www.euratex.eu/set

Introduction to SET Tool and SET Web

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

SAVE ENERGY IN TEXTILE SMEs

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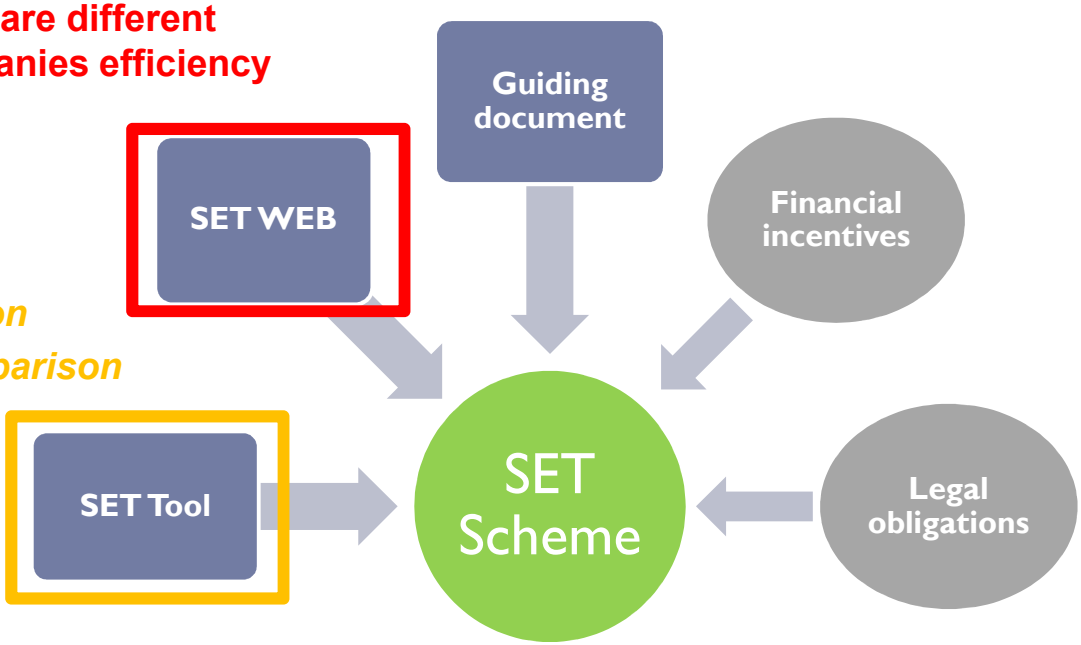
SET results: SET Scheme, the structure

***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

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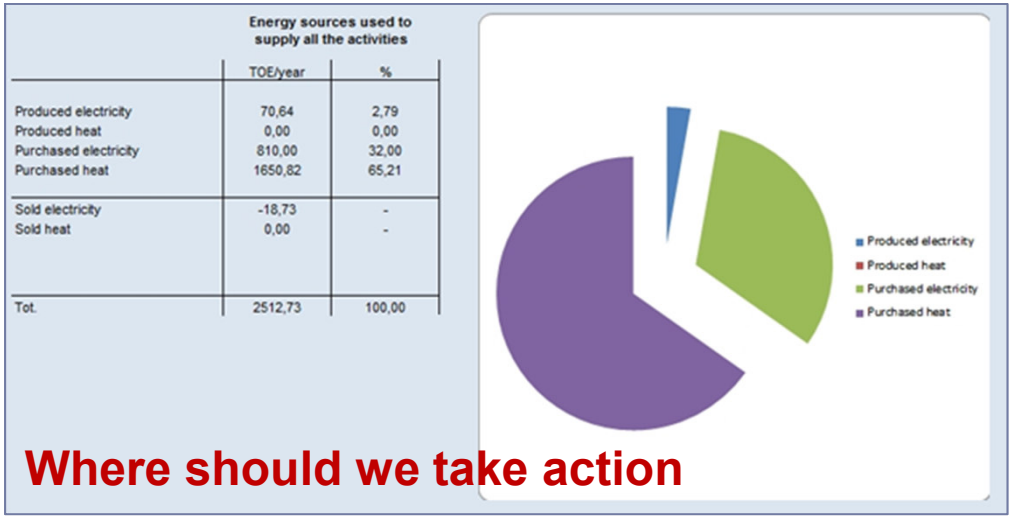
SET Tool/1

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

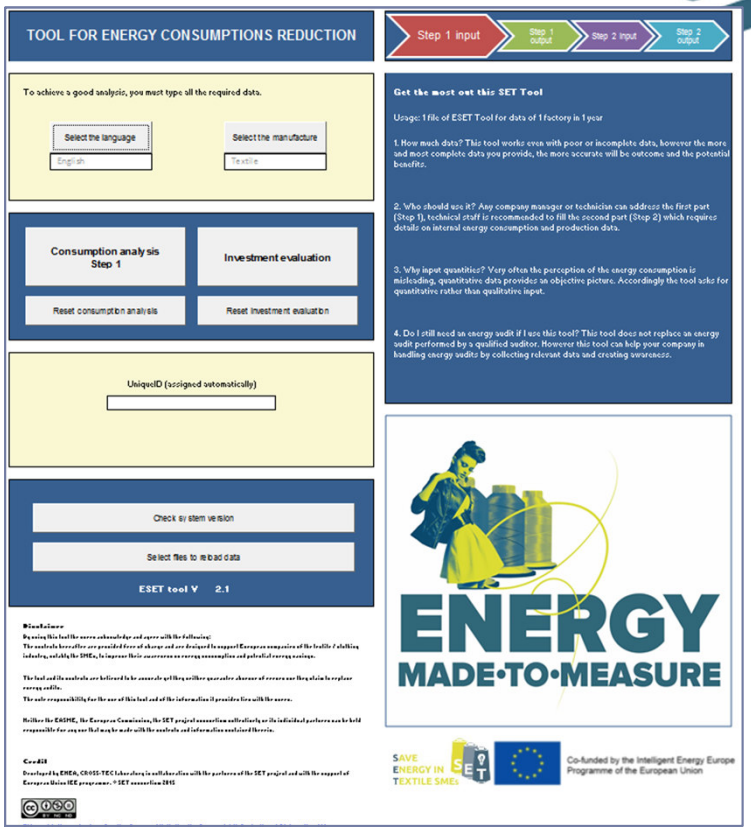
- Analyze company energy consumption
- Get a list of measures for energy saving and costs reduction
- Evaluate saving achieved through the improvement of the energy efficiency



Energy sources used to supply all the activities

	TOE/year	%
Produced electricity	70,64	2,79
Produced heat	0,00	0,00
Purchased electricity	810,00	32,00
Purchased heat	1650,82	65,21
Sold electricity	-18,73	-
Sold heat	0,00	-
Tot.	2512,73	100,00

Where should we take action



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

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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.

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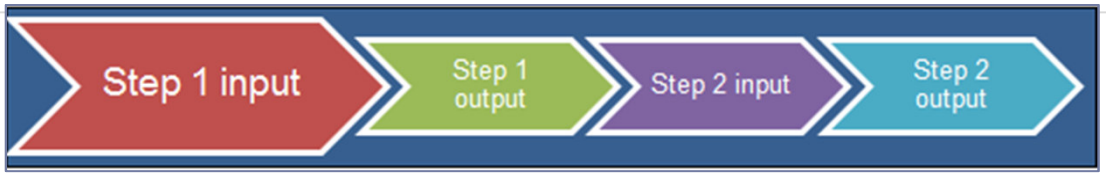
SET Scheme: the path



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)

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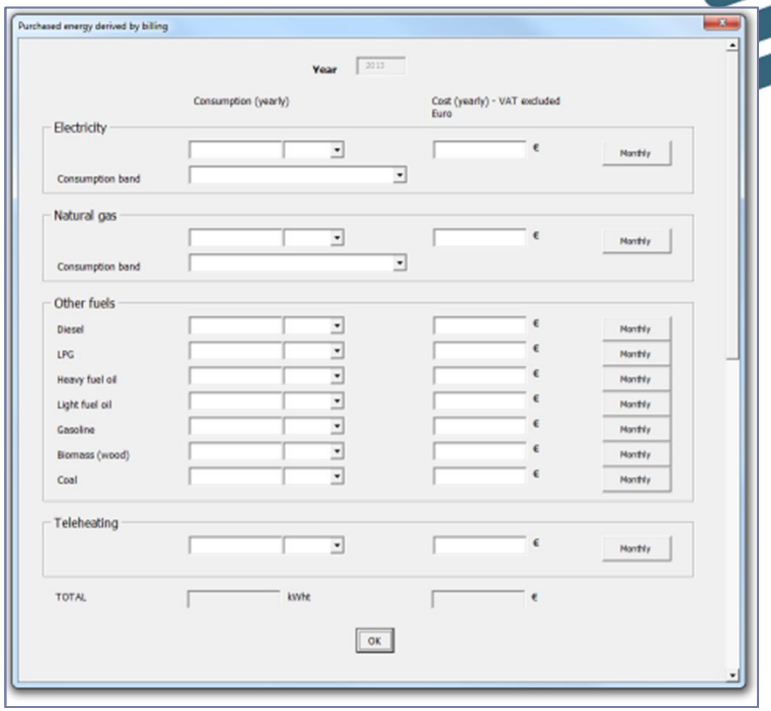
SET Tool: Input/1

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)



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

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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.

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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 231measures: 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**	

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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

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

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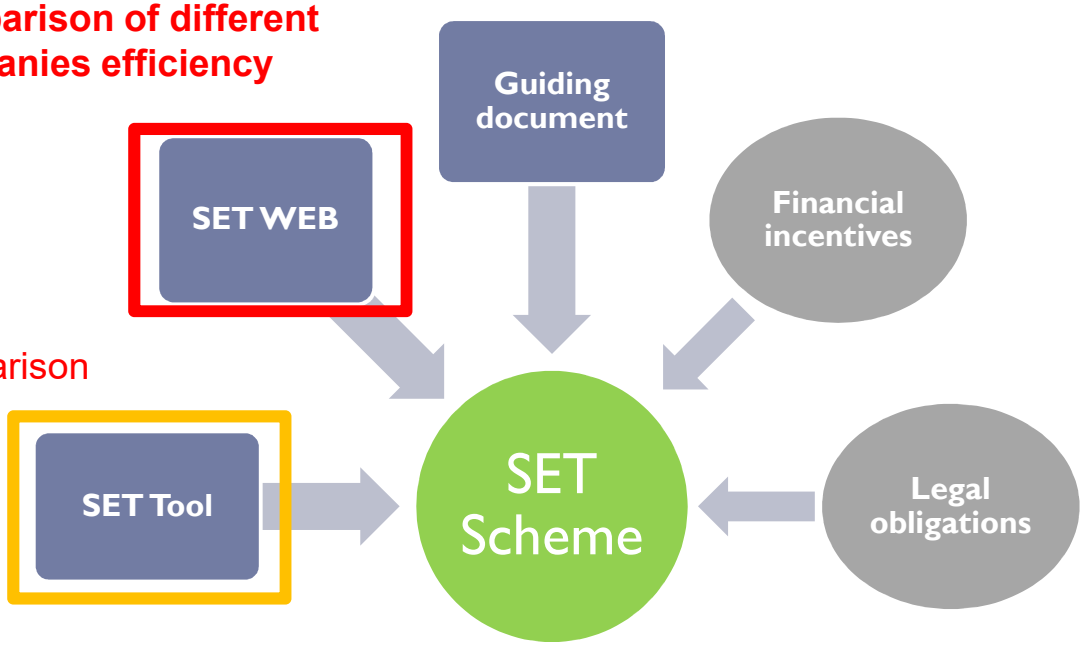

Objectives

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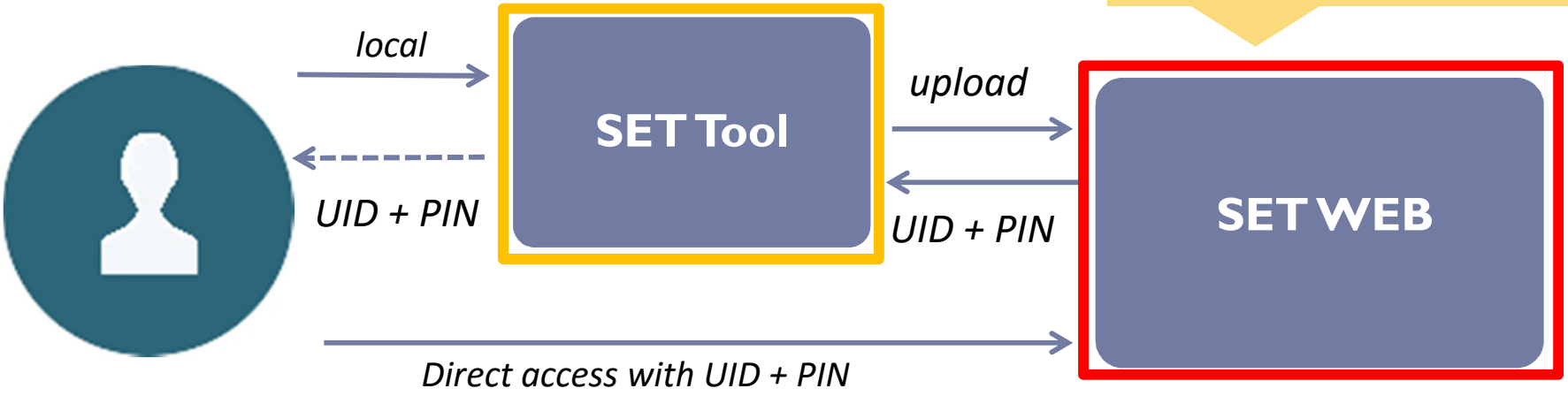
SET Scheme's components

- Store anonymous energy profiles
- Compare companies efficiency
- Access to individualized services

- Data collection
- Identification
- First analysis



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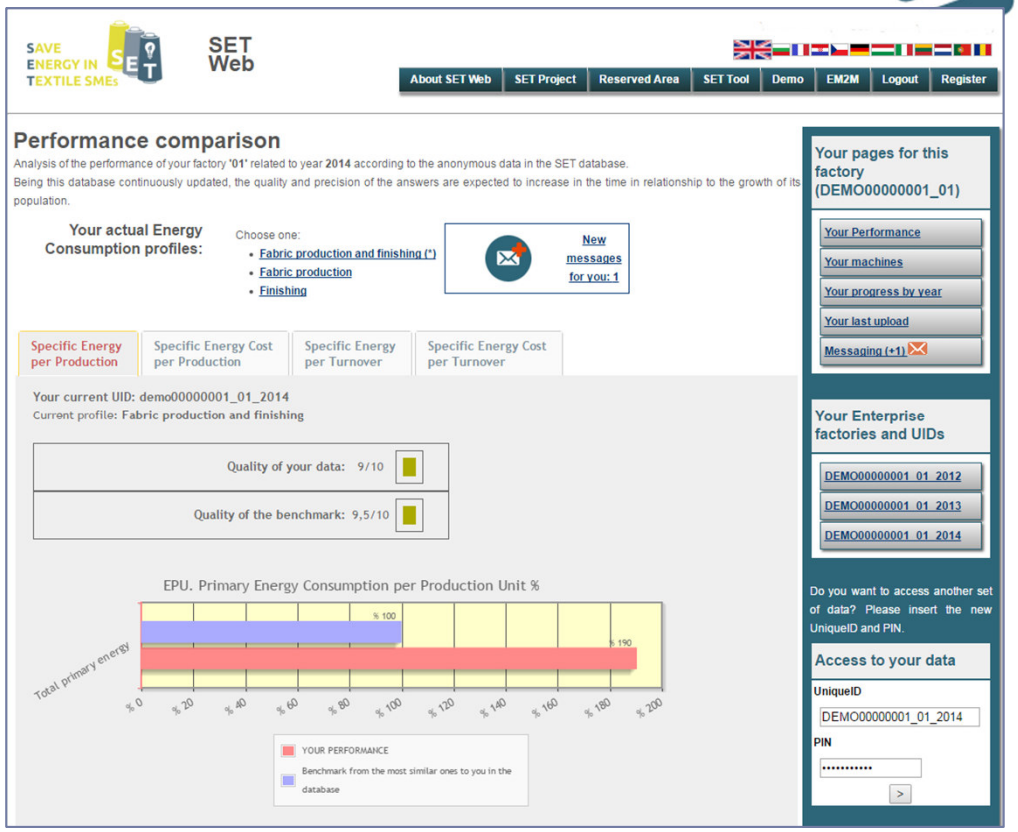
SET WEB

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



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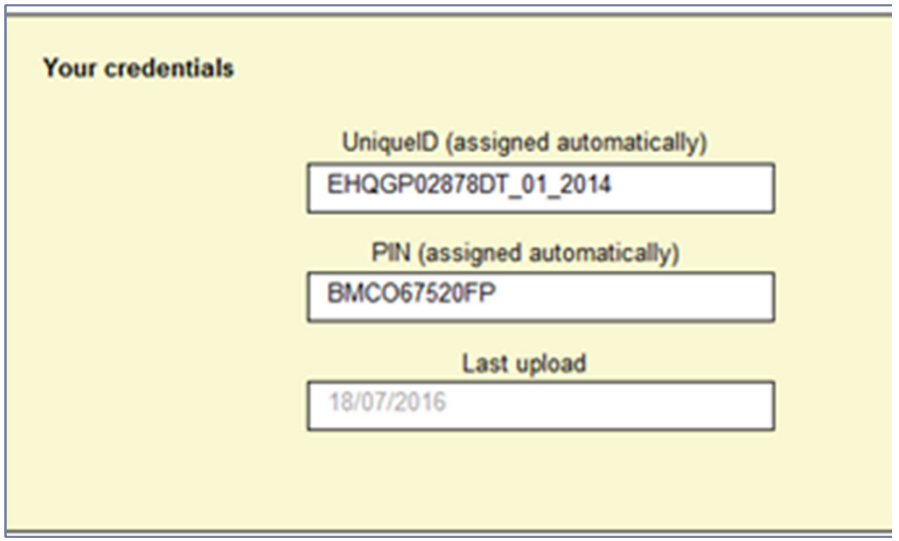
From SET Tool to SET WEB/2: Anonymous data

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



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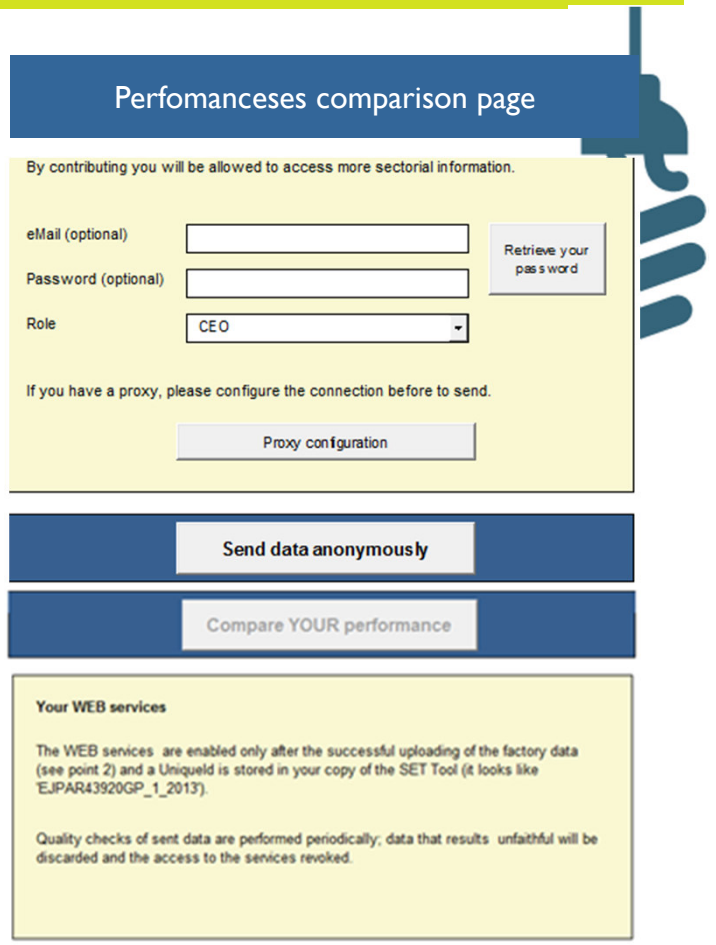
Da SET Tool a SET WEB/3

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)



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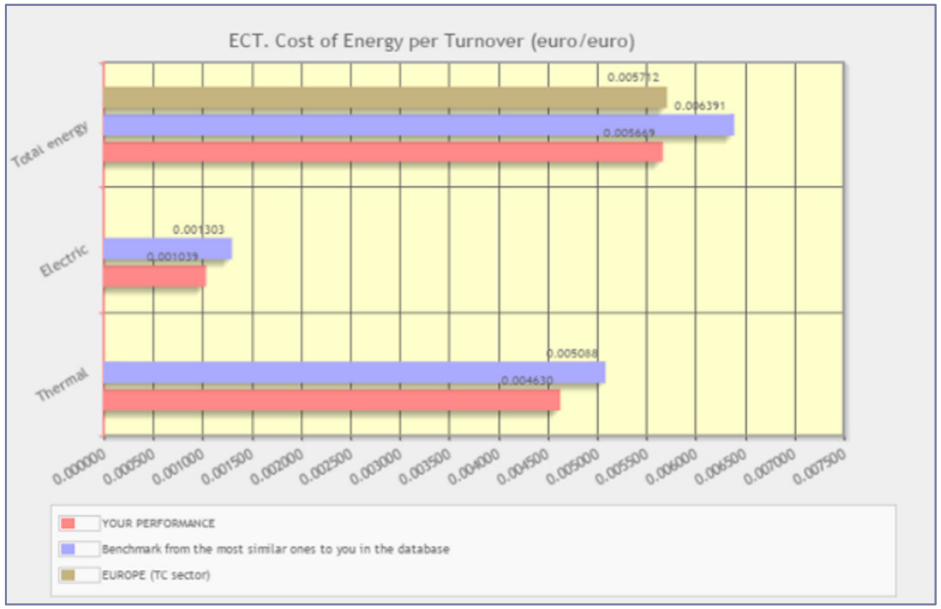
SET WEB Output: Your performances

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

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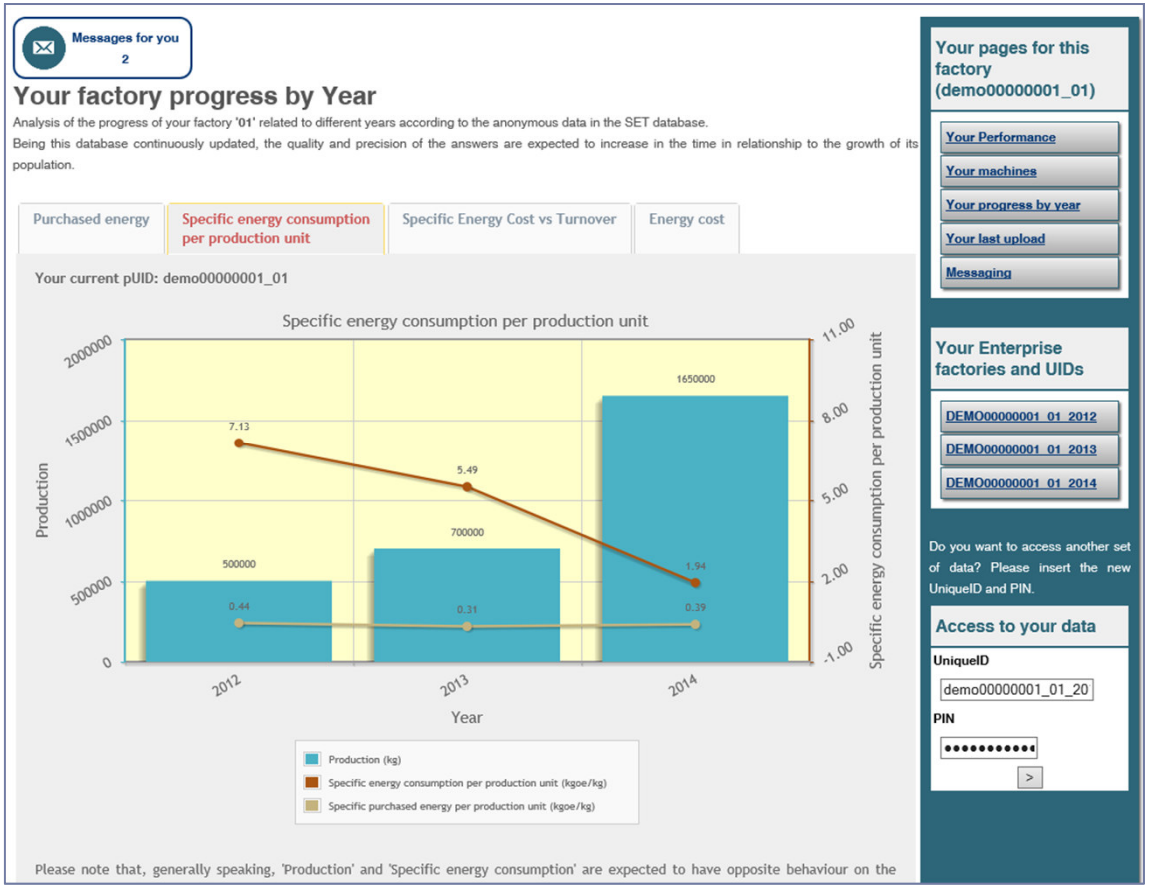
SET WEB Output: Your processes year by year

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?

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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	>

Reset any change

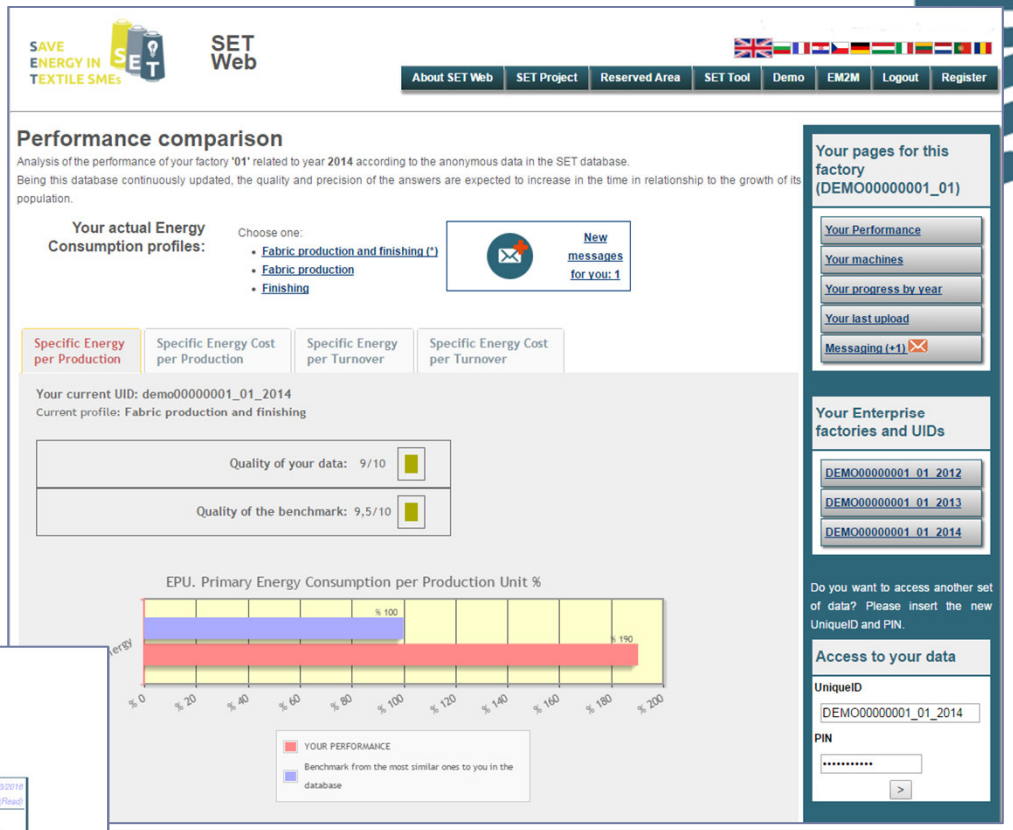
Expected consumption vs actual extimated

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 kWhe	2100000 kg	7029146,3 kWhe	3,28 kWhe/kg	7170018 kWhe	2141012 kg	3,35 kWhe/kg	3,35 (+2%)

Share of total real production (b/D%) 98,1%

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



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Thanks for your attention !

Contacts

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LinkedIn group)

Documents :

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