

www.euratex.eu/set

Introduction to SET Tool and SET Web



Gessica Ciaccio – ENEA
gessica.ciaccio@enea.it



**SELF-ASSESSMENT
TOOL**



**LEGAL
OBLIGATIONS**



**INFORMATION &
TRAINING EVENTS**



**FINANCIAL
INCENTIVES**



Co-funded by the Intelligent Energy Europe
Programme of the European Union

ENEA

SAVE
ENERGY IN
TEXTILE SMEs



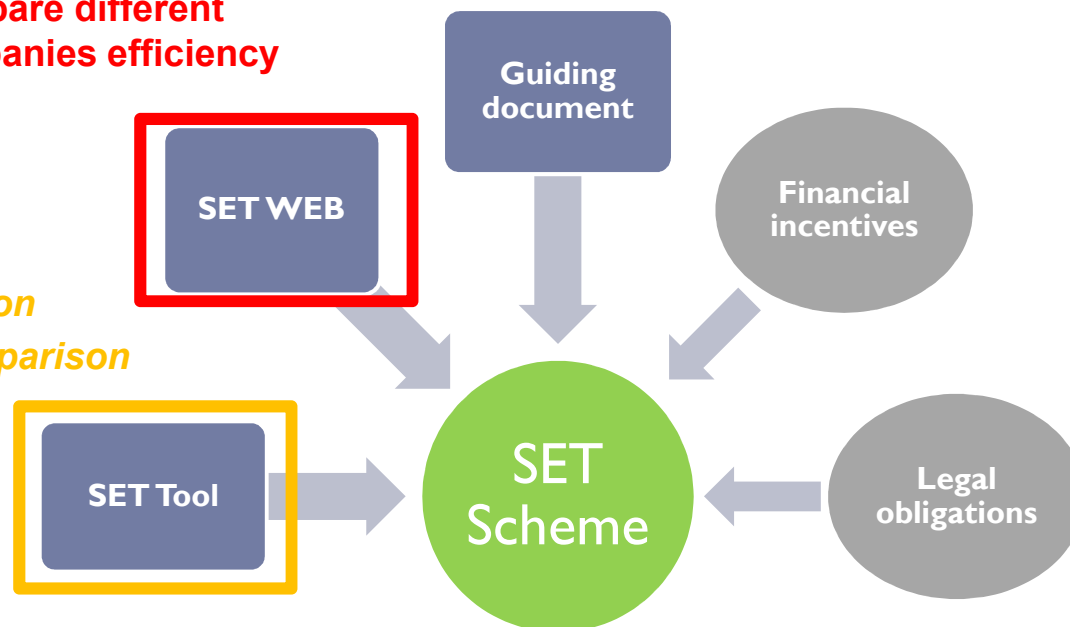
ENERGY
MADE-TO-MEASURE

SET results: SET Scheme, the structure



Web application:
Compare different
companies efficiency

SET Tool:
Energy uses
Savings Estimation
Investments comparison



Objectives

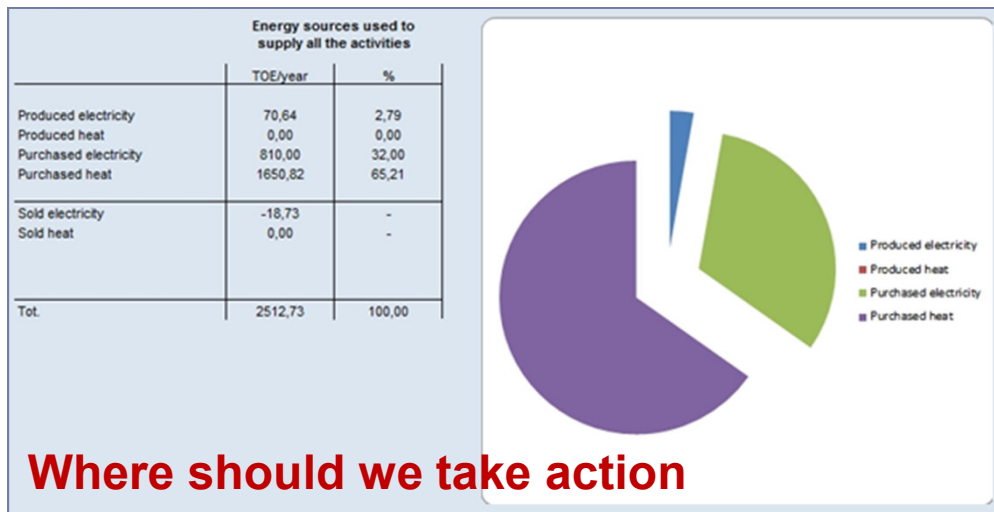
- make companies aware of the uses of energy and potential savings
- compare own performances towards those of analogous companies
- collect and organize own data

SET Tool/1



SET Tool is a free 40000 line code Excel application downloadable from www.em2m.eu/tools . It makes possible to:

- Analyze company energy consumption
- Get a list of measures for energy saving and costs reduction
- Evaluate saving achieved through the improvement of the energy efficiency



TOOL FOR ENERGY CONSUMPTIONS REDUCTION

Step 1 input → Step 1 output → Step 2 input → Step 2 output

To achieve a good analysis, you must type all the required data.

Select the language: English
Select the manufacture: Textile

Consumption analysis Step 1 | Investment evaluation

Reset consumption analysis | Reset investment evaluation

UniquelD (exchanged automatically)

Check my steam version
Select files to read data

ESET tool V 2.1

Get the most out this SET Tool

Usage: Fill of ESET Tool for data of 1 factory in 1 year

1. How much data? This tool works even with poor or incomplete data, however the more and most complete data you provide, the more accurate will be outcome and the potential benefits.
2. Who should use it? Any company manager or technician can address the first part (Step 1), technical staff is recommended to fill the second part (Step 2) which requires details on internal energy consumption and production data.
3. Why input quantities? Very often the perception of the energy consumption is misleading, quantitative data provides an objective picture. Accordingly the tool asks for quantitative rather than qualitative input.
4. Do I still need an energy audit if I use this tool? This tool does not replace an energy audit performed by a qualified auditor. However this tool can help your company in funding energy audits by collecting relevant data and creating awareness.

ENERGY MADE-TO-MEASURE

SAVE ENERGY IN SET
TEXTILE SMEs

Co-funded by the Intelligent Energy Europe Programme of the European Union



SET Tool/2



System requirements:

- Microsoft Windows XP (service pack 3 or later)
 - Microsoft Windows 7
 - Microsoft Windows 8.0/8.1
 - Microsoft Windows 10 (*we don't know for the future*)
-
- Microsoft Office 2007 (fully updated)
 - Microsoft Office 2010

SET Tool summary



- Any SET Tool (that is an Excel file) contains data related to a textile factory in a single year
- More detailed are uploaded data, more precise and reliable will be the results supplied by the tool
- SET Tool doesn't replace an energy audit performed by an expert of the sector
- Often the perception of the energy consumption is distant from the real data, therefore the Tool uses, when possible, quantitative data instead of percentages assigned in qualitative way
- Not all the energy and production data are easily available inside a company, therefore SET proposes three simple and progressive STEPS.



Co-funded by the Intelligent Energy Europe
Programme of the European Union



SET Scheme: the path



SET three steps:

- ▶ STEP 1: general annual data on consumption and production (SET Tool)
- ▶ STEP 2: detailed monthly data and description of the technologies used in the company (SET Tool)
- ▶ STEP 3: comparison of the performances of the factory and forecast of the consumptions based on the adopted technologies (SET Web)



Co-funded by the Intelligent Energy Europe
Programme of the European Union



SET Tool: Input/1



STEP1 INPUT: annual basic information

- general company information on yearly basis
- annual data on the purchased energy (optionally monthly turnover)
- annual data on the energy produced by renewable sources or cogeneration
- qualitative information on the auxiliary systems (lighting, heating, compressed air, technical fluids, machineries)

	Consumption (yearly)	Cost (yearly) - VAT excluded Euro	Monthly
Electricity	[Dropdown]	[Input] €	[Monthly]
Consumption band	[Dropdown]		
Natural gas	[Dropdown]	[Input] €	[Monthly]
Consumption band	[Dropdown]		
Other fuels			
Diesel	[Dropdown]	[Input] €	[Monthly]
LPG	[Dropdown]	[Input] €	[Monthly]
Heavy fuel oil	[Dropdown]	[Input] €	[Monthly]
Light fuel oil	[Dropdown]	[Input] €	[Monthly]
Gasoline	[Dropdown]	[Input] €	[Monthly]
Biomass (wood)	[Dropdown]	[Input] €	[Monthly]
Coal	[Dropdown]	[Input] €	[Monthly]
Teleheating	[Dropdown]	[Input] €	[Monthly]
TOTAL	[Input] kwhe	[Input] €	

STEP 2 INPUT: monthly information

- Monthly data on consumptions and production (if not inserted in the STEP 1)
- List of industrial processes and technologies (selection on three levels)
- Survey on the selected technologies

SET Tool: Input/2



Processes and Technologies

- Selection of the technologies on the basis of the selected processes
- Organization according to three levels (processes-phase-subphase), p.ie:
 - main process: Yarn Production
 - phase: Spinning
 - sub-phase/ technology: Spinning Air-jet
- The three supported processes are:
 - yarn production
 - fabric production
 - finishing

Yarn production

Preparation of the cotton fibers for the spinning

- Opening for cotton
- Carders
- Lap winders

Spinning

- Ring spinning
- Open-end spinning
- Air-jet spinning

Production of Fabric

Preparation to the weaving

-

Weaving

- Weaving with rapier loom
- Weaving with projectile loom
- Weaving with air-jet loom.



SET Tool Output/1



OUTPUT

- Graphic output on the monthly variations of consumptions and production
- Graphic regression analysis (your consumption vs. production and specific consumption vs. production)
- List of cross-cutting Best Practices and process specific ones

• The recommended Best Practices returned by the tool are selected through a system of rules from a list of 231 measures: cross-cutting and process specific.

• Besides the description of the suggested measures, information are supplied on potential savings, approximate costs, time to return and priority, when available.

	Kind of Best Practices	N. of BP		Available data
CROSS-CUTTING	Heating/Air conditioning		117	Description Fuel savings Electricity saving Investment cost Payback period Priority
	Electric motor			
	Compressed air			
	Pumping systems			
	Fan systems			
	Lighting			
	Steam / Hot water systems			
	Vacuum systems			
	Reduction of peak power			
PROCESS SPECIFIC	Yarn and sub phases	33	114	
	Fabric and sub phases	15		
	Finishing and sub phases	66		
Total			231	

SET Tool Output/2



Output Sheet: process specific suggested Best Practices

The production processes analysis together to industrial consumptions data suggests to evaluate the realization of the next measures of energy efficiency

CONTINUE

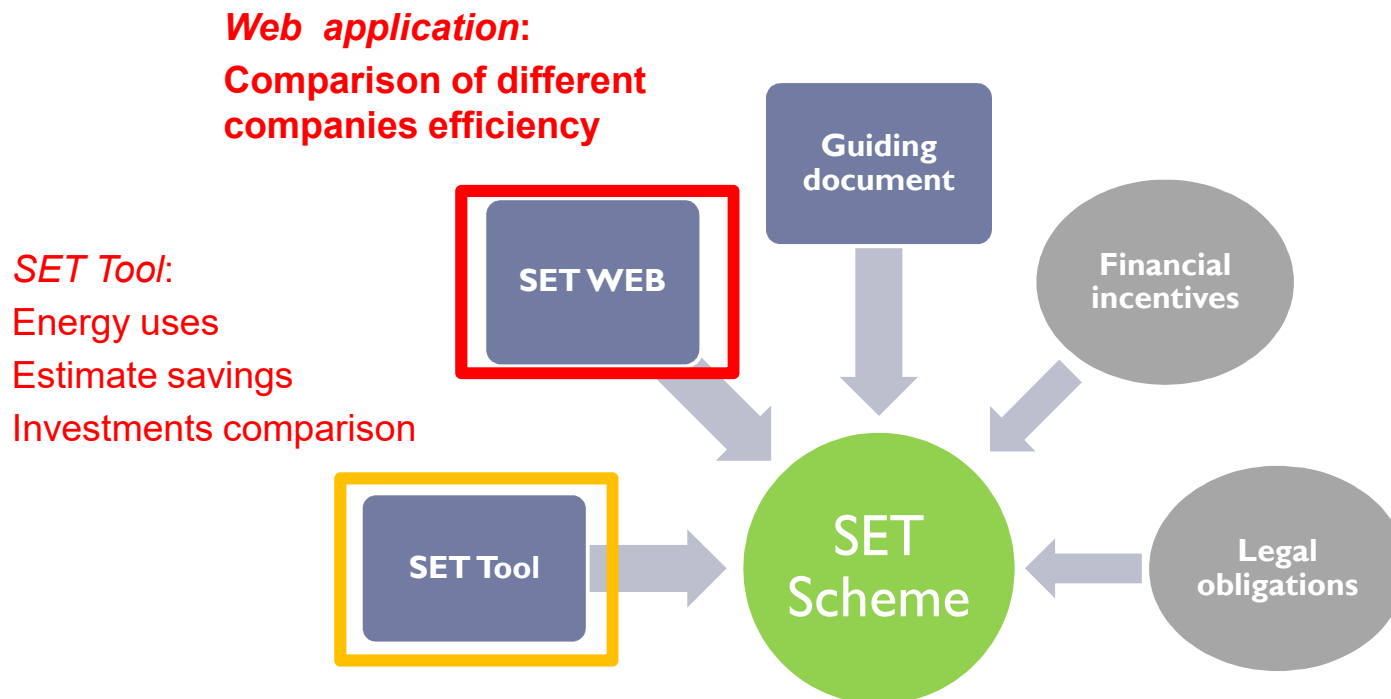
Category	Action	Cost	Fuel Economy	Electric energy savings	Pay back time	Priorities
1 Produzione di tessuti (2)	Start of periodic maintenance		no	Si	<1	1
2 Tessitura a getto d'aria (2.2.3)	Control of the pressure automatic valves installation	300/telaio	no	Si	<2	2



Co-funded by the Intelligent Energy Europe Programme of the European Union



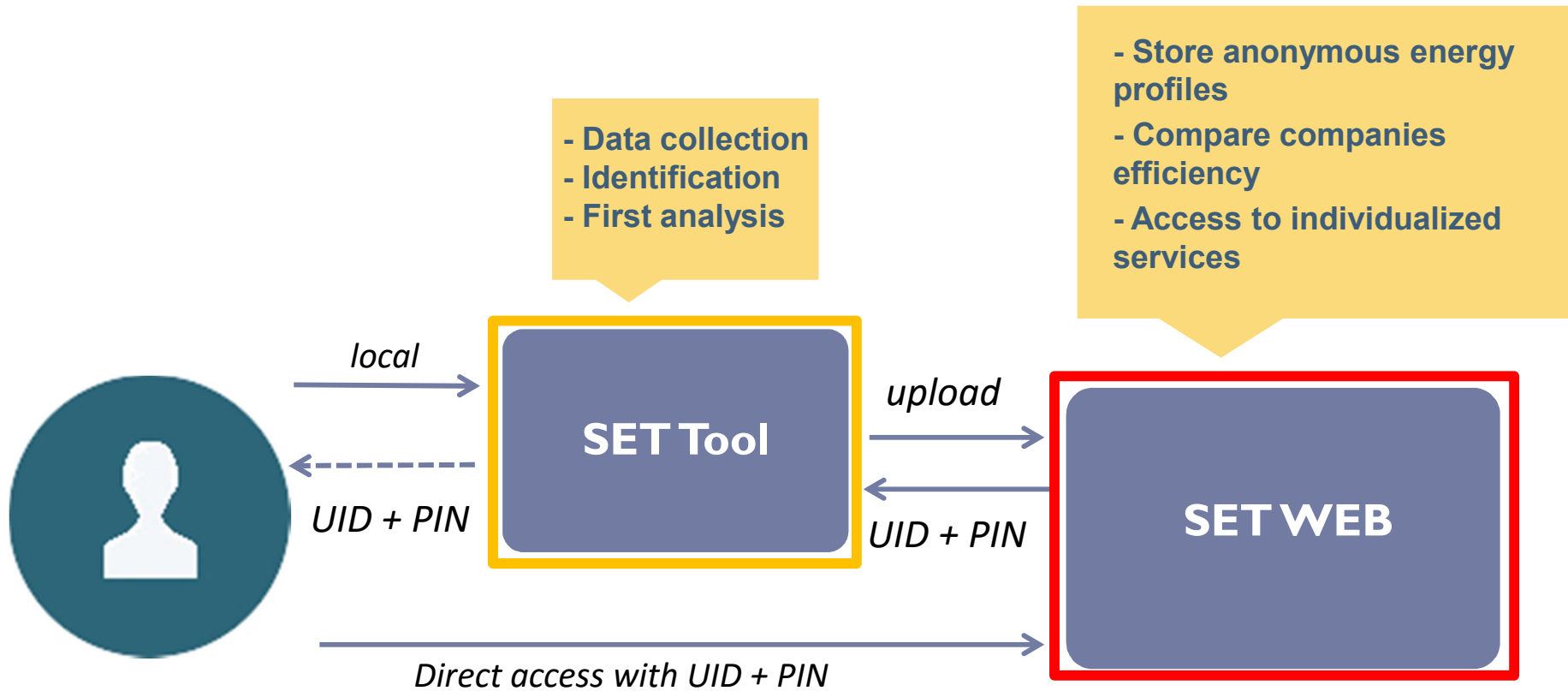
SET results: SET Scheme, the structure



Objectives

- make companies aware of the uses of energy and potential savings
- compare own performances towards those of analogous companies
- collect and organize own data

SET Scheme's components



Co-funded by the Intelligent Energy Europe Programme of the European Union



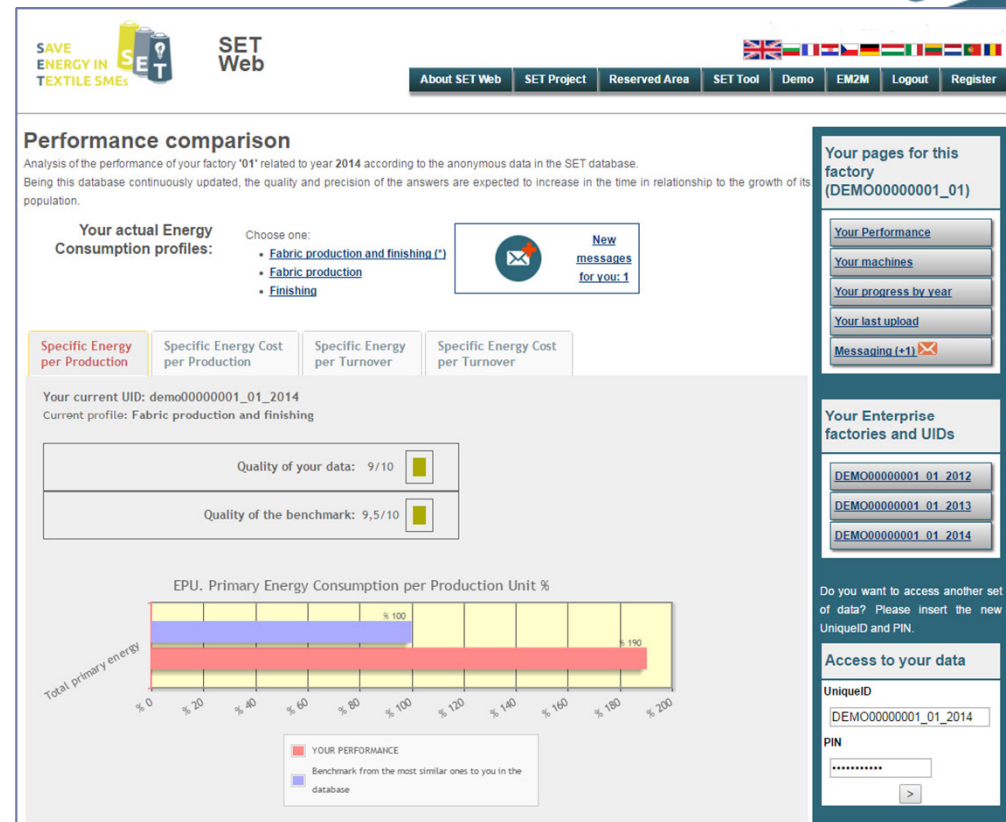
SET WEB



SET WEB it is a Web application accessible from SET Tool or from www.em2m.enea.it

It collects in ANONYMOUS form the energy data of the companies giving access to various services:

- comparison of performances with a dynamic sectorial benchmarking
- comparison of the indices related to different years
- comparison of singles technologies performances related to theoretical models
- a printable report of the dataset sent by the tool (to support possible follow-up)
- a messaging system that allows companies to evaluate how much reliable are the uploaded data



From SET Tool to SET WEB/2: Anonymous data



Uploaded data from SET Tool into SET Web are totally anonymous.

If data are uploaded with success, SET Tool receives and stores a UniqueID and a PIN, which will allow to view and update your data in a second time.

Example:

UniqueID = **EHQGP02878DT_01_2014**

- EHQGP02878DT, is the anonymous company code
- 01, progressive number related to the single examined factory
- 2014, year
- PIN (es. BMCO67520FP), related to the company

Your credentials

UniqueID (assigned automatically)
EHQGP02878DT_01_2014
PIN (assigned automatically)
BMCO67520FP
Last upload
18/07/2016



Co-funded by the Intelligent Energy Europe
Programme of the European Union



Da SET Tool a SET WEB/3

Uploading data to SET Web allows the company to:

- Have a unique ID and PIN for own data
- Get access to SET Web functions (compare own factory performances, special machine consumptions forecast, monitor own performances year by year)
- SET Tool will be the access point of your own data (company, factory, year) on WEB

Besides, uploading data in anonymous way allows to:

- Increase the database of benchmarks with more accurate performance indicators
- Receive support from experts for checking the data (adding a contact mail is optional but recommended)

Performances comparison page

By contributing you will be allowed to access more sectorial information.

eMail (optional)	<input type="text"/>	Retrieve your password
Password (optional)	<input type="text"/>	
Role	CEO	

If you have a proxy, please configure the connection before to send.

Proxy configuration

Send data anonymously

Compare YOUR performance

Your WEB services

The WEB services are enabled only after the successful uploading of the factory data (see point 2) and a Uniqueld is stored in your copy of the SET Tool (it looks like EJP4R43920GP_1_2013).

Quality checks of sent data are performed periodically; data that results unfaithful will be discarded and the access to the services revoked.



Co-funded by the Intelligent Energy Europe Programme of the European Union



SET WEB Output: Your performances

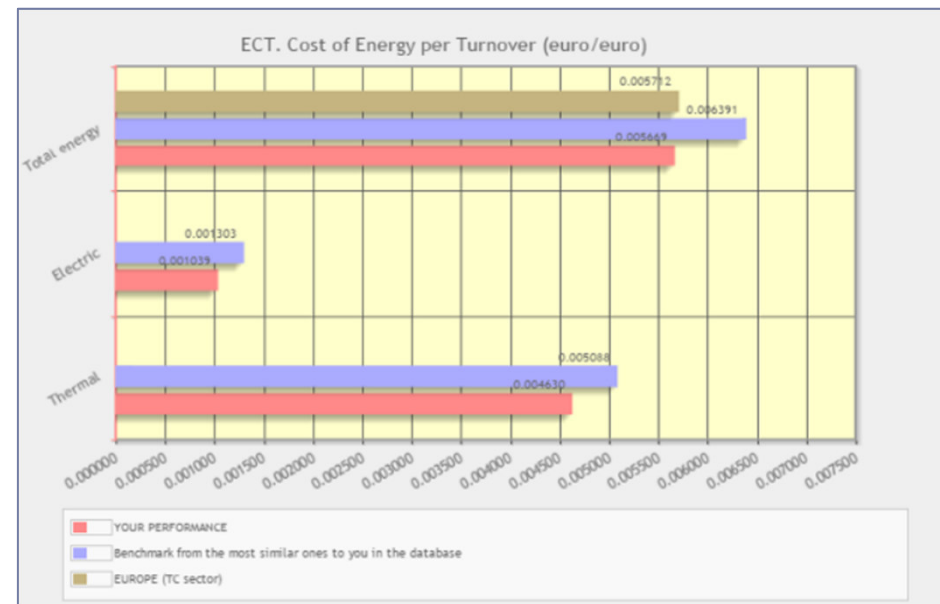


The sectorial dynamic benchmark built through the application of Set Scheme in European companies involved in Set project, is based on the followings indices (applied to the electricity and thermal consumptions):

- Energy consumption x production unit
- Energy cost x unit of turnover
- Energy cost x production unit
- Energy consumption x unit of turnover

After the data upload, own performances are compared against a benchmark built on the profile of the company, based on a group of similar companies.

BENCHMARKING



Me and my competitors



Co-funded by the Intelligent Energy Europe Programme of the European Union



SET WEB Output: Your processes year by year

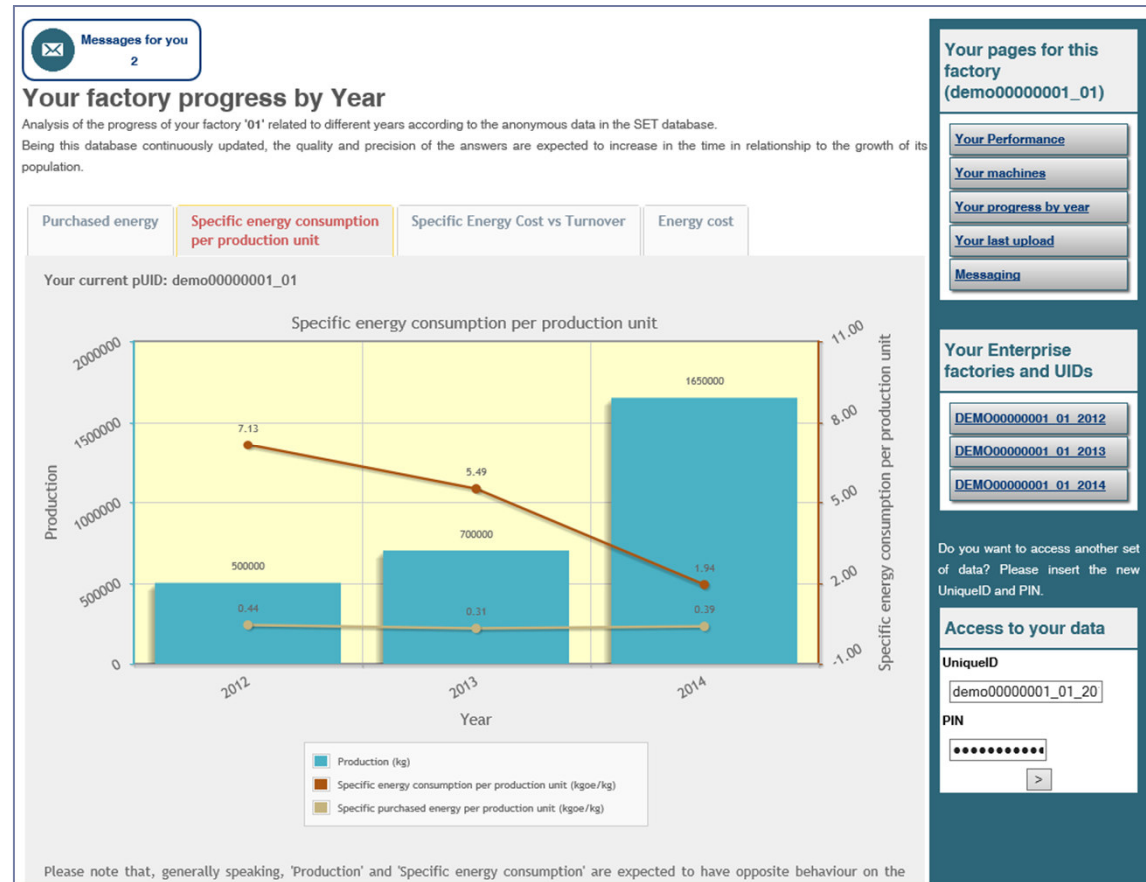


When factory data have been uploaded for different years, SET Web allows to compare the evolution of performance indicators year by year.

Have I improved my 2014 performance in comparison to 2013 and 2012?

Example:

When specific energy consumption grows following the production there could be some problem



SET WEB Output: your machines/1

Set Web allows the access to two models for forecasting of the consumptions for technologies of the yarn and textile production

Through these models the company can perform a comparison between the consumptions of its own machines and the expected results by the models, based on the technology and the mix of jobs on the machines.

Is this department efficient?

Choose the setting for your consumption evaluation
Time frame: refer data to the activities of the whole year (Year) and the whole factory or simply to a period (other) Year 2012

Your factory data
Change or complete these data

	Factory Electric energy (A)	% Electric energy for production (B)	Electric Energy for production C=(A*B%)	Your production (D)	
Total factory Energy consumption:	9560024 kWh	<input type="text" value="75"/> %	7170018 kWh	<input type="text" value="2141012"/> kg	>

Insert data about your (main) kind of production

Technology/machines	Raw materials blend	Yarn Count (Nm)	Yarn Use	Qty (kg) (d)	% (d/D%)	Expected EL Consumption (kWh)	
1.4.1 Ring-spinning	65% Polyester - 35% Cotton	61 Nm	welt yarn (carded)	<input type="text" value="500000"/> kg	23,35 %	1836000 kWh	>
1.4.1 Ring-spinning	65% Polyester - 35% Cotton	41 Nm	welt yarn (carded)	<input type="text" value="1250000"/> kg	58,38 %	2560000 kWh	>
1.4.1 Ring-spinning	100% Cotton	102 Nm	welt yarn (combed)	<input type="text" value="350000"/> kg	16,25 %	2509500 kWh	>

Expected consumption vs actual estimated

Figures used for estimation (declared for technologies/machines)		Electric energy expected consumption		Actual figures of your Factory			Evaluated deviation
Electric energy consumption for production (a)	Production (b)	Energy consumption for the whole production F=(a*D)/(b)	Specific energy consumption per production unit G=(F/D)	Electric energy consumption (C)	Production (D)	Specific energy consumption per production unit E=(C/D)	Evaluation (G-E)/E %
6894500 kWh	2100000 kg	7029146,3 kWh	3,28 kWh/kg	7170018 kWh	2141012 kg	3,36 kWh/kg	3,35 (+2%)



Co-funded by the Intelligent Energy Europe Programme of the European Union



SET WEB Output: your machines/2



Insert data about your (main) kind of production							
Technology/machines	Raw materials blend	Yarn Count (Nm)	Yarn Use	Qty (kg) (d)	% (d/D%)	Expected El. Consumption (kWhe)	
1.4.1 Ring-spinning	65% Polyester - 35% Cotton	61 Nm	weft yarn (carded)	500000 kg	23,35 %	1835000 kWhe	>
1.4.1 Ring-spinning	65% Polyester - 35% Cotton	41 Nm	weft yarn (carded)	1250000 kg	58,38 %	2550000 kWhe	>
1.4.1 Ring-spinning	100% Cotton	102 Nm	weft yarn (combed)	350000 kg	16,35 %	2509500 kWhe	>
<input type="button" value="Reset any change"/>							
Expected consumption vs actual estimated							
Figures used for estimation (declared for technologies/machines)		Electric energy expected consumption		Actual figures of your Factory			Evaluated deviation
Electric energy consumption for production (a)	Production (b) Share of total real production (b/D%)	Energy consumption for the whole production $F=(a \cdot D)/(b)$	Specific energy consumption per production unit $G=(F/D)$	Electric energy consumption (C)	Production (D)	Specific energy consumption per production unit $E=(C/D)$	Evaluation (G-E)/E %
6894500 kWhe	2100000 kg 98,1%	7029146,3 kWhe	3,28 kWhe/kg	7170018 kWhe	2141012 kg	3,36 kWhe/kg	 3,35 (+2%)

SET WEB Output: Messaging

► Messaging system that allows companies to:

- Receive warning messages on the reliability of the uploaded data, based on automatic validation
- Receive information and support from the experts of the Set project

The screenshot displays the SET Web interface. At the top, there is a navigation bar with links: About SET Web, SET Project, Reserved Area, SET Tool, Demo, EMZM, Logout, and Register. The main content area is titled "Performance comparison" and includes an analysis of factory '01' performance for 2014. It features a "Your actual Energy Consumption profiles" section with a "Choose one:" dropdown menu containing "Fabric production and finishing (*)", "Fabric production", and "Finishing". A "New messages for you: 1" notification is visible. Below this, there are four tabs: "Specific Energy per Production", "Specific Energy Cost per Production", "Specific Energy per Turnover", and "Specific Energy Cost per Turnover". The current profile is "Fabric production and finishing". A "Quality of your data: 9/10" and "Quality of the benchmark: 9,5/10" are shown with progress bars. A bar chart titled "EPU. Primary Energy Consumption per Production Unit %" compares "YOUR PERFORMANCE" (red bar at 190%) with a "Benchmark from the most similar ones to you in the database" (blue bar at 100%). The x-axis ranges from 0% to 200%. On the right sidebar, there are sections for "Your pages for this factory (DEMO00000001_01)" with links for performance, machines, progress, and messaging (+1), and "Your Enterprise factories and UIDs" with links for 2012, 2013, and 2014 data. An "Access to your data" section includes fields for UniqueID and PIN.

The screenshot shows the "Messages" section with the heading "Messages" and "Messages dedicated to your data sets ...". It contains two messages:

- Message 1:** UID: DEMO00000001_01_2013, dated 21/03/2014 (Read). Subject: "Data set sounds unfaithful because". Content: "- Electric Energy PRICE 0,0667: this price is out of the expected range for this country (Italy)" and "- Energy PRICE 0,0667: this price is out of the expected range for this country (Italy)". Sent "from Validation".
- Message 2:** UID: DEMO00000001_01_2013, dated 21/03/2014 (To Be Read). Subject: "Data owner confirms data". Content: "Yes I am sure, the price is exactly reported in my contract." Sent "from Data owner: 24".

At the bottom, it says "Found messages: 1".



Co-funded by the Intelligent Energy Europe Programme of the European Union



Thanks for your attention !



Contacts

Official SET Partner for ITALY

ENEA, Piero De Sabbata

piero.desabbata@enea.it

CEA Croatian Employers' Association:
Croatian SET Partner

ana.falak@hup.hr (Ana Falak)

SET coordinator

EURATEX, Mr. Mauro Scalia

mauro.scalia@euratex.eu

Documents :

- SET: <http://euratex/em2m> e <http://euratex/set>
- SET Web: <http://www.em2m.enea.it>
(multilingual)

Linked  group)