



SET Project – Meeting with companies

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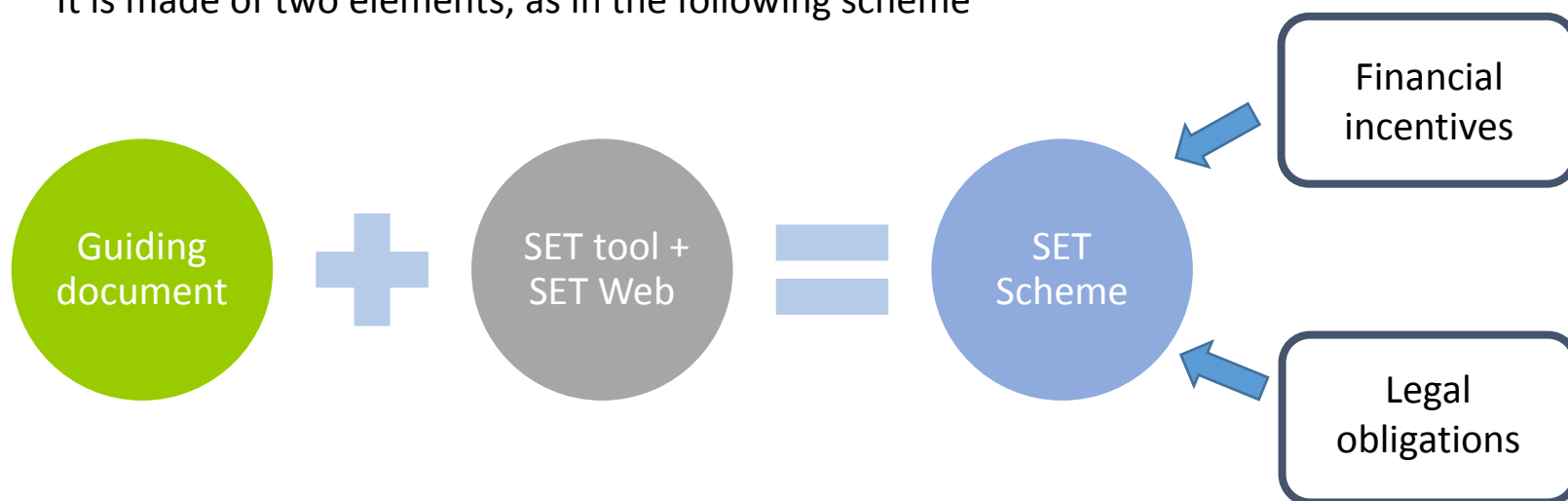


SET Scheme methodology of application on companies

What is SET Scheme?

- Main goal of SET project;
- Methodology for an easy-to-use energy assessment method

It is made of two elements, as in the following scheme



The application of SET Scheme on the companies selected for Task 3.2 is divided in four main phases, as follows:



Consists on initial meetings (one or more depending on the availability of companies) between the SET representatives and the respective country companies participating on the project.

Objectives of the meetings:

- Short introduction about SET project and objectives
- Signature of SET letter of intent , if it's not signed yet
- Present legal obligations and incentives (both national and European)
- Presentation of SET Scheme Methodology applicable to the companies
- Demonstration of SET Tool
- Distribution of document “SET Scheme Application – Support Document for companies” and form “SET Scheme – Feedback from companies”



- Companies must use the tool following the guidelines identified on document ["SET Scheme Application - Support Document for Companies"](#)
- In case of doubts or errors, companies contact SET partners for support. Can be provided in –person or virtually (phone, skype, etc.)
- Regular communication with companies must be ensured (at least every week)



SET Scheme Guidance for companies

Leading author: CITEVE

Date: July 2015

Status: Final 1.3

The aim of this document is to be used as a guide for companies in the application phase .

It contains the following information:

- Description of the methodology applicable to the companies
 - Preparation
 - Application (mainly focused on this phase)
 - Validation
 - Rationalization Plan
- Feedback from companies on SET Scheme application
- List of the most common errors and doubts found by SET Partners during the test phase and respective solutions.

At the end of the application period, partners should collect from the companies the “**SET Scheme - Feedback from companies**” and the outputs from SET Excel use.

On this phase, SET partners shall validate the inputs and outputs obtained by companies with the use of SET Tool. Companies are not involved in this phase, only SET partners.

Based on the results of Application and Validation phases. Should contain:

- Company characterization
- Energy consumption and cost by type of energy
- Energy indices provided the outputs of SET tool, namely
- Energy efficiency measures
- Savings in energy consumption of the selected measures
- Legal obligations (if applicable to the company) and financial incentives for energy efficiency

Company characterization:

- Company identification
- Main business
- Main produced goods
- Production and turnover
- Small description of production process

SET Tool presentation

General philosophy:

- 1 excel file is related to 1 textile manufacturing plant in 1 year
- the more detailed the data you input, the more precise is the output
- the perception of the energy consumption is often far from the reality, therefore the tool uses objective indicators (*when possible*) rather than 'percentages' qualitatively assigned
- consumption of auxiliary systems (steam, heating/conditioning, compressed air...) are not negligible and vary a lot among similar plants
- the tool does not replace an **energy audit conducted by specialists**

Multi-step approach:

- **STEP 1 – Basic yearly information:** The application asks companies for yearly general information (it also allows to sum the monthly bills) and gives back as result some energy indices and some best practices (cross-cutting)
- **STEP 2 – Monthly and process information:** Company is asked for more detailed data by the Excel application. A wider set of Best Practices is evaluated (also related to the kind of machines) and more data, diagrams and indices describing the energy uses are showed
- **Performance comparison:** Available in case of uploading data. Compare energy indices with 5-10 most similar companies in the database; Analyse company data from different years (necessary to upload data from more than a year); Compare the performance of your processes and technologies with reference values; Manage energy data via WEB in a safely.
- **STEP 3 (under development)** - detailed data from machines to build an electrical and thermal model of the company to compare against the macro values and obtain the shares of energy for the different uses.

How the tool can be used?

The excel file alone allows companies to:

- collect data;
- view and analyse indicators;
- know selected best practices and roughly estimated savings;
- evaluate investments and payback (after a technical analysis).

The excel file plus the web application allow companies to:

- view own data and compare internal trends year by year (each excel file manages data only for one year);
- view theoretical consumptions models related to their machinery;
- compare performances against benchmarks based on 'similar' plants;

Data on business

Data on business :

Number of employee

Plant name

Kind of product

Product market segment

Market segment application

Average lot size class

Average lot size quantity

Raw material used within the plant

Turnover and production

3. Turnover and production

Year

Turnover

Total amount of product

Working time

4. Working time

What is the working time ?

Do you use work-shifts? ☒ yes ☐ no

How many work-shifts in a day ?

How many working day in a week ?

How many working day in a year ?

Inputs Step 1 - Energy

Data about purchased energy

Purchased energy derived by billing

Year: 2014

Consumption (yearly) Cost (yearly) - VAT excluded Euro

Electricity

Consumption band: Band ID : 2 000 MWh < Consumption < 20 000 MWh

Cost (yearly) - VAT excluded Euro: 280000

Natural gas

Consumption band: Band I3 : 10 000 GJ < Consumption < 100 000 GJ

Cost (yearly) - VAT excluded Euro: 150000

Other fuels

Fuel	Amount (yearly)	Cost (yearly) - VAT excluded Euro	Frequency
Diesel			Monthly
LPG			Monthly
Heavy fuel oil			Monthly
Light fuel oil			Monthly
Gasoline			Monthly
Biomass (wood)			Monthly
Coal			Monthly

Teleheating

Amount (yearly) Cost (yearly) - VAT excluded Euro

TOTAL

Amount (yearly) Cost (yearly) - VAT excluded Euro

0 kWh 430000 €

OK

Data about energy production from a non-predictable source

Enter data on cogeneration

Year: 2014

COGENERATION PLANT: you must enter data on CHP and amount of produced energy or consumed fuel (per year or per month).

Cogeneration capacity: kWh

Electric efficiency: %

Thermal efficiency: %

Overall CHP efficiency: %

Count consumed fuel

Count produced electricity

Count produced heat

Fuel

Kind of fuel: Natural gas

Amount (yearly) Cost (yearly) - VAT excluded Euro

Fuel consumed by cogeneration: 150000 €

Production

Amount (yearly)

Produced electricity: kWh

Produced heat: kWh

Sale

Amount (yearly) Revenue (yearly) - VAT excluded Euro

Sold electricity: 4041290 kWh

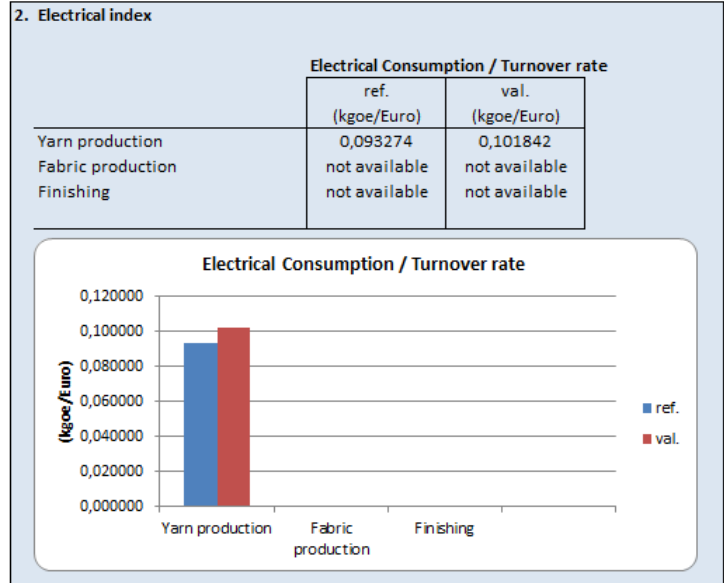
Sold heat: €

OK

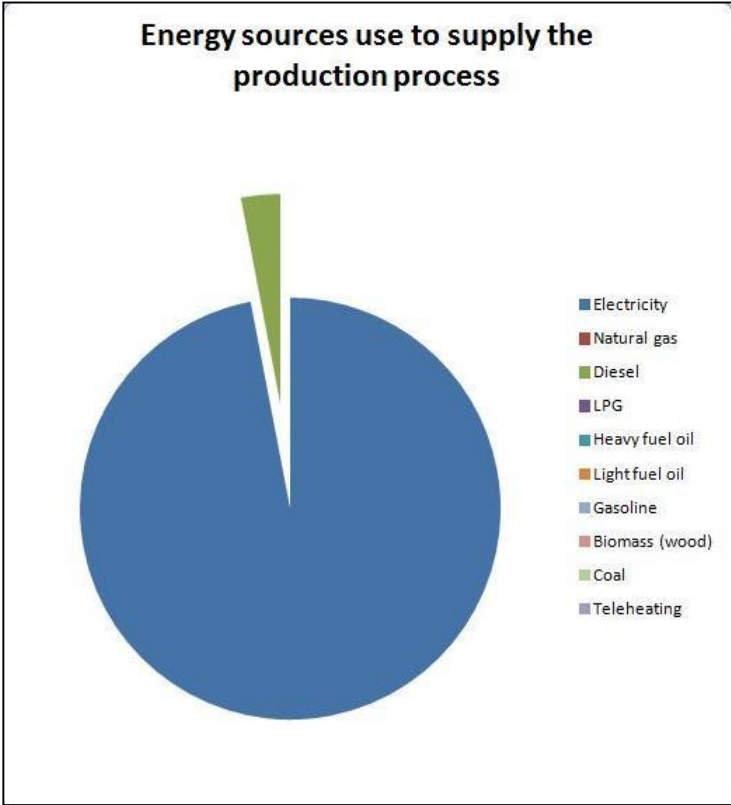
Qualitative information about:

- Lighting
- Heating / Air conditioning
- Process fluids
 - Compressed air
 - Steam / Hot Water
 - Ventilation
 - Pumping
 - Vacuum
- Process machines

Energy indices:



Energy consumption by source:



Cross-cutting best practices:

OUTPUT SHEET - Recommended cross energy measures

The analysis of input data suggests to evaluate the implementation of the following energy measures.

In next step, you can analyze your production processes and related best practices.

Consumption analysis

Step 2

Category	Action	Cost	Fuel Saving	Electricity Savings	Pay back time	Priority
1	Organization Reconsideration of electric supply contract.	Negligible		0% (no energy saving, but there may be economic saving)	Immediate	1
2	Organization Reconsideration of thermal supply contract / cost of used combustibles.	Negligible	0% (no energy saving, but there may be economic saving)		Immediate	1
3	Reduction of peak power Shifting of energivorous processes towards lower price time slots.	Slight		0% (no energy saving, but there may be economic saving)	Immediate	1
4	Heating/Air conditioning Use heat/cooling only when area is occupied.	Null	Variable <= 1% of factory thermal consumption	Variable <= 1% of factory electrical consumption	immediate	1

Monthly data;

List of processes and 

Specific input requested by best practices or processes;



INPUT SHEET - Yarn production

Do you monitor and grinde your card tambours regularly? ☐ Yes ☒ No

Are your carding machines older than 15 years? ☐ Yes ☒ No

Do you use machine exhaust air for room hearing? ☐ Yes ☒ No

Yarn production

☒ Spinning Preparation for cotton fibers

☐ Opening for cotton process data

☐ Cards process data

☐ Drawing machines for cotton

☐ Lap winders

☐ Combing machines for cotton

☐ Roving frames

☒ Spinning Preparation for wool fibers

☐ Opening lines for raw wool

☐ Raw wool scouring lines

☐ Carbonising lines

☐ Opening for wool

☐ Worsted cards

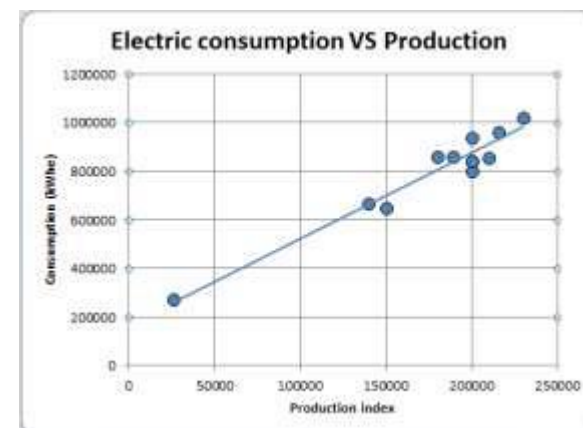
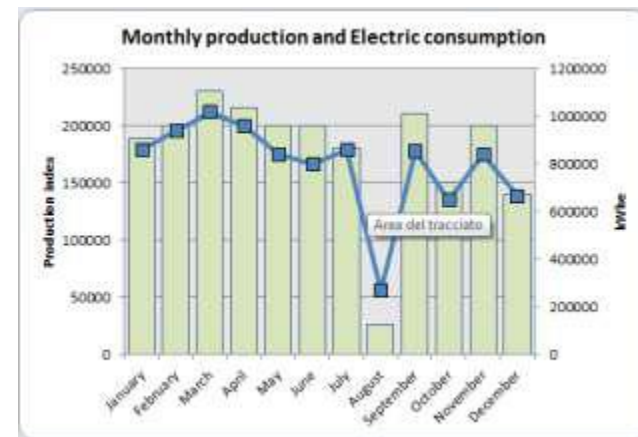
☐ Semi-worsted cards

☐ Woollen cards

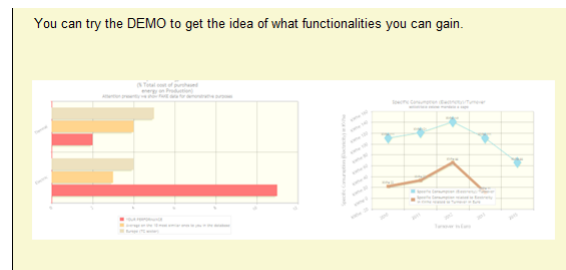
☐ Drawing machines for wool

☐ Combing machines for wool

- Monthly Production and Energy Consumption graphic (kWh o TOE)
- Specific Energy Consumption vs Production graph (regression line), from which we can derive:
 - Energy consumption if production is Zero
 - Energy required to produce each additional unit
 - Energy proportion that doesn't contribute to production
- Updated list of recommended Best Practices including the measures related to company processes (Process Specific)



WEB demos are available



Try the demo

Uploading data allows to:

- Get a Uniqueld and PIN of your data that are stored in the excel file;
- Enable links to WEB application for your data (performance comparison, machinery consumption models, compare your data by years);
- Connect anonymously the excel file to company data (firm, plant, year).

Send data anonymously

Your WEB services

The WEB services are enabled only after the successful uploading of the plant data (point 2) and a Uniqueld is stored in your copy of the SET Tool (it looks like 'EJPAR43920GP_1_2013').

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

Compare YOUR performance

View the behaviour of your machines

View your data

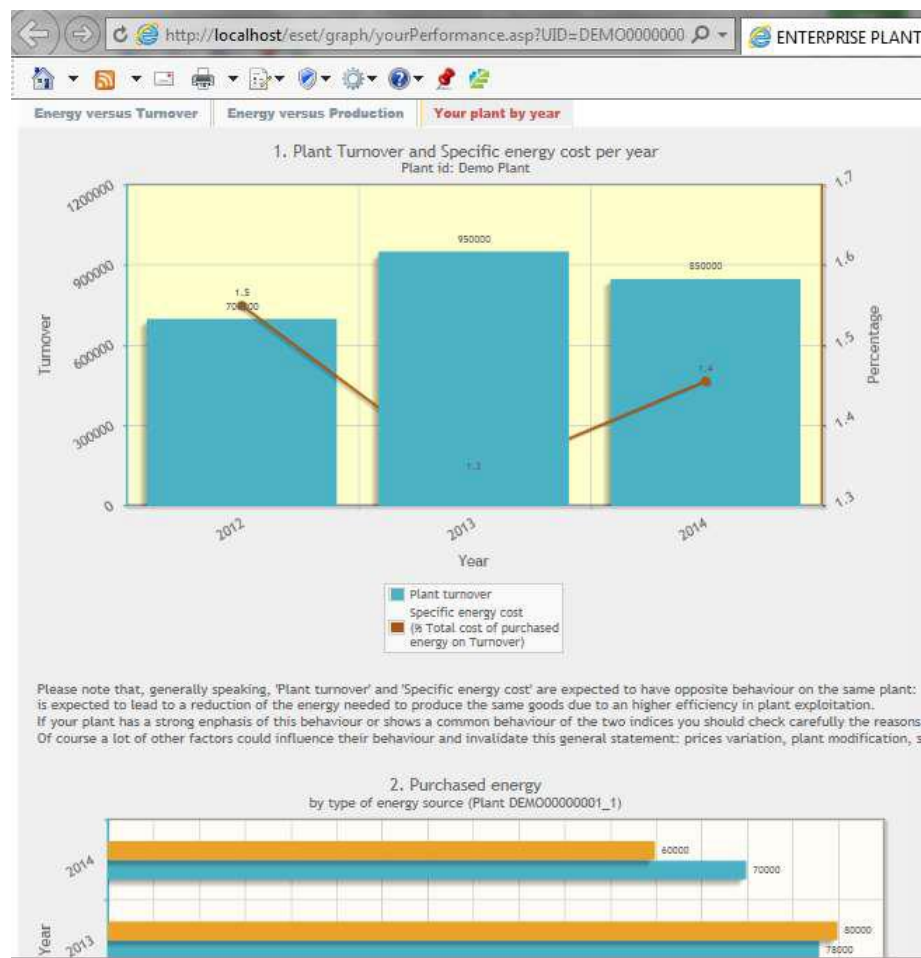
UniqueID: EGTHP06093JL_01_2012

- EGTHP06093JL identifies the company anonymously
- 01 is the plant
- 2014 is the year
- PIN: ITDT51394IS

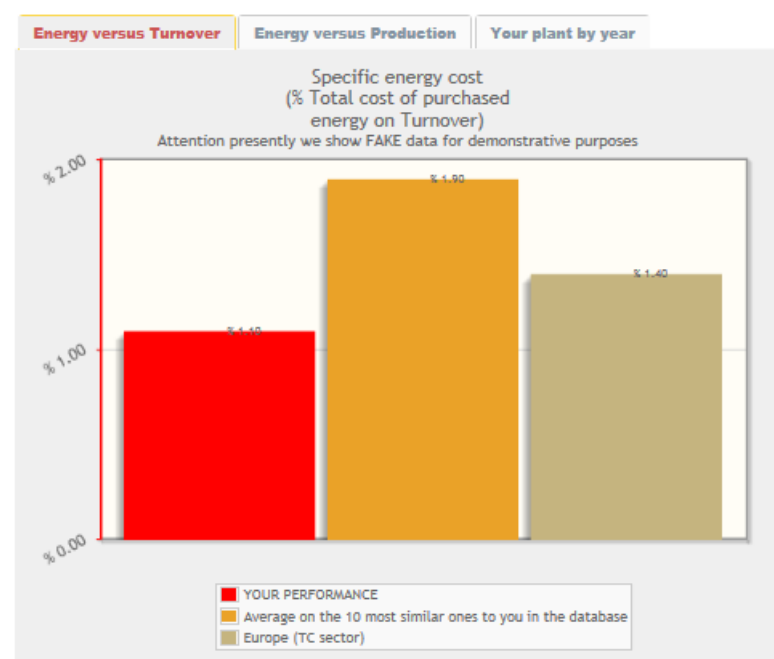
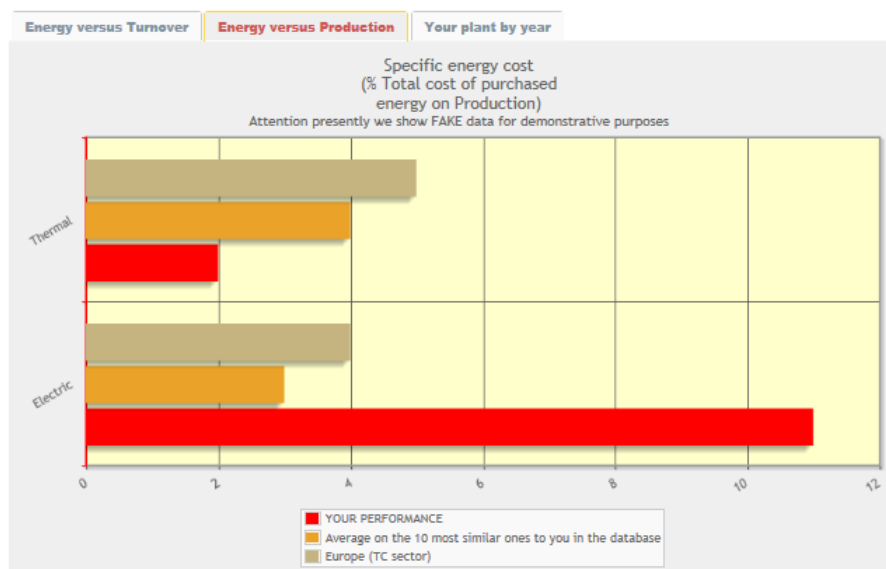
Your credentials

UniqueID (assigned automatically)	<input type="text"/>
PIN (assigned automatically)	<input type="text"/>
Last upload	<input type="text"/>

Yearly data comparison



Performance comparison with similar plants



Theoretical consumption models

Reference spinning machines performances (Concept demo)

Your Parameters

Calculation model
Choose the calculation model of your Machine producer.
Calculation model Type 1

Your technology
Choose the technology of the machine type you are willing to examine
1.4.2 Compact spinning

Yarn Count (Nm)
Choose the reference value for Yarn Count of your production.
41 Nm


Material blend
Choose the average value for Material blend of your raw material.
35% Polyester / 65% Cotton

Yarn use at customer
Choose the main Yarn Use of your production.
weft yarn (carded)

Calculate

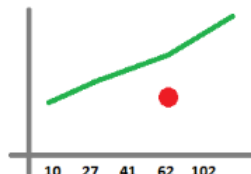
Expected performance (fake data)

Technology: 1.4.2
YarnCount: 41
Material blend: 4
Yarn use: 2



Your actual consumption kWh / kg: 7,56




Reference end energy consumption [kWh/kg]: 2,56

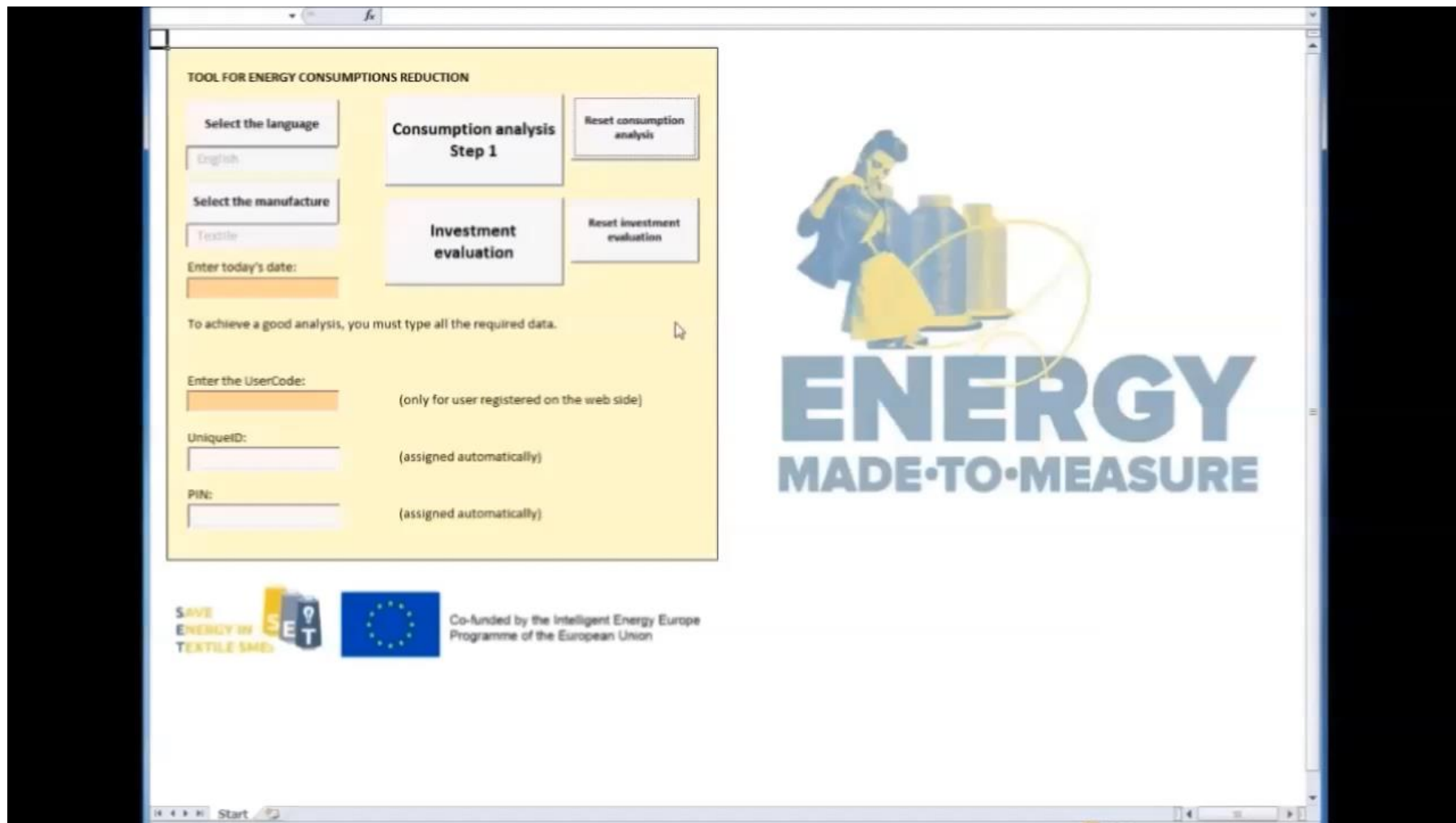


consumption kWh / kg: 7,56

Your actual

Reference finishing machines performances

Considered technologies in your plant	Expected performance Energy GJ/tonne		Your value	Reference
Process step	Min	Max	(when data are available)	
3.1.4 - Desizing	1,0	3,5		Hasanbeigi, A., 2010. "Energy-Efficiency Improvement Opportunities for the Textile Industry"
3.1.5 - Bleaching batch	3,0	7,5		Hasanbeigi, A., 2010. "Energy-Efficiency Improvement Opportunities for the Textile Industry"
3.1.6 - Continuous Bleaching	3,0	7,0		Hasanbeigi, A., 2010. "Energy-Efficiency Improvement Opportunities for the Textile Industry"
3.1.9 - Open-width washing	2,8	10,5	N.A.	Hasanbeigi, A., 2010. "Energy-Efficiency Improvement Opportunities for the Textile Industry"



Obrigado!

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