



## IND-ECO Contract IEE/11/949/SI2.615946

<b>WP 3</b>	Technical support actions
<b>Task 3.1</b>	Scouting of technical solutions
<b>Deliverable 3.1 update</b>	Scouting report update
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<b>Deliverable responsible</b>	LEITAT

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## 1. Introduction

The IND-ECO project aims to obtain initial primary energy savings by its end, and to create favourable conditions for more investments by 2020. To reach their objectives there are a rationale structure developed in eight inter-related work packages.

Work Package 3, **Technical support actions**, has the following objectives:

- To make available knowledge and technological solutions, thanks to a scouting activity
- To build and implement an energy efficient technologies data base with recommended solutions
- To establish agreements with technologies providers and their associations and other facilities, and
- To present to companies the identified technical solutions.

The WP3 has to build a tool that helps tanneries and footwear companies to search, find and make an easy access of companies to technical solutions. According to this aim the WP3 is divided in various tasks:

- 3.1 Scouting of technical solutions (lead by LEITAT),
- 3.2 Data base: realization and implementation (lead by CR&S),
- 3.3 Agreements with suppliers (lead by LEITAT), and
- 3.4 Presentation to companies (lead by INESCOP).

The results of this work package will be useful instrument to companies, which gives an updated vision by energy efficient solutions to share knowledge about energy efficient machinery and to save energy and money in companies.

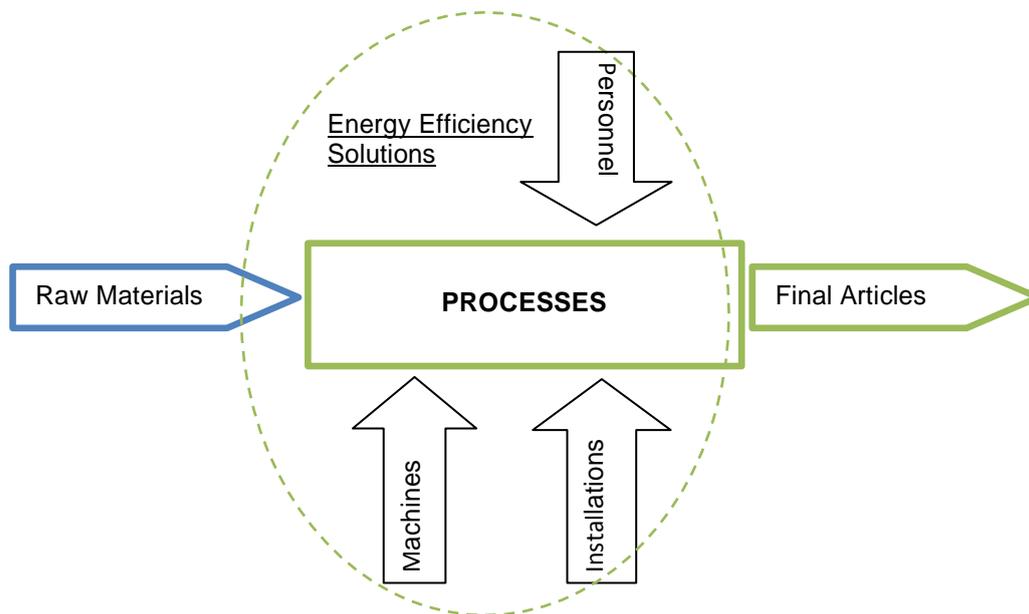
In addition, they are relevant for other work packages:

- allowing companies to define their strategic position regarding their obtained baseline in WP2 with respect to energy consumption,
- to define new investments (WP5) with the objective of modernise and upgrade installations and reduce structural cost (as energy expenses) in companies, and
- let companies to communicate (WP7) their engagement and results, which give a better image of the company because new technologies provide some savings in energy and in CO<sub>2</sub> emissions.

The deliverable D3.1 Scouting report is focused on to define, develop and update a tool which permits to collect data in a format compatible and coherent with data base. This data base will be the repository of energy efficiency solutions in the processes developed in tanneries and footwear companies.

## 2. Technical description

The industrial activities in tanneries and footwear companies transform raw materials to final articles through several processes. Principal auxiliary factors as personnel, machinery, installations, etc., have direct influence in processes energy consumption developed in factories (see figure below).



The scouting task of technical solutions will be applied to specific and general industrial processes and their impacts on energy consumption including technology elements as machines, equipment, plants, technologies, ...

The searching of solutions is focused in multiple directions:

- process optimisation,
- energy efficiency equipment specific from tanneries and footwear companies,
- common technologies which could be applied in an industrial environment, but not are specific from tanneries and footwear industries,
- monitoring,
- explore low cost or no cost measures which could help companies to save energy,
- sensitization and training,
- behavioural procedures and good practices, etc.

Technical solutions could be collected with the information obtained from suppliers and technology providers and their associations. All the data should be introduced in data base of energy efficiency.

## 2.1. Scouting report

The scouting template will be designed according to collect and feed technical data base on the most efficient technologies available on the market.

Several actions have been developed to obtain a general view of the energetic balances in tanneries and footwear companies such as:

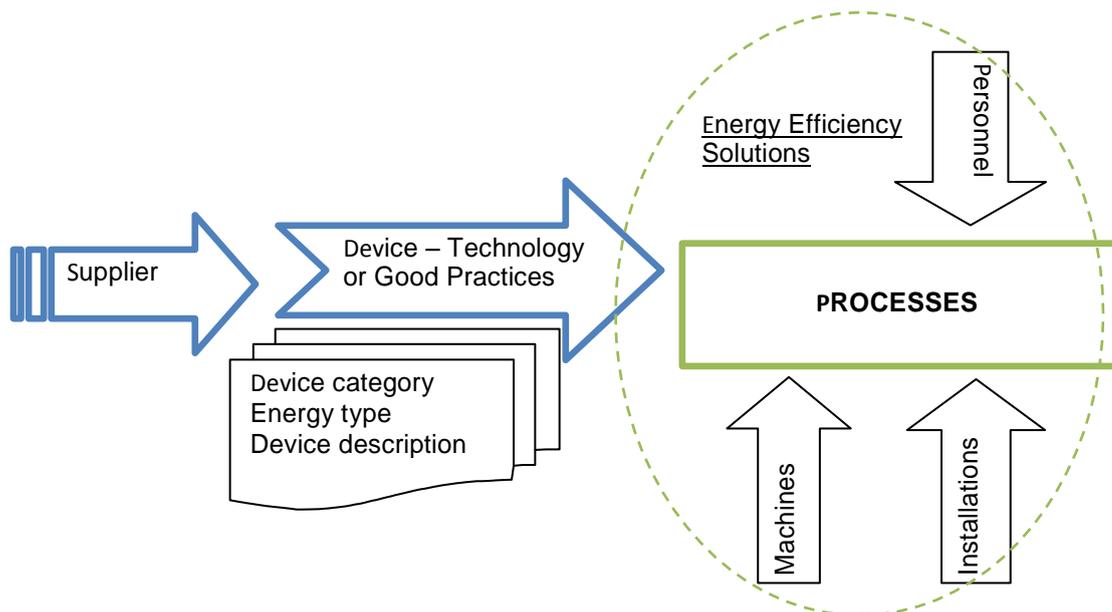
- study of processes,
- contacts with industrial managers,
- information with suppliers and their associations, and
- collection of questionnaires from WP2 Inventory and benchmarking, etc.

These energetic balances give information about the processes, machineries and technologies which could consume high energy amounts. Thus it, should be interesting to focus in the areas with high consumes of energy.

The requisites of energy efficiency data base condition scouting template design. The scouting tool should be:

- .- a repository of data which will be upload in data base, and
- .- a warehouse from suppliers' characteristics which can help in further tasks of IND-ECO project.

Scouting activity should give actual advances in technology and to gather in technical solutions with energy efficiency. A conventional diagram to describe this process is represented in the figure below.



The scouting template has been built taking into consideration fields' structure of the data base, and thus it, following the next tables.

### 1. SUPPLIER identification data

<b>Supplier</b>	
<b>Name of the field</b>	<b>Information to be filled</b>
Organization:	Corporate name
Address	Street, number, city, city code,
Country	Name of the country of the supplier
Web Site	Web site address

### 2. ENERGY TYPE used in technology or machinery

<b>Energy Type</b>	
<b>Name of the field</b>	<b>Information to be filled</b>
Electric	
Thermal	

### 3. DEVICE CATEGORY

<b>Device Category</b>	
<b>Name of the field</b>	<b>Information to be filled</b>
Building	
Chemicals	
Chilling system	
Compressor	
Heat pump	
Heater and oven	
Illuminating engineering	
Micro end co-generation	
Motor and inverter	
Pellet	
Photovoltaic	
Power factor correction	
Test category	
Thermal solar	
Thermostatic valve	
Uninterruptible Power Supply (UPS)	
Ventilation	
Various / Other	

Examples:

Device category: motor and inverter → Device type: high efficiency motor.

Device category: thermal solar → Device type: solar heating system.

## 4. DEVICE TYPES

<b>Device Types</b>	
<b>Name of the field</b>	<b>Information to be filled</b>
Absorption refrigerating	
Air compressor	
Boiler	
Building envelope	
Capacitor	
Chiller	
Cogenerator plant	
Compressor	
Cooling plant	
Dimmer stabilizer	
Economiser (water)	
Electric distribution system	
Electric substation	
Energy management	
Fan system	
Fluorescent lamp	
Fuel cells	
Gas turbine plants	
Gasification	
Heat exchangers	
Heat pump	
Heat recovery	
High efficiency motors	
High pressure sodium bulbs (HPS)	
Hydraulic plants	
Insulation	
Inverter	
Led bulb	
Lighting system	
Mechanical vapour compression	
Mercury vapour lamp	
Piping and instrumentation (P&I)	
Photovoltaic system	
Piping	
Power factor correction	
Pump system	
Solar collector	
Solar heating system	
Steam boiler	
Thermal heat pump	
Thermostat	
Vapour compression system	
Waste heat recovery boiler	

## 5. DEVICE DESCRIPTION

Device Description	
Name of the field	Information to be filled
Device name	
Supplier	
Device category	
Device type	
Pre-requisites	
Energy IN	
Energy type	
Energy unit	
Energy value	
Energy OUT	
Energy type	
Energy unit	
Energy value	
Efficiency & Warranty	
Efficiency	
Grant time	
Warranty period	
Annotations	
Good practices	
Prices	

Scouting template format will be adapted to the specific characteristics of production processes, in order to allow an easy data collection from suppliers and technology providers.

During the contacts, interviews and business relationships with providers and technologic associations, project partners will collect data in each country and evaluate the troubles encountered in the process, in order to update and improve scouting template and optimise the process to upload solutions into data base.

This process is a key point to develop the data base and to bring closer to tanneries and footwear industries some information and news which can promote energy efficiency solutions in industries.

The knowledge of new developments can relate and study alternatives to the current processes, machinery and technologies because a new overview has been open about energy consumption such as:

- .- optimise consume of energy,
- .- reduce energy costs,
- .- maintaining quality of the final articles, and
- .- increase environmental image of the business.

## 2.2. Scouting results

The partners of INDECO project develop their tasks in order to detect new technologies, devices and their suppliers which high energetic efficiency and consequently less environmental impact in European footwear and leather sectors of Italy, United Kingdom, Spain, Portugal, Romania and Bulgaria (as partner countries).

Also the actual status of technologies was explored in order to inform the companies about the most efficient alternatives to the current equipment and machinery used in the companies involved in INDECO project.

The state of art developed wants to give an “image” of possible actions to reduce energy consumption and to save money improving energy channels: from the energy that goes into the company (power, stability, harmonics, energy management) to the energy consumed in maintenance equipment of installations (boilers, steamers, HVAC, pumps, motors, compressors, lighting, thermal and photovoltaic solar cells), facilities (isolation, energy management, drying program, processes and operations plan) and specific machinery for leather and footwear sectors.

In addition, they were detected in relation with installations low or non cost solutions: update part of installations, redesign processes in and operations in horary time with low prices (tariff normally at night) in accordance to increase productivity and reduce energy consumption in the productive process.

The news and information updated is transferred as knowhow to employers of these industries. This knowledge could be useful for the managers as decision element to define a strategy to make investment plans in short, medium and long term.

Results achieved by the partners permit to identify and detect as a “package” of tools which include different types of options. The solutions scouted (around of 200) are focused in production machinery of footwear companies and tanneries, compressors, lighting, cogeneration, photovoltaic and thermal solar energy, energy management, power systems, power factor correction, motors, drives, pumps, inverters (see in annex 1 an example of solutions detected).

Table 1. Summary of suppliers and solutions detected.

Country	Suppliers	Solutions
Italy	13	105
Spain	13	40
Romania	6	43
Bulgaria	13	25
Portugal	20	38
Great Britain	15	15
<b>Totals <sup>(1)</sup></b>	<b>80</b>	<b>266</b>

<sup>(1)</sup> This data could be modified and updated until the last day of the project.

### 3. Conclusions

1.- Scouting activities could be useful to identify and collect information about:

- .- types of energy used in companies (from questionnaires and inventories)
- .- audit results walking through companies (from audit procedures and interviews with staff in companies),
- .- mass balance of energy channels and points of consumption since the energy come into industry, it is used in general maintenance equipment and in specific production machinery of footwear and leather companies (from Integrated Pollution Prevention and control –IPPC-, reference documents on Best Available Techniques – BREF-, etc).

The information collected has permitted to focus the energy monitored in areas as drying, hot water and space heating with thermal energy, and machinery and process vessels, compressed air and light with electric energy.

2.- The scouting of technical solutions were focused in machines, equipment, installations, etc., and several solutions which permit to spread energy efficient culture in traditional companies as footwear and tanneries. IndECO project was the starting point of the companies (employers and maintenance staff) to change their mentality, costumes, and behaviour management energy.

3.- Following the scouting template it has been collected data from Supplier-Technological association [company or association name (address, zip code, city, country, phone, fax, e-mail, web site, skype contact, ...)], and Device type-Technical solution [energy type, energy units, device type, device category and device name], and extra data [as efficiency declared, warranty time, price and special conditions, grant time, requirements for installation], if necessary. The scouting activity will feed data base of energy efficiency with technical solutions, and for this reason should be coherent with the structure of data base. Data base (DB) tool was the repository of technical solutions and will be a practical tool which can help and support companies which want to improve their energy behaviour.

4.- Information presented to interested companies has allowed to put in hands of the SMEs know-how and technical solutions to reduce their energy bills and consequently their CO<sub>2</sub> emissions. The knowledge disseminated will be competitive tool for these companies in the near future, in order to increase the productivity and reduce the energy consumptions.

5.- Results show that there are a significant number of providers involved in develop energy efficient technologies, implement new devices and promote techniques to save money and energy and in consequence to reduce CO<sub>2</sub> emissions. Types of equipment detected are (see an example in annex 1): automatic monitoring, boilers and steamers, compressed air, HVAC, motors and drives, refrigeration, warm air and radiant heaters, etc. Companies involved in footwear and leather sector are SMEs or micro SMEs. Their staff is the key actor to execute best practices, or low cost measures to promote energy efficiency and they are dedicated to assure production with quality in tight deadlines. For these reason changes which implies new procedures which should be implemented with properly trainings and dissemination actions.

## Annex 1. Example of technical solutions detected

The next table exposes an example of technologies detected to save energy in footwear companies and tanneries.

SUPPLIERS (country)	Device type	Device Description
A. Polverini & Figli (IT)	Impianti Fotovoltaici	XG60P
Albasolar (IT)	Impianti termici e fotovoltaici	
Aston Energy S.r.l. (IT)	Rivenditori di UPS di piccola e media taglia	UPS
Atlas Copco (IT)	Compressori e gruppi elettrogeni	Energy recovery (compressori versione ER)
Atlas Copco (IT)	Compressori e gruppi elettrogeni	Essiccazione aria compressa a recupero energia (serie MD)
BERGI S.p.A. (IT)	Pressa rotativa con sistema di riscaldamento a mezzo di olio diatermico	Superstar
Berica Impianti S.p.a. (IT)	Cogeneration plants	Serie Jolly 50-150 kW
Berica Impianti S.p.a. (IT)	Trigenerazione	Jolly-trigen
Brollo Siet S.r.l. (IT)	Trafo, lampade a catodo freddo, motori siemens	Lampade a catodo freddo, ....
Cadel srl (IT)	Impianti termici e telegestione	Impianti per generazione di calore
Caleffi spa (IT)	Hydronic Solutions	
CEG Elettronica Industriale (IT)	Raddrizzatori, UPS e gruppi statici di continuità	UPS
C.I.S.E. (IT)	Trigeneration	
CMG Solari (IT)	Pannelli solari termici	New efficient orizon (circolazione naturale)
Ecojoule srl (IT)	Caldaie a legna/pellet	EJ-TURNER (a cippato)
ENER-G (IT)	Impianti di cogenerazione e micro-cog,	
EnerPoint spa (IT)	Sistemi Fotovoltaici	
Exalto Energy & Innovation S.r.l. (IT)	Impianti solari termici	
Exalto Energy & Innovation S.r.l. (IT)	Cogeneration plants	
Fini Compressori (IT)	Compressor	Compressori rotativi a vite
Fini Compressori (IT)	Compressor	Essicatori a refrigerazione
GE.MA.TA. SpA (IT)	Sistema per il recupero del calore	Tunnel di essiccazione
GE.MA.TA. SpA (IT)	Macchina per la rifinitura a rullo di pelli difettose	Megastar
Giacomini spa (IT)	Pannelli solari termici	Serie PS
Giacomini spa (IT)	Settore Idro-sanitario	Serie R4
IML Impianti – INTERGEN (IT)	Cogenerazione, UPS, en. Rinnovabili	Cogenerazione a gas metano
IML Impianti – INTERGEN (IT)	Cogenerazione, UPS, en. Rinnovabili	
Ingersoll Rand (IT)	Compressor	Compressore VSD
Ingersoll Rand (IT)	Compressor	Essiccazione aria compressa ad adsorbimento
IREM (IT)	Illuminotecnica e micro-idroelettrico	Regolatori di flusso luminoso
IREM (IT)	UPS	Minipower UPX/R
ITALPROGETTI (IT)	Bottali ad alto rendimento energetico	Bottali Eco-Smart
Kaeser Compressori srl (IT)	Compressor	Compressori rotativi a vite serie SK
Kaeser Compressori srl (IT)	Compressor	Compressori a vite rotativi con SIGMA FREQUENCY CONTROL
Klimit srl (IT)	Valvole termostatiche	Cronotermostati e termostati
Klimit srl (IT)	Valvole termostatiche	Vari modelli e forme
KME Spa (IT)	Tetti solari in rame	TECU® Solar System
MTM Energia (IT)	Cogenerazione e frigoriferi ad assorbimento	
Officine di Cartigliano SpA (IT)	Essiccatore	EFT
Officine di Cartigliano SpA (IT)	Modulo di pirolisi	
Osa Caldaie srl (IT)	Caldaie	Serie SV (a combustione forzata)
Osa Caldaie srl (IT)	Caldaie	Serie SC (tradizionale a combustibili solidi)
R.D. Mec srl (IT)	Compressor	Compressore a vite Rollair
R.D. Mec srl (IT)	Compressor	Compressore oil-free
Robert Bosch S.p.A. (IT)	Impianti di cogenerazione	Cogeneratore a motore endotermico
SCM Industria S.A. (IT)	Tecnica innovativa di bordatura	SLIM LINE
Solarys energie rinnovabili srl (IT)	Energie rinnovabili	Circolazione forzata
Studio Associato di Ingegneria per l'Ambiente (IT)	Illuminazione industriale	
Sunheat (IT)	Pannelli solari termici	Circolazione forzata, modelli SKY e DELUXE
SunSystem spa (IT)	Sistemi Fotovoltaici	
Vortex Italia (IT)	Ugelli a basso consumo d'energia	Ugelli e getti a basso consumo d'energia
Wissenlux s.r.l. (IT)	illuminazione a led	Illuminazione a LED
OLCINAGroup Trading Co (SP)	Specific tannery machinery	Drum Cangilones Next
Grup Air, S.A. (SP)	Air compressor	Compressors variable speed
Grup Air, S.A. (SP)	Cooling plants	Coolers
E3ENER Enginyeria (SP)	Energy management	Energy efficiency studies
Airmatic S.A. (SP)	Air compressor	Compressors variable speed
UNI.CO SCCL (SP)	Energy management	Energy efficiency studies

Circutor (SP)	Power factor correction	Power factor correction (harmonics...)
Circutor (SP)	Electric distribution system	Protection current transformers
SOGORBMAC S.L. (SP)	Dryers	Air Dryer
SOGORBMAC S.L. (SP)	Specific Footwear Machinery	Specific Footwear Machinery
DOMUS INGENIERIA (SP)	Energy management	Energy managements
DOMUS INGENIERIA (SP)	Lighting system	Illuminating Engeneering
F.G. INGENIERIA S.L.P. (SP)	Inverter	Variador de frecuencia en compresores de aire
F.G. INGENIERIA S.L.P. (SP)	Solar Heating Systems	Instalaciones de placas solares térmicas
INNOVACIÓN ELECTRÓNICA Y CONTROL S.L.-INELCO. (SP)	Analytical Energy management soft	INELCO energy solutions
INNOVACIÓN ELECTRÓNICA Y CONTROL S.L.-INELCO. (SP)	Power Factor Correction	Batería de condensadores
JUAN ANTONIO SIMON ALBERT (SP)	Lighting system	Lighting systems
ELECTROLUZ, S.L (SP)	Fluorescent Lamps, Led bulb,	Luminarias eficientes
ELECTROLUZ, S.L (SP)	Power factor correction	Batería de condensadores
SC SERVELECT Srl (RO)	Air compressor. Chillers. Cold compressors	
SC SERVELECT Srl (RO)	Power transformers. Inverter	
SC SERVELECT Srl (RO)	Intelligent lighting systems	
SC SERVELECT Srl (RO)	High efficiency motors	
SC SERVELECT Srl (RO)	Pump systems	
SC SERVELECT Srl (RO)	Absorption refrigeration plants	
SC SERVELECT Srl (RO)	Boilers. Economisers.	
SC SERVELECT Srl (RO)	Dryers. Heat exchangers	
SC SERVELECT Srl (RO)	Heat pump	
SC SERVELECT Srl (RO)	Mechanical vapour compression	
JRO Masini de Cusut Industriale (RO)	Specific footwear machinery	JUKI DU-1181N Sewing machine
JRO Masini de Cusut Industriale (RO)	Specific footwear machinery	JUKI DSC-245V Sewing machine
Amifidel Com (RO)	Power factor correction	Microprocessor Controlled Power Factor Controller
Amifidel Com (RO)	Power factor correction	Power factor correction capacitors low voltage
LedStar (RO)	Lighting system	Led systems
Sisteme de iluminat cu Leduri (RO)	Lighting system	Led systems
Vesta-R ltd. (BG)	Specific tannery machinery	Sewing machines M-type Durkopp Adler
Vesta-R ltd. (BG)	Specific footwear machinery	Footwear machines - Skiving
Mikas ltd. (BG)	Led bulb	Led lighting solutions
Incotex Group Leader Light (BG)	Led bulb	Armstrong 60-60ext
Incotex Group Leader Light (BG)	Led bulb	Industrial 64 INT
STS Solar JSC (BG)	Photovoltaic system	Photovoltaic modules
Efka (GE)	High efficiency motors	Electric motors (servo motors for sewing machines)
TMT Elkom Ltd (BG)	Energy management	Electric systems automation/ control (Schneider, OSRAM)
URSA Terra (BG)	Insulation	Thermal insulataion
„БИМС“ ООД / "Bims" OOD (BG)	Air compressor	High efficiency compressors
PL Control (BG)	Specific footwear machinery	Machines/process automation
RGS OOD-Viessmann distributor (BG)	Heat pump	Large heat pumps (for industry)
RGS OOD-Viessmann distributor (BG)	Solar heating systems	Solar thermal systems Vitosol
RGS OOD-Viessmann distributor (BG)	Cogeneration plants	CHP unit-Vitobloc 200 Cogenerators
Paros OOD (BG)	Insulation	Thermal Insulation (Baumit systems)
Paros OOD (BG)	Insulation	Hydro Insulation (Baumit systems)
Schneider electric Bulgaria (BG)	Energy management	
CEI - Companhia de Equipamentos Industriais (PT)	Specific footwear machinery	Automatic laser engraving system
CEI - Companhia de Equipamentos Industriais (PT)	Specific footwear machinery	Automatic laser roughing system
INOCAM - Soluções de Manufatura Assistida por Computador, Lda	Specific footwear machinery	Software to control footwear industrial machines
ZIPOR - Equipamentos e Tecnologia Ind. (PT)	Specific footwear machinery	Laboratory testing equipment's for footwear
ZIPOR - Equipamentos e Tecnologia Ind. (PT)	specific tannery machinery	Laboratory testing equipment's for leather
Silva & Ferreira, Ida (PT)	Specific footwear machinery	Automatic ind. handling systems– stitching
Silva & Ferreira, Ida (PT)	Specific footwear machinery	Automatic ind.handling systems– assembling
FLOWMAT - Sistemas Ind. Lda (PT)	Specific footwear machinery	Automatic ind.handling systems – stitching
FLOWMAT - Sistemas Ind. Lda (PT)	Specific footwear machinery	Automatic ind.handling systems – assembling
TECMACAL - Equipamentos Ind.SA (PT)	Specific footwear machinery	Machines for footwear industry– cutting
TECMACAL - Equipamentos Ind.SA (PT)	Specific footwear machinery	Machines for footwear industry – finishing
Somacal - Sociedade de Máquinas e Acessórios de Calçado, Lda (PT)	Specific footwear machinery	Machines for footwear industry– stitching
Somacal - Sociedade de Máquinas e Acessórios de Calçado, Lda (PT)	Specific footwear machinery	Machines for footwear industry– finishing

Coprintec - Comércio de Equipamentos p/ Calçado SA (PT)	Specific footwear machinery	Machines for footwear industry– cutting
Coprintec - Comércio de Equipamentos p/ Calçado SA (PT)	Specific footwear machinery	Machines for footwear industry– assembling
Mind - -Sistemas Informáticos,Internet e Multimédia Lda (PT)	Specific footwear machinery	CAD Software solutions
Oficina de soluções (PT)	Specific footwear machinery	Software solutions
ExpandIndustria - Estudos, Projectos e Gestão de Empresas S.A (PT)	Specific footwear machinery	Software solutions
Creative Systems - Sistemas e Serviços de Consultoria Lda (PT)	Specific footwear machinery	RFID solutions
Mater-Maquinas e Tecnologia Ind. SA (PT)	Specific footwear machinery	Injection machines
Future solutions – Sist. eléctricos e Domótica Lda (PT)	Photovoltaic system	Photovoltaic panels
Termopor - Industrias térmicas de Portugal (PT)	Boiler	Boiler
Iberoair Lda (PT)	Air Compressor	Compressor
Unisola (PT)	Air Compressor	Compressor
Inovar - Sistemas de aire comprimido Lda (PT)	Air Compressor	Compressor
OSRAM Empresa de Aparelhagem Eléctrica Lda. (PT)	Lighting System	Led Technology
SINERSOL Ida (PT)	Photovoltaic system	Photovoltaic panels
EMSc (UK) Ltd (UK)	Electric distribution system	Powerstar
Wellman Thermal Services Ltd	Economisers	
Inverter Drive Systems Limited	Inverter	
Weishaupt (UK) Ltd	Boiler	Purflam, WG and WM ranges
t-mac Technologies Ltd	Energy Management	t-mac software suite
Ingersoll Rand	Air compressor	Ingersoll Rand X-series system automation
NewFound Energy Ltd	Energy management	Atlas Energy Management System
Babcock Wanson UK Ltd	Steam boiler	BWD series fire tube boilers
Fenner Ltd	Inverter	QD HAVA Inverter
Space-Ray	Other	ULTRA High Intensity radiant plaque heater
Cochran Ltd	Economiser (water)	Cochran economisers
KSB	High Efficiency motors	KSB Supreme motor generation
Chalmor Ltd	Lighting system	Refit T5
Siemens UK Ltd	High efficiency motors	SIMOTICS GP
Vacon Drives UK Ltd (UK)	Variable speed drives	Vacon 10 & Vacon 20