visualisation in a single chart to easily spot data values and each measure percentage value within a set group (cost centers for instance)

# ES WEB STANDARD PACKAGE

#### MENU

#### HISTORICAL DATA

HISTORICAL DATA
PERIODS COMPARISON
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#### REPORT

ENGINE TEACHER

from 03/01/2017 to 03/31/2017	00:00 - 23:59
Electrical Line [kWh]	5955792,5
LV Factory Total [kWh]	3288143,5
Extrusion Line 2 [kWh]	972971,3
Extrusion Line 3 [kWh]	952144,2
Secondary Slitters [kWh]	25649,7
Recycling [kWh]	490130,7
Metallization [kWh]	112642,1
Services [kWh]	45585,0
Utilities [kWh]	45213,3
Rolls Handling & Packaging [kWh]	3339,8
Kampf Slitter PS03 [kWh]	9078,6
Atlas Slitter PS02 [kWh]	10894,3
TOTAL GAS Line [Nmc]	11259,0
GAS LV Factory Total [Nmc]	8143,5
Gas Extrusion Line 2 [Nmc]	2971,3
Gas Extrusion Line 3 [Nmc]	144,2



One of the reports available is the "Total Consumption" one that groups a set period of time's data in a single file divided, for instance, per cost center.

Another report example could be a bands synthesis per hour with consumptions per hour, per day and total of the selected period.



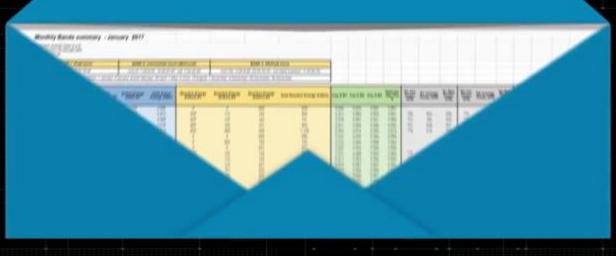
#### MENU

#### HISTORICAL DATA

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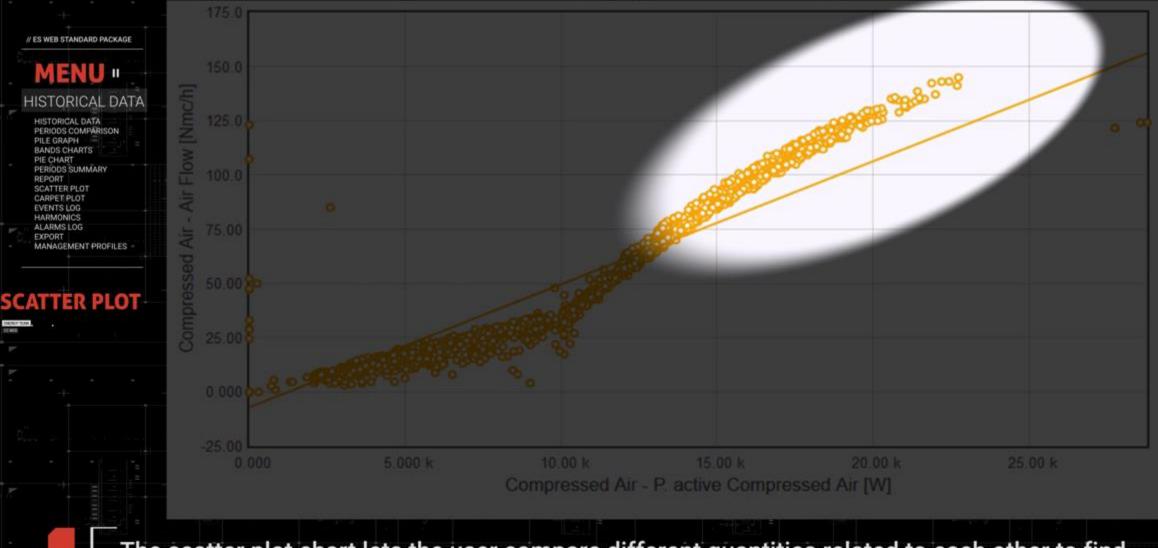
#### REPORT





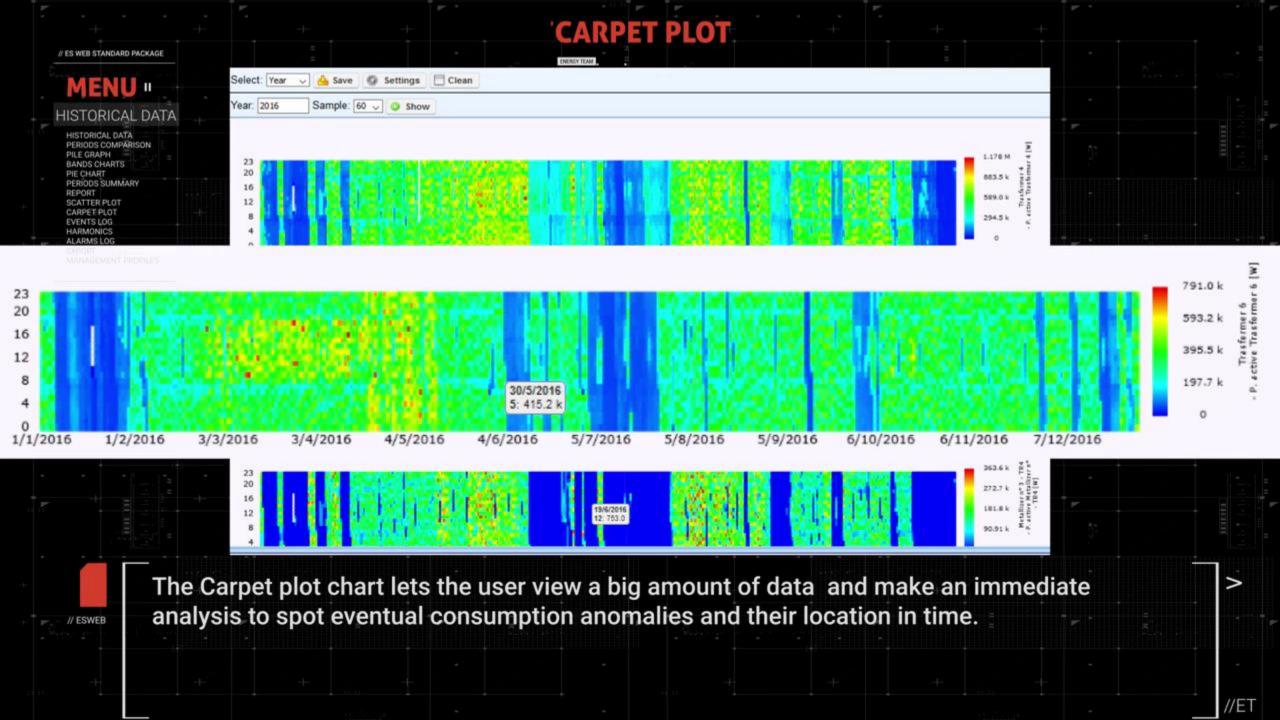


There are various kinds of reports that can also be personalised. The system allows automatic sending of emails with the configured report to the user so they do not need to access it.



// ESWEB

The scatter plot chart lets the user compare different quantities related to each other to find the better performance. For instance, this compressor's air production is related to its energy consumption and is quite clear that the machine's highest efficiency coincides with it being near to the 100 percent of its energy consumption.



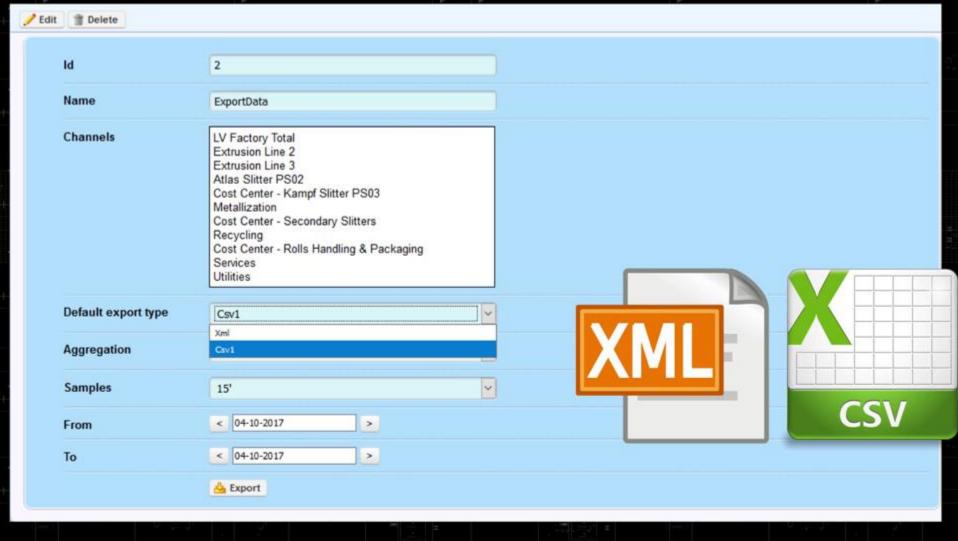


#### HISTORICAL DATA

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ALARMS LOG
EXPORT

#### **EXPORT**

22,903





The export function lets the user download the historical data acquired by the system on to xml or csv files (excel files). The user can set the number of channels, analysis period and aggregation time.

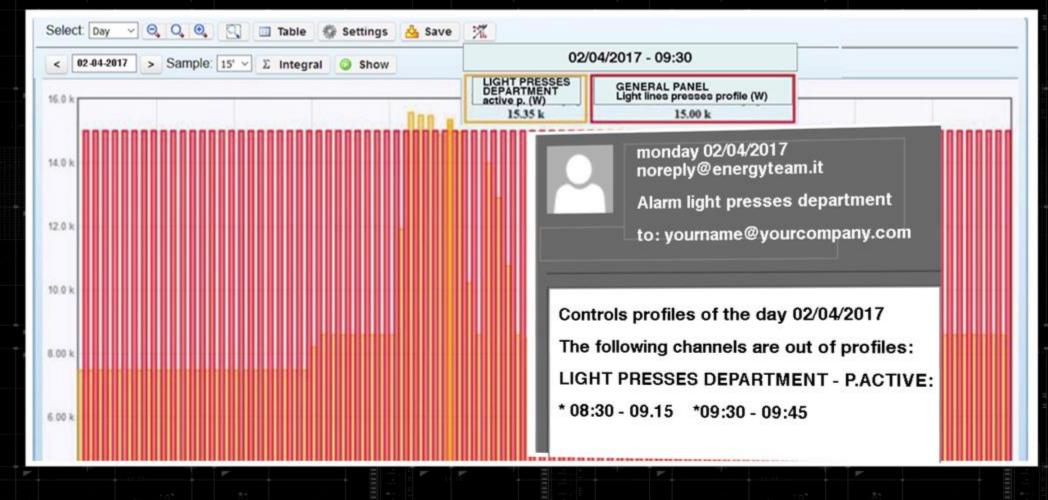
MENU II

// ES WEB STANDARD PACKAGE

HISTORICAL DATA
PERIODS COMPARISON
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ALARMS LOG
EXPORT
MANAGEMENT PROFILES

#### MANAGEMENT PROFILES

STATE OF





The scope of creating different management profiles is that of comparing the acquired data with a theoretical profile forecast by the user (Baseline). The server can automatically manage the data and warn the user in case of set threshold values exceedance. This function in particularly useful to spot possible anomalies in the plant's efficiency or changes from the forecast values that may be caused by unforeseen factors.

#### MENU "

AUTOMATIC ES WEB REPORT SENDING TO YOUR E-MAIL

ARMS LOG



The Alarms log function lets the user configure alarms based on real time or historical values and send them via email and/or S M S. Some examples of possible errors that can occur: communication (in case of the server not connecting to the device), generic contact error (from a contact's status), threshold error (generic - mobile - relative) from the comparison with set threshold values. (for instance, temperature and consumption management profiles)



ET

> ESWEB

SOFTWAR

// ES WEB

## PACKAGE EXPORT

**EXPORT DATA MAINLY AS:** 

XML FILES
A.P.I. (APPLICATION PROGRAM INTERFACE)
DATA REPLICATING TOWARDS
EXTERNAL DATABASES
MODBUS T C P SLAVE



This package was introduced as a response to the need of sending instant and historical data acquired by E S WEB to external systems (scada, SAP, PLC) for K P I elaboration. The Export package includes a series of additional functions compared to the previous packages.



#### ES WEB PACKAGE

EXPORT DATA MAINIV AS

XML FILES A.P.I. (APPLICATION PROGRAM INTERFACE) DATA REPLICATING TOWARDS EXTERNAL DATABASES MODBUSTIC P SLAVE



ENERGY TEAM



ET SENDING THROUGH







The function for x m I export of alarms includes the x m I export and the f t p sending of all alarms occurred since the last sending.

The data function (x m l format and for f t p sending ready) is for all historical and real time data export as well as client's data.

# ES WEE

#### ES WEB PACKAGE

#### **EXPORT**

EXPORT DATA MAINLY AS:

XML FILES A.P.I. (APPLICATION PROGRAM INTERFACE) DATA REPLICATING TOWARDS EXTERNAL DATABASES MODBUS T.C.P. SLAVE

#### DATA REPLICATING TOWARDS EXTERNAL DATABASES

ENCHICY TEAM





Data replicating towards external databases is the function for replicating both real time and historical databases on to other databases.

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#### ES WEB PACKAGE

#### **EXPORT**

EXPORT DATA MAINLY AS:

XML FILES
A.P.I. (APPLICATION PROGRAM
INTERFACE)
DATA REPLICATING TOWARDS
EXTERNAL DATABASES
MODBUS T.C.P. SLAVE

#### MODBUS TCP SLAVE

ENERGY TEAM



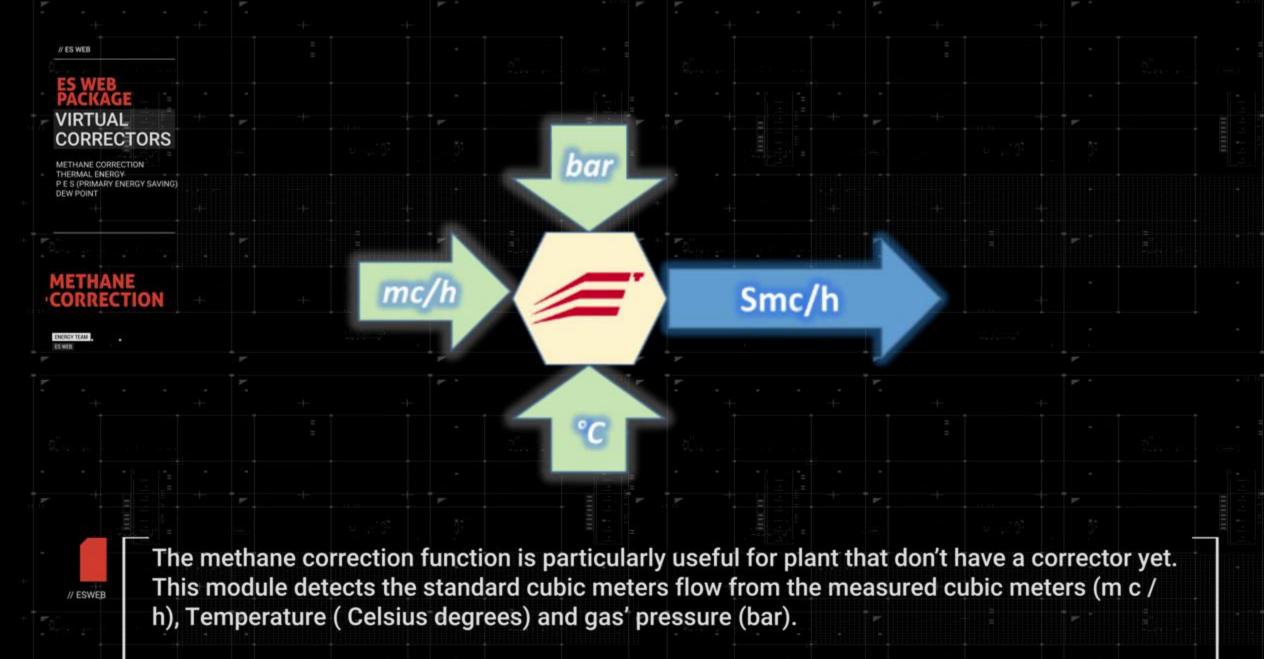


Modbus T C P slave – online data reading is the function that enables the option for reading instant data from the devices via Modbus t c p.

The other option available is the outputs management slave Modbus t c p one that lets the user control modules with digital outputs, with commands coming from external sources.

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### VIRTUAL CORRECTORS

METHANE CORRECTION THERMAL ENERGY P E S (PRIMARY ENERGY SAVING) DEW POINT

## THERMAL

ENERGY TE



Thermal energy: this function is particularly useful to define produced power/thermal energy values; for instance, measuring a fluid's flow and its supply and return temperature. Inputs values (Density, thermal capacity, flow, temperature) should be acquired by probes installed on the instruments involved.

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# ES WE

#### PACKAGE VIRTUAL CORRECTORS

METHANE CORRECTION THERMAL ENERGY P E S (PRIMARY ENERGY SAVING) DEW POINT

#### P.E.S Primary Energy Saving

ENERGY TEA





The P E S (Primary Energy Saving) function shows the relative energy saving that can be achieved from a cogeneration plant compared to separated plants for thermal energy and electricity production. The value is a percentage and can be used to obtain the "High performance cogeneration" qualification (2004/8/CE standard). The supply quantities are combusted energy, electricity, thermal energy.

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## DRIVERS AND PROTOCOLS

OTHER MANUFACTURERS'
DEVICES THAT CAN BE READ BY
THE SYSTEM



> ESV



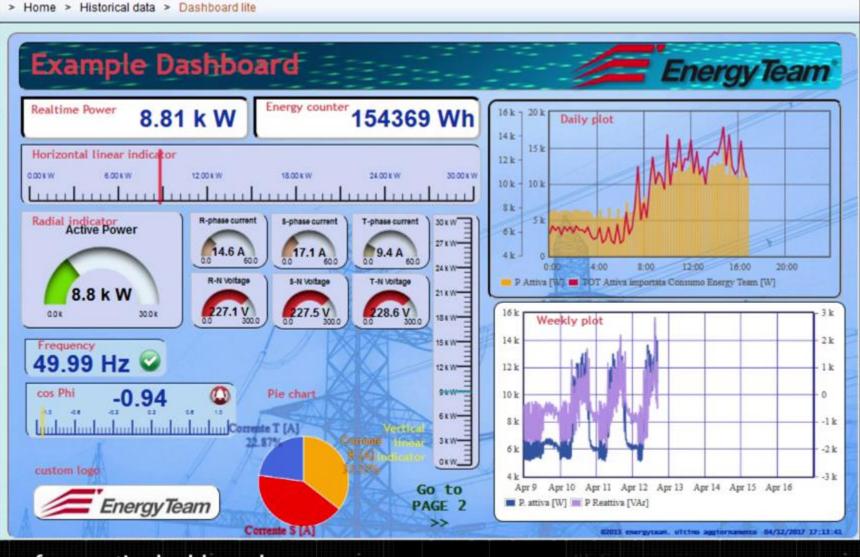
SOFTWARE

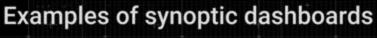


This option allows acquiring measurements and information from various devices even other manufacturers'. We specifically developed many drivers based on each manufacturer's technical specifications.



EXAMPLES OF SYNOPTIC DASHBOARDS





Graphic features, images and components' position and size are completely customisable.

HER WEE

#### PACKAGE PLUS

DAILY KPI
WEEKLY PREVISION
ALARM FOR DAILY TOTAL
EXCEEDANCE
DURATION CURVE REPORT
THERMIC DAY REPORT
GENERIC MODBUS DEVICE
GENERIC SIMP DEVICE
GENERIC BACNET DEVICE



#### DAILY KPI

ENERGY TE

## CALCULATE

the relation between energy consumption and daily production



The daily K P I function is specific for Key Performance Indicator elaboration. The system can calculate, for instance, the relation between energy consumption and daily production. Should this relation change, the system will notify the user.

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// ES WEE

#### ES WEB PACKAGE

DAILY KPI
WEEKLY PREVISION
ALARM FOR DAILY TOTAL
EXCEEDANGE
DURATION CURVE REPORT
THERMIC DAY REPORT
GENERIC MODBUS DEVICE
GENERIC SAMP DEVICE
GENERIC BACNET DEVICE

## ALARM FOR DAILY TOTAL EXCEEDANCE

ALARM



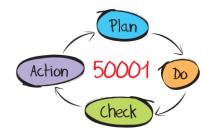
Alarm for daily total exceedance: this function lets the user monitor if one or more utilities' daily consumption's exceed each channel's set threshold values. The system is usually able to monitor the previous day's data (parameter to be set) to alert the user with an email should they exceed or be lower than a threshold value set by the user.

## Added value services for Energy Efficiency

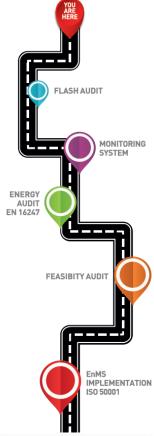
#### **The Efficiency Team**

A recently born **Business Unit** dedicated to our customers' needs to reach a higher awareness in their Energy cost centers management.

**UNI CEI EN ISO 50001:2011** gives the best picture of the steps to take to define an Energy Management System; this path is clearly represented by the 4 phases of the Deming Cycle (PLAN-DO-CHECK-ACT):



- ✓ Energy Review
- ✓ System **Implementation** / feasibility projects
- Energy performance review
- ✓ Analysis of the results to find further possible improvement targets.



## 10 good reasons to install an Energy monitoring system

- 1. To raise awareness and understand the actual energy needs
- 2. To continuously acquire Energy data to understand Energy usage and waste
- 3. To compare and verify your provider's Energy bills with an independent system
- Acquiring your facility's Energy data lets you understand the production plants' efficiency performance and intervene promptly in case of faults or anomalies
- 5. To monitor your Company's Energy information lets you evaluate the various Energy providers' offers on the market to choose the one that better suits your actual needs
- To acquire and manage your Energy data lets you evaluate the possible replacement of obsolete production machinery









- 7. To collect and analyse Energy data for a correct cost allocation on all production area
- 8. Share your Energy data with all employees to raise awareness on a more responsible use of Energy
- 9. Manage your Energy monitoring system to significantly improve your Energy savings in time
- 10. Install an Energy monitoring system to start the process of being ISO 50001 certified



## Why should you choose Energy Team?

- ✓ Because you can have a sole provider for your complete solution
- ✓ Because **we produce and manage ourselves** each and every element of your monitoring system (Hardware, Software, Assistance, Services, etc.)
- ✓ Because our mission is to **develop innovative solutions** and integrate systems for Energy efficiency
- ✓ Because we've been doing it for over 20 years, since 1996
- ✓ Because 9.000 customers guarantee, more than anything else, reliability and results brought by our solutions
- Because to use, research and innovation are not mere words but we turn them into actions
- ✓ Because technical support and Customer Care are the foundation of our solutions









We are what we repeatedly do. Excellence, then, is not an act, but a habit.

WILL DURANT





#### Thank you for your time and attention

#### Fabio Telli

Export Sales & Trade Marketing Manager fabio.telli@energyteam.it Skype: ftelli.energyteam

#### **Energy Team SpA**

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Certified Company ISO 9001 ISO 50001 OHSAS 18001 UNI 11352 Associated Company Fire Kyoto Club www.energyteam.it