



**List of Automatically Eligible Equipment  
and Suppliers**

Residential Projects

August 2010

## **FOREWORD**

### **EQUIPMENT ELIGIBILITY CRITERIA**

The List of Eligible Materials and Equipment (LEME) is designed and updated by the PC and consists of an indicative open list of eligible materials and equipment with minimum energy performance characteristics. These sets of equipment are established based on the following criteria:

- Energy performance of new equipment and systems available in the local market;
- Energy performance of new equipment and systems representing BAT (Best Available Technologies);
- Performance requirements set by national standards and regulations.

Technologies considered as eligible under TURSEFF for residential sector sub-projects are:

- Low thermal transmission windows
- Insulation of walls, roof, floors
- Solar water heaters
- Energy efficient gas and liquid fuel boilers (including burners)
- HVAC systems (Heat pumps and Ventilation)

### **MANUFACTURERS ELIGIBILITY CRITERIA**

The List of Eligible Suppliers and Installers (LESI) includes the manufacturers, suppliers and installers of the equipment and materials listed in the LEME and are subject to the following eligibility criteria:

- CE marking or accredited Turkish testing laboratories certification
- staff that are qualified for installing equipment in accordance with the local legislation;
- necessary registrations and licences to perform the services;
- adequate insurance;
- the capacity to maintain installed equipment where necessary;
- adequate resources and the ability to implement Sub-projects of a good quality on schedule and budget.



**The list includes a set of equipment which can be provided by the aforementioned suppliers, among which the client can choose the equipment to be purchased and installed, but is not limited to the equipment present in the list. Whatever equipment which satisfies the LEME eligibility criteria is actually eligible.**

**The identified suppliers include the following companies, certified according, European, Turkish or international standards.**

## GLOSSARY

<b>ENE</b>	<b>Energy Efficiency</b>
<b>LEME</b>	<b>List of Eligible Materials and Equipment</b>
<b>LESI</b>	<b>List of Eligible Suppliers and Installers</b>
<b>CFL</b>	<b>Compact Fluorescent Lamps</b>
<b>HID</b>	<b>High Intensity discharge Lamps</b>
<b>HPS</b>	<b>High Pressure Sodium</b>
<b>CCFL</b>	<b>Cold Cathode Fluorescent Lamps</b>
<b>IPPC</b>	<b>Integrated Pollution Prevention and Control</b>
<b>P<sub>N</sub></b>	<b>Power – Nameplate</b>
<b>kW</b>	<b>kilo watt</b>
<b>COP</b>	<b>Coefficient of Performance</b>
<b>HVAC</b>	<b>Heating, Ventilation, Air Conditioning</b>
<b>AHU</b>	<b>Air Handling Unit</b>
<b>VRV</b>	<b>Variable Refrigerant Volume</b>
<b>AC</b>	<b>Alternate Current</b>
<b>VSD</b>	<b>Variable Speed Drive</b>
<b>kVA</b>	<b>kilo volt ampere</b>
<b>kWh</b>	<b>kilo watt hour</b>
<b>U</b>	<b>thermal transmittance</b>
<b>k</b>	<b>thermal conductivity</b>



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## 1 DOUBLE AND TRIPLE GLAZED WINDOWS

### 1.1 List of Eligible Materials and Equipment (LEME) for Double and triple Glazed Windows

Equipment / Technology SubCategory	Eligibility Criteria	Indicative Price Range	Local Suppliers/ Manufacturers	References
Installation of new PVC frame Double-Glazed Windows	Maximum U-factor for the whole window: < 1.8 W/m <sup>2</sup> K	170-450 TL (1,2 m width – 1,0 m height)	Firatpen, Pimapen, Egepen	CE Marking as per EN ISO 10077-1  Turkish Standard for Building Energy Performance Definition TS-825 'Thermal Insulation in Buildings'
Installation of new PVC frame Triple-Glazed Windows	Maximum U-factor for the whole window: < 1.6 W/m <sup>2</sup> K	350- 600 TL (1,2 m width – 1,0 m height)	Firatpen, Pimapen, Egepen	CE Marking as per EN ISO 10077-1  Turkish Standard for Building Energy Performance Definition TS-825 'Thermal Insulation in Buildings'

## 1.2 List of Eligible Suppliers and Installers (LESI) for Double and triple Glazed Windows

Company	Product Category	Technical Specification	Model	Efficiency (Thermal Transmittance)	Guarantee and Warranty conditions	Services included	Certification
<b>Firatpen (Turkey)</b>	PVC Double Glazing	80 mm profile	S 80	1,56 W/m <sup>2</sup> K (whole window)	2 years	none	TS 5358 EN12608
		75 mm profile	S-75	1,56 W/m <sup>2</sup> K (whole window)			
		70 mm profile	S-70	1,57 W/m <sup>2</sup> K (whole window)			
	PVC Triple Glazing	80 mm profile, 6 chambers, TPE gasket	S80	1,4 W/m <sup>2</sup> K (whole window)	2 years	none	TS 5358 EN12608
	PVC frame Windows with panels or triple glazing	80 mm profile	S80	1,24 W/m <sup>2</sup> K (whole window)	2 years	none	TS 5358 EN12608
		75 mm profile	S75	1,4 W/m <sup>2</sup> K (whole window)			
		70 mm profile	S70	1,5 W/m <sup>2</sup> K (whole window)			
<b>Pimapen (Turkey)</b>	PVC Double Glazing	75 mm profile	S7599 Fantasia	1,65 W/m <sup>2</sup> K (whole window)	2 years	none	TS 5358 EN12608
		70 mm profile	S7000 Maximus or S7000 Horizon	1,7 W/m <sup>2</sup> K (whole window)			
		60 mm profile	S6000 Quadro	1,71 W/m <sup>2</sup> K (whole window)			
<b>Egepen (Turkey)</b>	PVC Double Glazing	76 mm profile	Inoutic Prestige	1,5 W/m <sup>2</sup> K (whole window)	2 years	None	TS 5358 EN12608
		70 mm profile	Zendow	1,6 W/m <sup>2</sup> K (whole window)	2 years	None	TS 5358 EN12608

Company	Product Category	Technical Specification	Model	Efficiency (Thermal Transmittance)	Guarantee and Warranty conditions	Services included	Certification
		60 mm profile	Max	1,6 W/m <sup>2</sup> K (whole window)	2 years	None	TS 5358 EN12608
<b>Egepen (Turkey)</b>	PVC Triple Glazing	76 mm profile	Inotic Prestige	1,4 W/m <sup>2</sup> K (whole window)	2 years	None	TS 5358 EN12608
		70 mm profile	Zendow	1,5 W/m <sup>2</sup> K (whole window)	2 years	None	TS 5358 EN12608
		60 mm profile	Max	1,5 W/m <sup>2</sup> K (whole window)	2 years	None	TS 5358 EN12608

## 2 INSULATION OF WALLS, ROOFS AND FLOORS

### 2.1 List of Eligible Materials and Equipment (LEME) for Insulation of Walls, Roofs and Floors

Equipment / Technology SubCategory	Eligibility Criteria	Indicative Price Range (excluding VAT)	Manufacturer Supplier Installer	References
Fibreglass (blankets)	<p>Maximum thermal conductivity (k) value for the material:  <math>k \leq 0.045</math> W/mK</p> <p>Maximum U-factor for whole wall – Equivalent insulating material thickness (<sup>1</sup>):            Walls: <math>\leq 0.05</math> W/m<sup>2</sup>K – 8 cm            Roof: <math>\leq 0.03</math> W/m<sup>2</sup>K – 13 cm            Floor: <math>\leq 0.05</math> W/m<sup>2</sup>K – 8 cm</p>	<p>For 12 kg/m<sup>3</sup>; 8cm            4,42TL/m<sup>2</sup></p> <p>24 kg/m<sup>3</sup>; 5cm            8,46TL/m<sup>2</sup></p>	IZODER Members	<p>CE marking for insulation materials (from EN 13162: 2001 to EN13171:2001)</p> <p>Turkish Standard for Building Energy Performance Definition TS-825 'Thermal Insulation in Buildings'</p>
Rigid fiberglass (rigid boards)	<p>Maximum thermal conductivity (k) value for the material:  <math>k \leq 0.045</math> W/mK</p> <p>Maximum U-factor for whole wall – Equivalent insulating material thickness (<sup>1</sup>):            Walls: <math>\leq 0.05</math> W/m<sup>2</sup>K – 8 cm            Roof: <math>\leq 0.03</math> W/m<sup>2</sup>K – 13 cm            Floor: <math>\leq 0.05</math> W/m<sup>2</sup>K – 8 cm</p>	5cm; 13 TL/m <sup>2</sup>	IZODER Members	<p>CE marking for insulation materials (from EN 13162: 2001 to EN13171:2001)</p> <p>Turkish Standard for Building Energy Performance Definition TS-825 'Thermal Insulation in Buildings'</p>
Mineral (rock wool)	<p>Maximum thermal conductivity (k) value for the material:  <math>k \leq 0.04</math> W/mK</p> <p>Maximum U-factor for whole wall – Equivalent</p>	5cm; about 18,00 TL/m <sup>2</sup>	IZODER Members Baumit	CE marking for insulation materials (from EN 13162: 2001 to EN13171:2001)

Equipment / Technology SubCategory	Eligibility Criteria	Indicative Price Range (excluding VAT)	Manufacturer Supplier Installer	References
	insulating material thickness <sup>(1)</sup> : Walls: ≤ 0.5 W/m <sup>2</sup> K – 7 cm Roof: ≤ 0.3 W/m <sup>2</sup> K – 12 cm Floor: ≤ 0.5 W/m <sup>2</sup> K – 7 cm			Turkish Standard for Building Energy Performance Definition TS-825 'Thermal Insulation in Buildings'
Extruded polystyrene (XPS)	Maximum thermal conductivity (k) value for the material: k ≤ 0.031 W/mK  Maximum U-factor for whole wall – Equivalent insulating material thickness <sup>(1)</sup> : Walls: ≤ 0.05 W/m <sup>2</sup> K – 5 cm Roof: ≤ 0.03 W/m <sup>2</sup> K – 9 cm Floor: ≤ 0.05 W/m <sup>2</sup> K – 5 cm	3cm – 5 cm: 17.5 – 24 TL/m <sup>2</sup>	IZODER Members	CE marking for insulation materials (from EN 13162: 2001 to EN13171:2001)  Turkish Standard for Building Energy Performance Definition TS-825 'Thermal Insulation in Buildings'
Perlite, Dry cellulose, Wet spray cellulose	Maximum thermal conductivity (k) value for the material: k ≤ 0.035 W/mK  Maximum U-factor for whole wall – Equivalent insulating material thickness <sup>(1)</sup> : Walls: ≤ 0.05 W/m <sup>2</sup> K – 6 cm Roof: ≤ 0.03 W/m <sup>2</sup> K – 10 cm Floor: ≤ 0.05 W/m <sup>2</sup> K – 6 cm		IZODER Members	CE marking for insulation materials (from EN 13162: 2001 to EN13171:2001)  Turkish Standard for Building Energy Performance Definition TS-825 'Thermal Insulation in Buildings'
Expanded polystyrene (EPS)	Maximum thermal conductivity (k) value for the material: k ≤ 0.04 W/mK  Maximum U-factor for building insulation: Walls: ≤ 0.05 W/m <sup>2</sup> K – 7 cm Roof: ≤ 0.03 W/m <sup>2</sup> K – 12 cm Floor: ≤ 0.05 W/m <sup>2</sup> K – 7 cm		IZODER Members Baumit	CE marking for insulation materials (from EN 13162: 2001 to EN13171:2001)  Turkish Standard for Building Energy Performance Definition

Equipment / Technology SubCategory	Eligibility Criteria	Indicative Price Range (excluding VAT)	Manufacturer Supplier Installer	References
				TS-825 'Thermal Insulation in Buildings'
Polyurethane, Spray Polyurethane Foam (SPF)	<p>Maximum thermal conductivity (k) value for the material:  <math>k \leq 0.03 \text{ W/mK}</math></p> <p>Maximum U-factor for whole wall – Equivalent insulating material thickness <sup>(1)</sup>:            Walls: <math>\leq 0.05 \text{ W/m}^2\text{K} - 5 \text{ cm}</math>            Roof: <math>\leq 0.03 \text{ W/m}^2\text{K} - 9 \text{ cm}</math>            Floor: <math>\leq 0.05 \text{ W/m}^2\text{K} - 5 \text{ cm}</math></p>		IZODER Members	<p>CE marking for insulation materials (from EN 13162: 2001 to EN13171:2001)</p> <p>Turkish Standard for Building Energy Performance Definition TS-825 'Thermal Insulation in Buildings'</p>
Foam Glass	<p>Maximum thermal conductivity (k) value for the material:  <math>k \leq 0.045 \text{ W/mK}</math></p> <p>Maximum U-factor for whole wall – Equivalent insulating material thickness <sup>(1)</sup>:            Walls: <math>\leq 0.05 \text{ W/m}^2\text{K} - 8 \text{ cm}</math>            Roof: <math>\leq 0.03 \text{ W/m}^2\text{K} - 13 \text{ cm}</math>            Floor: <math>\leq 0.05 \text{ W/m}^2\text{K} - 8 \text{ cm}</math></p>		IZODER Members	<p>CE marking for insulation materials (from EN 13162: 2001 to EN13171:2001)</p> <p>Turkish Standard for Building Energy Performance Definition TS-825 'Thermal Insulation in Buildings'</p>

<sup>(1)</sup> Reported U Factor is related to the whole walls, the 'equivalent insulating material thickness' represent the minimum thickness to achieve quoted transmittance values (considering that insulating material contributes for about 90% of the total U Factor)

(2) the manufacturers members of IZODER are:

1. AKÇALI WAGNER BOYA VE KIMYA SAN. VE TIC. A.Ş.
2. ANKAPOR YALITIM VE AMBALAJ SAN TIC. A.Ş.
3. ANKARA EPS ÜRETİM VE İNŞ. SAN. A.Ş.
4. AUSTROTHERM YALITIM MALZ. SAN. VE TIC. LTD. ŞTI.
5. BAUMIT İNŞ. MALZ. SAN. VE TIC. LTD. ŞTI.
6. BETEK BOYA VE KIMYA SANAYİ A.Ş.

7. BTM BİTÜMLÜ TECRİT MADDELERİ SAN. VE TİC. A.Ş.
8. DİLEKPOR YALITIM VE AMB. MALZ. SAN. TİC. LTD. ŞTİ.
9. DİNAMİK ISI LTD. ŞTİ.
10. DOW TÜRKİYE KİMYA SAN. VE TİC. LTD. ŞTİ.
11. EKY ECZACIBAŞI KORAMIC YAPI KİMYASALLARI SAN. VE TİC. A.Ş.
12. ERSAN AMBALAJ VE YALITIM SAN. TİC. A.Ş.
13. ERYAP PLASTİK SAN. VE TİC. A.Ş.
14. FIXKİM PAZARLAMA A.Ş.
15. GESERPAREX YAPI KİMYASALLARI SANAYİ VE TİC. A.Ş.
16. GROFEN İLERİ YAPI TEKNOLOJİLERİ İZOL. MAD. SAN. VE TİC. A.Ş.
17. HİTİT YALITIM VE YAPI MALZEMELERİ SAN.VE TİC.LTD.ŞTİ.
18. İZOBER ROCK (BEŞLER SAN. VE TİC. A.Ş.)
19. İZOCAM TİC. VE SAN. A.Ş.
20. KNAUF İNŞ. VE YAPI ELEMANLARI TİC. A.Ş.
21. KÜTAHYA YAPI KİMYASALLARI SAN. VE TİC. LTD. ŞTİ.
22. MARSHALL BOYA VE VERNİK SAN. A.Ş.
23. ODE YALITIM SAN. VE TİC. A.Ş.
24. ÖZGÜR ATERMİT SAN. VE TİC. A.Ş.
25. PAYER AMBALAJ YALITIM KUYUMCULUK VE GIDA SAN. TİC. LTD.ŞTİ.
26. POLYPET BİTÜMLÜ ÖRTÜLER SAN. VE TİC. LTD. ŞTİ.
27. STROTON HIZLI KONUT SİSTEMLERİ VE YALITIM A.Ş.
28. TEKBAU YAPI MALZ. MADENCİLİK SAN. A.Ş.
29. URSA ISI YALITIM SAN. VE TİC. A.Ş.
30. YALTEKS YALITIM MALZ. ÜRET. PAZ. A.Ş.

## 2.2 List of Eligible Suppliers and Installers (LESI) for Insulation of Walls, Roofs and Floors

Supplier	Sub Category	Technical Specification	Model	Efficiency (thermal conductivity)	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
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Supplier	Sub Category	Technical Specification	Model	Efficiency (thermal conductivity)	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
<b>(ODE) Turkish</b>	Extruded polystyrene (XPS)	Format: 60 cmx120cm Density: min. 30 kg/m3	Isipan	Thermal conductivity: = 0.028W/mK	2 years	None	TS 11989 EN 13164
	Mineral (rockwool)	Format: 60 cm x 120 cm Density: 150 kg/m3	Rockflex Rockwool Coating Board	Thermal conductivity: = 0.040W/mK	2 years	None	TS EN 13501-1
	Glasswool (blankets)	Density : 12-24 kg/m3 classified as "A1"group non-combustible. Flame spread :5, Fuel contributed:0, Smoke developed:0 are determined on surface burning characteristics test.	Starflex Glasswool Building Blankets	Thermal conductivity < 0,040 W/mK at 10°C	2 years	None	ASTM E 84 EN 13501-1 TS 13047 EN 13162
	Extruded polystyrene (XPS)	They are designed with the dimension of 60 x 120 cm (width x length ) and the thicknesses of 2-2,5-3-4-5-6-8-10cm Optimized water vapour diffusion resistance coefficient;preventing condensation, letting the component breathe; Non-absorbant closed cell structure.	ISIPAN BD	Thermal conductivity < 0,028 W/mK	2 years	None	EN 13501-1.
<b>Baumit International</b>	Expanded polystyrene (EPS)	Vapour-permeable façade insulation panel based on EPS ( $\mu$ value $\leq 10$ )	Baumit open Plate	Thermal conductivity: 0.040 W/mK	2 years	None	EN 13163

Supplier	Sub Category	Technical Specification	Model	Efficiency (thermal conductivity)	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
	Expanded polystyrene (EPS)	Vapour-permeable façade insulation panel based on EPS ( $\mu$ value $\leq 10$ ), with improved thermal insulation properties	Baunit open Plate plus	Thermal conductivity: 0.032 W/mK	2 years	None	EN 13163
	Expanded polystyrene (EPS)	Format: 50 x 100 cm.	Baunit Protherm / Duotherm	Thermal conductivity: 0.040 W/mK	2 years	None	EN 13163 ÖNORM B 6000
	Expanded polystyrene (EPS)	Fully carbon	Baunit Starherm	Thermal conductivity: 0,032 W/mK	2 years	None	Tested according to ÖNORM EN 13163. EPS-F according to ÖNORM B 6000.
	Expanded polystyrene (EPS)	Embossed insulation panel with straight edge for the base area. Format: 60 x 125 cm.	Baunit XPS	Thermal conductivity: 0.035 W/mK	2 years	None	EN 13164 ÖNORM B 6000
	Mineral (rock wool)	Non-flammable mineral wool plaster base panel Thicknesses: 2 – 18 cm, format: 80 cm x 62.5 cm	Baunit platte 040 – coated on one side	Thermal conductivity: 0.040 W/mK	2 years	None	EN 13162 ÖNORM B 6000
	Mineral (rock wool)	Non-flammable mineral lamella insulation panel with surface coated on one side. Thicknesses: 4 – 20 cm, format: 120 cm x 20 cm	Baunit Lamellen Plate 040 – coated on one side	Thermal conductivity: 0.040 W/mK	2 years	None	EN 13162 ÖNORM B 6000
<b>Terratherm (Izocam) Turkish</b>	Expanded polystyrene (EPS)	Format: 50 cm x 100 cm	Manto Izopor	Thermal conductivity: 0.040 W/mK	2 years	None	TS 7316 EN 13163

Supplier	Sub Category	Technical Specification	Model	Efficiency (thermal conductivity)	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
	Mineral (rock wool)	Format: 60 cm x 120 cm	RockWool Exterior Coating Board	Thermal conductivity: 0.040 W/ mK	2 years	None	TS 901-1 EN 13162
	Extruded polystyrene (XPS)	Format: 60 cm x 125 cm	Manto Foamboard	Thermal conductivity: 0.031 W/ mK	2 years	None	TS 11989 EN 13164
	<b>Izocam Turkish</b>	Mineral (rock wool)	Fire resistance: İzocam Rock Wool Building Boards are classified as "A" group non combustible.	RockWool building boards	Thermal conductivity < 0,040 W/mK at 10°C	2 years	None
	Extruded polystyrene (XPS)	Maximum and minimum working temperatures: +70 °C - 180 °C. Dimension: 60 x 125 cm (width x length), thicknesses of 3-4-5-6-8 cm. 100 % closed cell structure. Classified as "E" according to EN 13501-1. It covers all requirements of EN 13499 Thermal Insulation Products for Buildings.	Foamboard	Thermal conductivity < 0,031 W/mK	2 years	None	EN 13501-1 EN 13499
	Fibreglass (blankets)	Fire resistance with respect to ASTM E 84 and EN 13501-1 Classified as "A" group non combustible. Flame spread: 5, Fuel contributed: 0, Smoke developed: 0	Glasswool Building Blankets	Thermal conductivity < 0,040 W/mK at 10°C	2 years	None	ASTM E 84 EN 13501-1
	Rigid fiberglass (rigid boards)	Fire resistance with respect to ASTM E 84 and EN 13501-1 Classified as "A" group non combustible. Flame spread: 5, Fuel contributed: 0, Smoke developed: 0	Glasswool Building Boards	Thermal conductivity < 0,040 W/mK at 10°C	2 years	None	ASTM E 84 EN 13501-1

### 3 SOLAR WATER HEATERS

#### 3.1 List of Eligible Materials and Equipment (LEME) for Solar Water Heaters

Equipment / Technology	Eligibility Criteria	Indicative Price Range	Local Supplier/ Manufacturer	References
Flat plate collectors: Solar thermal products for hot water generation covered by EN 12975 and EN 12976 including systems for space heating: Flat plate collectors	Conversion factor: ≥ 0.75  Yearly Solar yield, domestic hot water: > 1,300 kWh/m <sup>2</sup>	250 – 800 €/m <sup>2</sup>	Baymak Demirdöküm, Eraslan, Feniş, Viessmann	CE Marking (EN 12975) TSE Conformity

<p>Evacuated tube collectors: Solar thermal products for hot water generation covered by EN 12975 and EN 12976 including systems for space heating</p>	<p>Conversion factor: <math>\geq 0.75</math></p> <p>Yearly Solar yield, domestic hot water: <math>&gt; 1,300 \text{ kWh/m}^2</math></p>	<p>300 – 800 €/m<sup>2</sup></p>	<p>RES, Viessmann,</p>	<p>CE Marking (EN 12975) TSE Conformity</p>
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### 3.2 List of Eligible Suppliers and Installers (LESI) for Solar Water Heaters

Supplier	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Certification
Baymak	Flat Plate Collectors	40 mm rockwool insulation	Solenstar Advanced XL	Conversion factor = 0,78	5 Years	None	TS EN 12975, Solar
		40 mm rockwool insulation	Solenstar Premium	Conversion factor = 0,78	10 Years	None	TS EN 12975, Solar
		40 mm rockwool insulation	Solenstar Premium L	Conversion factor = 0,79	10 Years	None	TS EN 12975, Solar
		40 mm rockwool insulation	Solenstar Gold	Conversion factor = 0,78	10 Years	None	TS EN 12975, Solar
Demirdöküm	Flat Plate Collectors	50 mm glasswool insulation	Sunrol	Conversion factor = 0,84	5 Years	None	TS EN 12975-1, 12075-2, Solar-KEYMARK
Eraslan	Flat Plate Collectors	50 mm glasswool insulation	Bluestar S-Cu, Bluestar L-Cu, Bluestar XL-Cu, Bluestar XXL-Cu	Conversion factor = 0,79	2 Years	None	TS EN 12975, Solar-KEYMARK
Feniş	Flat Plate Collectors	Selective surface	Solartek AL2.0, Solartek AL2.5	Conversion factor = 0,84	10 Years	None	TS EN 12975, Solar-KEYMARK
		Selective surface	Solartek RA 90CU-200, RA 90CU-250	Conversion factor = 0,76	5 Years	None	TS EN 12975, Solar-KEYMARK

Supplier	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Certification
RES (China)	Evacuated tube collectors	Heat pipe series, 15 Tube	58/1800-15	Conversion factor = 0.75	13 Years	Installation	TS EN 12976-1,12976-2, CE
		Heat pipe series, 20 Tube	58/1800-20	Conversion factor = 0.75	14 Years	Installation	TS EN 12976-1,12976-2, CE
		Heat pipe series, 25 Tube	58/1800-25	Conversion factor = 0.75	15 Years	Installation	TS EN 12976-1,12976-2, CE
		Heat pipe series, 30 Tube	58/1800-30	Conversion factor = 0.75	16 Years	Installation	TS EN 12976-1,12976-2, CE
Viessmann (Germany)	Evacuated tube collectors	Pressured system, vaccum tube collectors + DHW tank, 9 tubes	Vitosol 222-T	Conversion factor = 0,75	2 Years	Installation	EN 12976, Solar-KEYMARK
		Pressured system, selective absorber  2,3 m <sup>2</sup> net absorber surface	Vitosol 200-T	Conversion factor = 0,75	2 Years	Installation	EN 12976, Solar-KEYMARK
	Flat Plate Collectors	Pressured system, selective absorber  2,3 m <sup>2</sup> net absorber surface	Vitosol 100-F	Conversion factor = 0,75	2 Years	Installation	EN 12975, Solar-KEYMARK
		Pressured system, selective absorber  2,3 m <sup>2</sup> net absorber surface	Vitosol 200-F	Conversion factor = 0,75	2 Years	Installation	EN 12975, Solar-KEYMARK



## 4 EFFICIENT GAS AND LIQUID FUEL BOILERS (INCLUDING BURNERS)

### 4.1 List of Eligible Materials and Equipment (LEME) for efficient gas and liquid fuel boilers (including burners)

Equipment / Technology SubCategory	Sizing Eligibility Criteria (Medium for Istanbul. Range will be changed to recognize ambient temperatures in other regions)	Technical Eligibility Criteria	Indicative Price Range	Local Supplier/ Manufacturer	References
Gas/Liquid Fuel Standard Hot Water/Space Heating boiler: (without condensation)	Maximum Installed Power: 4 kW - 400 KW	<p>Efficiency Value <math>\geq 87.5\% + 1.5 \log P_N</math> (kW) for cold input water (open circuit)</p> <p>Efficiency Value <math>\geq 84\% + 2 \log P_N</math> (kW) for warm input water (closed circuit)</p>	Euro 3,000 - 30,000	Özmaksan Erensan Viessmann Buderus Ferroli Alarko	<p>EU IPPC Reference Document on Best available Techniques (BAT) for Energy Efficiency</p> <p>Council Directive 92/42/EEC Council Directive 93/68/EEC Directive 2004/8/EC Directive 2005/32/EC Directive 2008/28/EC</p>

Equipment / Technology SubCategory	Sizing Eligibility Criteria (Medium for Istanbul. Range will be changed to recognize ambient temperatures in other regions)	Technical Eligibility Criteria	Indicative Price Range	Local Supplier/ Manufacturer	References
<p>Gas fuel condensing Hot Water/Space Heating boilers: a gas boiler designed to condense permanently a large part of the water vapour contained in the combustion process</p>	<p>Maximum Installed Power: 4 kW - 400 kW</p>	<p>Efficiency Value <math>\geq 91\% + 1 \log P_N</math> (kW)</p>	<p>Euro 3,500 - 30,000</p>	<p>Erensan Özmaksan Viessmann Buderus Alarko Ferrol</p>	<p>EU IPPC Reference Document on Best available Techniques (BAT) for Energy Efficiency</p> <p>Council Directive 92/42/EEC Council Directive 93/68/EEC Directive 2004/8/EC Directive 2005/32/EC Directive 2008/28/EC</p>
<p>Liquid Fuels condensing Hot Water/Space Heating boilers: a liquid fuel boiler designed to condense permanently a large part of the water vapour contained in the combustion process</p>	<p>Maximum Installed Power: 4 kW To 400 kW</p>	<p>Efficiency <math>\geq 87.5\% + 1.5 \log P_N</math> (kW)</p>	<p>Euro 8,500 - 30,000</p>	<p>Erensan Viessmann Buderus</p>	<p>EU IPPC Reference Document on Best available Techniques (BAT) for Energy Efficiency</p> <p>Council Directive 92/42/EEC Council Directive 93/68/EEC Directive 2004/8/EC Directive 2005/32/EC Directive 2008/28/EC</p>

Equipment / Technology SubCategory	Sizing Eligibility Criteria (Medium for Istanbul. Range will be changed to recognize ambient temperatures in other regions)	Technical Eligibility Criteria	Indicative Price Range	Local Supplier/ Manufacturer	References
Automatic forced draught burner: burner that is fitted with an automatic ignition, flame monitoring and burner control devices	Boiler Installed Power: 4 kW to 400 kW Burners installed power: 4 kW to 400 kW (1)  (Burner installed power to match that of the boiler)	Gas burners according to EN 676:2003+A2 → Automatic forced draught burners for gaseous fuels  Emissions: • CO < 40 mg/kWh • NOx ≤ 120 mg/kWh	Euro 2,000 – 10,000	Alarko Lamborghini Weishaupt Selnikel Erensan Buderus	EN 676:2003+A2
Recuperative and Regenerative burners: is a burner with a heat exchanger which extracts heat from the furnace waste gases to preheat the incoming combustion air.	Boiler Installed Power: 4 kW to 400 kW Burners installed power: 4 kW to 400 kW (1)  (Burner installed power to match that of the boiler)	Gas burners according to EN 676:2003+A2 → Recuperative / Regenerative burners with heat exchanger to preheat combustion air  Emissions: • CO < 40 mg/kWh • NOx ≤ 120 mg/kWh	Euro 2,000 – 10,000	Alarko Lamborghini Weishaupt Selnikel Erensan Buderus	EN 676:2003+A2

(1) Power of each burner will depend from the number of burners to be installed

#### 4.2 List of Eligible Suppliers and Installers (LESI) for efficient gas and liquid fuel boilers (including burners)

Supplier	Sub Category	Technical Specification	Model	Efficiency (1)	Guarantee and Warranty conditions	Services included	Certificates
<b>Özmaksan Turkish</b>	Gas/Liquid Fuel Standard Hot Water/Space Heating boiler	120 kW - 360 kW Scotch type, three pass Low NOx emissions	ÖSK-100 ÖSK-150 ÖSK-200 ÖSK-250 ÖSK-300	93,11%	2 – 5 years (depending on the model)	None	TS EN 377 DIN TÜV
	Gas/Liquid Fuel Standard Hot Water/Space Heating boiler	108 kW - 360 kW three pass Low NOx emissions Efficient insulation with 80mm glass wool		93,11%	2 – 5 years (depending on the model)	None	
	Gas/Liquid Fuel Standard Hot Water/Space Heating boiler	120 kW – 360 kW two pass Low counter pressure Efficient insulation with 80mm glass wool Low NOx emissions		90%	2 – 5 years (depending on the model)	None	
<b>Erensan (Turkish)</b>	Gas/Liquid Fuel Standard Hot Water/Space Heating boiler	70 kW - 360 kW three pass Low NOx emissions Efficient insulation with	TR P 70 TR P 117 TR P 175 TR P 233 TR P 291 TR P 350	92%	2 – 5 years (depending on the model)	None	TS EN 377

Supplier	Sub Category	Technical Specification	Model	Efficiency (%)	Guarantee and Warranty conditions	Services included	Certificates
		80mm glass wool Operation pressure : 3-8 bar max operating temp 120 C					
	Gas/Liquid Fuel Standard Hot Water/Space Heating boiler	84 kW - 360 kW Efficient insulation with 80mm glass wool	TR 80 TR 105 TR 150 TR 200 TR 250 TR 300 TR 350	90%	2 – 5 years (depending on the model)	None	
<b>Buderus (German/Turkish)</b>	Gas/Liquid Fuel Standard Hot Water/Space Heating boiler	92 kW – 360 kW Operation pressure : 6 bar Max operating temp 120 °C Low NOx emissions Efficient insulation	SK-425/90 SK-425/120 SK-425/150 SK-425/180 SK-625/230 SK-625/310	93%	2 – 5 years (depending on the model)	None	TS EN 377
	Gas/Liquid Fuel Standard Hot Water/Space Heating boiler	92 kW – 360 kW Operation pressure : 6 bar Max operating temp 120 °C Low NOx emissions Efficient	SE-635/230 SE-635/280 SE-635/350	94,5%	2 – 5 years (depending on the model)	None	

Supplier	Sub Category	Technical Specification	Model	Efficiency (%)	Guarantee and Warranty conditions	Services included	Certificates
		insulation					
<b>Viessmann (German/Turkish)</b>	Gas/Liquid Fuel Standard Hot Water/Space Heating boiler	92 kW – 360 kW Operation pressure : 6 bar Max operating temp 120 °C Low NOx emissions Efficient insulation	Vitoplex 200	96,3%	2 – 5 years (depending on the model)	None	TS EN 377
			Vitorond 200	96,4%			
	Condensing Hot Water/Space Heating boilers	28 kW – 1,009 kW	Vitocrossal 200 Vitocrossal 300	109%	2 – 5 years (depending on the model)	None	
<b>Ferrol Italian/Turkish</b>	Gas/Liquid Fuel Standard Hot Water/Space Heating boiler	92 kW – 360 kW Operation pressure : 6 bar Max operating temp 120 °C Low NOx emissions Efficient insulation	Pegasus F2	90%	2 – 5 years (depending on the model)	None	TSE, CE, EU 97/23 EEC, PEL certificates
			Pegasus F3	90%			
	Gas/Liquid Fuel Standard Hot Water/Space Heating boiler	108 kW (cast type)	GN1	90%	2 – 5 years (depending on the model)	None	TSE, CE, EU 97/23 EEC, PEL certificates
		106 kW (cast type)	GN2	92%			
		92 kW (cast)	GN2	92%			

Supplier	Sub Category	Technical Specification	Model	Efficiency (%)	Guarantee and Warranty conditions	Services included	Certificates
		259 kW (cast type)	Economax	97.2%			
		96 - 6.600 kW (cast type)	Economax	97.2%			
		≥ 97 kW (cast type)	Vitotrans 300	+12% gas fuels +5% liquid fuels			
	Condensing Hot Water/Space Heating boilers	180 kW - 360 kW (three pass) Low NOx emissions Efficient insulation with 80mm glass wool	TR C 175 TR C 230 TR C 290 TR C 350		2 – 5 years (depending on the model)	None	TS EN 15417, CE
	Condensing Hot Water/Space Heating boilers	319 kW Waste gas recovery Low NOx emissions Efficient insulation	SB-615/310	109%	2 – 5 years (depending on the model)	None	TS EN 377, CE

Supplier	Sub Category	Technical Specification	Model	Efficiency (%)	Guarantee and Warranty conditions	Services included	Certificates
<b>Alarko Turkish</b>	Gas/Liquid Fuel Standard Hot Water/Space Heating boiler (Döküm Kazan)	76kW – 448 kW	ADK 105 ADK 106 ADK 107 ADK 108 ADK 109 ADK 205 ADK 206 ADK 207 ADK 208 ADK 209 ADK 210 ADK 211 ADK 307	93%	5 Year	None	TS EN 430, CE
	Gas/Liquid Fuel Standard Hot Water/Space Heating boiler (Çelik Kazan)	35kW – 465 kW	ACK2-30 ACK2-40 ACK2-50 ACK2-60 ACK2-70 ACK2-80 ACK2-100 ACK2-120 ACK2-125 ACK2-140 ACK2-150 ACK2-160 ACK2-180 ACK2-200 ACK2-250 ACK2-300 ACK2-350 ACK2-400	93%	5 Year	None	TS EN 377, CE

**Burners**

Supplier.	Sub Category	Technical Specification	Model	Efficiency	Guarantee period	Other Services	Certificates
Alarko	Burner (gas)	29-65kW	ALG 7 - 1/2"		3 Years	Operator courses and service available	TS EN 676, CE
		41-80kW	ALG 9 - 1/2"				
		63-156kW	ALG 16 - 1"				
		63-156kW	ALG 16 - 1/2"				
		123-205kW	ALG 27 - 1"				
		123-205kW	ALG 27 - 1/2"				
		110-212kW	ALG 27/2 - 1"				
		110-212kW	ALG 27/2 - 3/4"				
		172-290kW	ALG 30 - 1 1/4"				
		172-290kW	ALG 30 - 1/2"				
		249-340kW	ALG 36 - 1 1/2"				
		249-340kW	ALG 36 - 3/4"				
		173-365kW	ALG 36/2 - 1 1/2"				
		173-365kW	ALG 36/2 - 3/4"				
		250-580kW	ALG 60/2 - 2"				
		250-580kW	ALG 60/2 - 1 1/2"				
		250-580kW	ALG 60/2 - 3/4"				
		285-745kW	ALG 77/2* - 2 1/2"				
		285-745kW	ALG 77/2 - 2"				
		285-745kW	ALG 77/2 - 1"				
416-908kW	ALG 94/2* - 2 1/2"						
416-908kW	ALG 94/2 - 2"						
416-908kW	ALG 94/2 - 1 1/2"						



Supplier.	Sub Category	Technical Specification	Model	Efficiency	Guarantee period	Other Services	Certificates
Lamborghini	Burner (Gas)	130 - 250kW	EM 26/M-E.D7-1 1/4"	NOx and CO2 emissions are lower than emission standards regulated by EN 676	3 Year	Operator courses and service available	EN 676, CE
		130 - 250kW	EM 26/M-E.D5-3/4"		3 Year		
		163 - 390kW	EM 40/M-E.D7-1 1/4"		3 Year		
		163 - 390kW	EM 40/M-E.D5-3/4"		3 Year		
		145 - 582kW	EM 50/M-E.D9 -1 1/2"		3 Year		
		145 - 582kW	EM 50/M-E.D8 -1 1/4"		3 Year		
		210 - 740kW	EM 70/M-E.D11 - 2"		3 Year		
		210 - 740kW	EM 70/M-E.D8-1 1/4"		3 Year		
		12,5-50 kW	WG 5 N/1-A LN		2 years		
		12,5-50 kW	WG 5 F/1-A LN		2 years		
Weishaupt	(Natural Gas, single stage)	12,5-50 kW	WG 10 N/0-D	NOx and CO2 emissions are below emission standards regulated by EN 267	2 years	Operator courses and service available	EN 676 90/396/EEC (Gas Appliance Directive), 98/37/EC (Machinery Directive), 89/336/EEC (Electromagnetic Compatibility), 73/23/EEC (Low Voltage
	(Natural Gas, single stage)	40-110 kW	WG 10 N/1-D		2 years		
	(Natural Gas, sliding two stage or modulating)						
	(Natural Gas, single stage with manually set air damper)	25-110 kW	WG 10 N/1-D		2 years		
		25-110 kW	WG 10 N/1-D		2 years		
	(Natural Gas, single or two stage)	12,5-50 kW	WG 10 F/0-D		2 years		



Supplier.	Sub Category	Technical Specification	Model	Efficiency	Guarantee period	Other Services	Certificates
	(Natural Gas, sliding two stage or modulating)	40-110 kW	WG 10 F/1-D		2 years		Directive), 92/42/EEC (Boiler Efficiency Directive), 97/23/EC (Pressure Equipment Directive)
	(LPG, sliding two stage or modulating)	25-110 kW	WG 10 F/1-D		2 years		
	(LPG, single stage with manually set air damper)	25-110 kW	WG 10 F/1-D		2 years		
	(LPG, single or two stage)	80-200 kW	WG 20 N/1-C		2 years		
	(LPG, sliding two stage or modulating)	35-200 kW	WG 20 N/1-C		2 years		
	(Natural Gas, single stage with manually set air damper)	35-200 kW	WG 20 N/1-C		2 years		
	(Natural Gas, single or two stage)	80-200 kW	WG 20 N/1-C		2 years		
	(Natural Gas, sliding two stage or modulating)	35-200 kW	WG 20 N/1-C		2 years		
	(Natural Gas, single stage with manually set air damper)	35-200 kW	WG 20 N/1-C		2 years		
	(Natural Gas, single or two stage)	35-200 kW	WG 20 F/1-C		2 years		
	(Natural Gas, sliding two stage or modulating)	35-200 kW	WG 20 F/1-C		2 years		
	(LPG, single or two stage)	40-350 kW	WG 30 N/1-C		2 years		
	(LPG, sliding two stage or modulating)	60-350 kW	WG 30 F/1-C		2 years		

Supplier.	Sub Category	Technical Specification	Model	Efficiency	Guarantee period	Other Services	Certificates
	(Natural Gas, sliding two stage or modulating)	55-550 kW	WG 40N/1-A		2 years		
	(LPG, sliding two stage or modulating)	80-550 kW	WG 40F/1-A		2 years		
	(Natural Gas, sliding two stage or modulating)	21,5-40 kW	WL/1-B		2 years		
	(LPG, sliding two stage or modulating)	21,5-40 kW	WL/1-B		2 years		
	(Light oil, single stage)	16,5-40 kW	WL/1-B H	NOx and CO2 emissions are lower than emission standards regulated by EN 676	2 years		EN 267, 98/37/EC (Machinery Directive), 89/336/EEC (Electromagnetic Compatibility), 73/23/EEC (Low Voltage Directive), 92/42/EEC (Boiler Efficiency Directive)
	(Light oil, single stage with servomotor)	16,5-40 kW	WL/1-B H		2 years		
	(Light oil, single stage with oil preheating)	25,5-55 kW	WL/2-B		2 years		
	(Light oil, single stage with oil preheating and servomotor)	25,5-55 kW	WL/2-B		2 years		
	(Light oil, single stage)	16,5-37 kW	WL/1-B H-2LN		2 years		
	(Light oil, single stage with servomotor)	35-70 kW	WL 10/2-D		2 years		
	(Light oil, single stage with oil preheating and servomotor)	35-70 kW	WL 10/2-D		2 years		
	Burner (Oil, single stage)	35-70 kW	WL 10/2-D		2 years		
	Burner (Oil, single stage)	50-90 kW	WL 10/3-D		2 years		

Supplier.	Sub Category	Technical Specification	Model	Efficiency	Guarantee period	Other Services	Certificates
	stage with servomotor)						
	Burner (Oil, two stage)	50-90 kW	WL 10/3-D		2 years		
	Burner (Oil, single stage)	50-100 kW	WL 10/3-D		2 years		
	Burner (Oil, single stage with servomotor)	50-120 kW	WL 20/1-C		2 years		
	Burner (Oil, two stage)	50-120 kW	WL 20/1-C		2 years		
	Burner (Oil, single stage)	50-120 kW	WL 20/1-C		2 years		
	Burner (Oil, single stage with servomotor)	70-180 kW	WL 20/2-C		2 years		
	Burner (Oil, two stage)	70-180 kW	WL 20/2-C		2 years		
	Burner (Oil, single stage)	70-200 kW	WL 20/2-C		2 years		
	Burner (Oil, single stage with servomotor)	72-330 kW	WL 30-C		2 years		
	Burner (Oil, two stage)	145-570 kW	WL 40-A		2 years		
	Burner (Oil, two stage)	30-55 kW	WL 10/1-D 1LN		2 years		
	Burner (Oil, two stage)	50-70 kW	WL 10/2-D 1LN		2 years		
	Burner (Oil, single stage, low NOx)	55-130 kW	WL 20/1-C 1LN		2 years		
	Burner (Oil, single	72-215 kW	WL 30-Z-C 4LN		2 years		

Supplier.	Sub Category	Technical Specification	Model	Efficiency	Guarantee period	Other Services	Certificates
	stage, low NOx)						
	Burner (Oil, two stage, low NOx)	120-355 kW	WL 40-Z-A 1LN		2 years		
	Burner (Oil, two stage, low NOx)	75-300 kW	WGL30N/1-A		2 years		
	Burner (Oil, two stage, low NOx)	75-300 kW	WGL30F/1-A		2 years		
	Burner (Natural gas, sliding two stage)	50-180 kW	JGN 80/1		2 years		
	Burner (LPG, sliding two stage)	70-250 kW	JGN 80/2		2 years		
Selnikel	Burner (Natural gas)	85-350 kW	PGN 0		2 years	Operator courses and service available	TS EN 676, CE
		200-750 kW	PGN 1		2 years		
		280-1010 kW	PGN 1 Sp		2 years		
		400-1700 kW	PGN 2		2 years		
		480-2120 kW	PGN 2 Sp		2 years		
		11,9-37,7 kW	JM 3 GAS		2 years		
		27-66,6 kW	JM 6 GAS		2 years		
Ferrol-Joannes	Burner (Natural gas)	32,1-79,3 kW	AZ 9 GAS		2 years		CE 90/396 EU gas standarts compatibility, CE 73/23 Low Voltage, CE 89/336 electromechanical compatibility, CE 89/392 mechanical standarts
		49,8-120 kW	JM 12 GAS		2 years		
		99-169 kW	JM 18 GAS		2 years		
		129-245 kW	G 26 GAS		2 years		
		188-320 kW	G 35 GAS		2 years		
		115-390 kW	G 35/2 GAS		2 years		
		145-582 kW	G 50/2 GAS		2 years		
		210-740 kW	G70/2 GAS		2 years		



Supplier.	Sub Category	Technical Specification	Model	Efficiency	Guarantee period	Other Services	Certificates

(<sup>1</sup>) Reported efficiency values are related to nominal capacity and under reference conditions

## 5 HVAC SYSTEMS (HEAT PUMPS AND VENTILATION)

### 5.1 List of Eligible Materials and Equipment (LEME) for HVAC Systems (Heat pumps and Ventilation)

Equipment / Technology	Eligibility Criteria		Indicative Price Range	Local Suppliers/ Manufacturers	References
Single Split Units (Cooling/Heat Pumps w/o ventilation with external air) 2.5 – 7,5 kW	Cooling COP > 3 <sup>(1)</sup> Heating COP > 3.5		250 - 2000 Euro	Arçelik-LG Klima A.S. Isısan (Daikin), Mitsubishi, Alarko (Carrier), Alarko (Toshiba), Demirdöküm, LG, Airfel, Arçelik-LG	EU IPPC Reference Document on Best available Techniques (BAT) for Energy Efficiency  Daikin and other top-level international manufacturers' products
	Up to 25 m <sup>2</sup> Cooled area	Maximum Installed Power: 4 kW			
	Up to 50 m <sup>2</sup> Cooled area	Maximum Installed Power: 7.5 kW			
Multi Split Units (Cooling/Heat Pumps w/o ventilation with external air)-Outdoor 5 – 16 kW	Cooling COP > 3 <sup>(1)</sup> Heating COP > 3.5		1,700 – 3,600 Euro	Arçelik-LG	EU IPPC Reference Document on Best available Techniques (BAT) for Energy Efficiency  Daikin and other top-level international manufacturers' products
	Up to 100 m <sup>2</sup> cooled area	Maximum Installed Power: 16 kW			
Commercial Cooling/Heat Pumps (w/o ventilation with external air) 2.5 – 25 kW	Cooling COP > 3 <sup>(1)</sup> Heating COP > 3.5		1,800 – 7,000 Euro	Arçelik-LG	EU IPPC Reference Document on Best available Techniques (BAT) for Energy Efficiency  Daikin and other top-level international manufacturers' products
	Up to 160 m <sup>2</sup> cooled area	Maximum Installed Power: 25 kW			

Equipment / Technology	Eligibility Criteria	Indicative Price Range	Local Suppliers/ Manufacturers	References
Air Handling Units (AHU): including ventilation of outside air into the building, plus cooling/heat pumps. 2.5 – 200 kW -	Cooling COP > 3 <sup>(1)</sup> Heating COP > 3.5 Equipment provided with Counter-flow Heat recovery for fresh/exhaust air	2,000 – 60,000 Euro	Arçelik-LG	EU IPPC Reference Document on Best available Techniques (BAT) for Energy Efficiency  Daikin and other top-level international manufacturers' products
VRV (Variable Refrigerant Volume) Systems Air Handling Units (AHU): including ventilation of outside air into the building. 100-2000 m3/h	Equipment provided with counter-flow for fresh/exhaust air heat exchange	600 – 2,700 Euro	Arçelik-LG	EU IPPC Reference Document on Best available Techniques (BAT) for Energy Efficiency  Daikin and other top-level international manufacturers' products
VRV (Variable Refrigerant Volume) Systems 5 – 50 kW (Outdoor)	COP > 3.2 <sup>(1)</sup>	3,800 – 6,400 Euro	Arçelik-LG	EU IPPC Reference Document on Best available Techniques (BAT) for Energy Efficiency  Daikin and other top-level international manufacturers' products

<sup>(1)</sup> Average seasonal coefficient of performance under reference climatic and operational conditions

## 5.2 List of Eligible Suppliers and Installers (LESI) for HVAC Systems (Heat pumps and Ventilation)

Supplier name	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
ISISAN (DAIKIN) International	Single Split Units (Cooling/Heat Pumps w/o ventilation with external air) 2.5 – 7,5 kW	2,8kW	FTXR28EV1B9	Heating COP : 5 Cooling COP : 5,14	3 Years	Installation	TS 14511, CE, TUV, Rohs
		4,2kW	FTXR42EV1B9	Heating COP : 4 Cooling COP : 4,32	3 Years	Installation	TS 14511, CE, TUV, Rohs
		5,0kW	FTXR50EV1B9	Heating COP : 3,42 Cooling COP : 3,97	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,5kW	FTXG25JV1BS	Heating COP : 4,46 Cooling COP : 4,36	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	FTXG35JV1BS	Heating COP : 3,93 Cooling COP : 4,04	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,5kW	FTXG25JV1BW	Heating COP : 4,46 Cooling COP : 4,36	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	FTXG35JV1BW	Heating COP : 3,93 Cooling COP : 4,04	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,5kW	FTXL25G2V1B	Heating COP : 4,55 Cooling COP : 4,42	3 Years	Installation	TS 14511, CE, TUV, Rohs

Supplier name	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
		3,5kW	FTXL35G2V1B	Heating COP : 4,02 Cooling COP : 4,35	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,5kW	FTXS25G2V1B	Heating COP : 4,55 Cooling COP : 4,53	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	FTXS35G2V1B	Heating COP : 4,02 Cooling COP : 4,17	3 Years	Installation	TS 14511, CE, TUV, Rohs
		4,2kW	FTXS42G2V1B	Heating COP : 3,44 Cooling COP : 3,67	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,5kW	FVXS25FV1B	Heating COP : 4,39 Cooling COP : 4,3	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	FVXS35FV1B	Heating COP : 3,43 Cooling COP : 3,69	3 Years	Installation	TS 14511, CE, TUV, Rohs
		5,0kW	FVXS50FV1B	Heating COP : 3,23 Cooling COP : 3,63	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,5kW	FLXS25BAVMB	Heating COP : 3,85 Cooling COP : 3,47	3 Years	Installation	TS 14511, CE, TUV, Rohs

Supplier name	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
ALARKO (CARRIER) International	Single Split Units (Cooling/Heat Pumps w/o ventilation with external air) 2.5 – 7,5 kW	4,5kW	Xpower Platinum 42 NQV 045-H	Heating COP : 5,5 Cooling COP : 3,21	3 Years	Installation	TS 14511, CE, TUV, Rohs
ALARKO (TOSHIBA) International	Single Split Units (Cooling/Heat Pumps w/o ventilation with external air) 2.5 – 7,5 kW	2,5kW	Suzumi RAS - 10SKV - E	Heating COP : 3,72 Cooling COP : 3,33	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	Suzumi RAS - 13SKV - E	Heating COP : 3,72 Cooling COP : 3,27	3 Years	Installation	TS 14511, CE, TUV, Rohs
		5,0kW	Suzumi RAS - 18SKV - E	Heating COP : 3,72 Cooling COP : 3,52	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,5kW	Daiseikai RAS-10SKVR-E	Heating COP : 4,21 Cooling COP : 4,07	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	Daiseikai RAS-13SKVR-E	Heating COP : 3,89 Cooling COP : 3,5	3 Years	Installation	TS 14511, CE, TUV, Rohs
		4,5kW	Daiseikai RAS-16SKVR-E	Heating COP : 3,62 Cooling COP : 3,23	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,5kW	Super Inverter Daiseikai RAS-10PKVP-E	Heating COP : 5,36 Cooling COP : 5,26	3 Years	Installation	TS 14511, CE, TUV, Rohs

Supplier name	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
		3,5kW	Super Inverter Daiseikai RAS-B13PKVP-E	Heating COP : 4,76 Cooling COP : 4,55	3 Years	Installation	TS 14511, CE, TUV, Rohs
		4,5kW	Super Inverter Daiseikai RAS-B16PKVP-E	Heating COP : 4,10 Cooling COP : 3,69	3 Years	Installation	TS 14511, CE, TUV, Rohs
		5,0kW	Super Inverter Daiseikai RAS-18PKVP-E	Heating COP : 3,90 Cooling COP : 3,36	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,5kW	Super Inverter Daiseikai RAS-B10SKVP-E	Heating COP : 5,08 Cooling COP : 5,10	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	Super Inverter Daiseikai RAS-B13SKVP-E	Heating COP : 4,42 Cooling COP : 4,10	3 Years	Installation	TS 14511, CE, TUV, Rohs
		4,5kW	Super Inverter Daiseikai RAS-B16SKVP-E	Heating COP : 3,69 Cooling COP : 3,33	3 Years	Installation	TS 14511, CE, TUV, Rohs
		Multi Split Units (Cooling/Heat Pumps w/o ventilation with external air)-Outdoor 5-16kW	5,2kW	Multi Inverter RAS-3M18SAV-E	Heating COP : 3,88 Cooling COP : 4,25	3 Years	Installation
AIRFEL International	Single Split Units (Cooling/Heat Pumps w/o ventilation with	2,64kW	Conabase Bio A FSW-09HRR1R	Heating COP : 3,62 Cooling COP : 3,03	3 Years	Installation	TS 14511, CE, TUV, Rohs

Supplier name	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
	external air) 2.5 – 7,5 kW	5,28kW	Conabase Bio A FSW-18HRR1R	Heating COP : 3,62 Cooling COP : 3,04	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,64kW	Conaplus Bio A FSW-09HRR1R	Heating COP : 3,62 Cooling COP : 3,5	3 Years	Installation	TS 14511, CE, TUV, Rohs
		5,28kW	Conaplus Bio A FSW-18HRR1R	Heating COP : 3,62 Cooling COP : 3,6	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,60kW	Artful AS09-0923	Heating COP : 3,21 Cooling COP : 3,61	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	Artful AS12-923	Heating COP : 3,21 Cooling COP : 3,61	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,60kW	Inverter AS09-0924/R1	Heating COP : 4,25 Cooling COP : 4,26	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	Inverter AS12-0924/R1	Heating COP : 3,61 Cooling COP : 3,50	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,60kW	Inverter AS09-0925/R2	Heating COP : 3,61 Cooling COP : 3,21	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	Inverter AS12-0925/R2	Heating COP : 3,64 Cooling COP : 3,26	3 Years	Installation	TS 14511, CE, TUV, Rohs

Supplier name	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
		5,3kW	Inverter AS18-0925/R2	Heating COP : 3,62 Cooling COP : 3,23	3 Years	Installation	TS 14511, CE, TUV, Rohs
		7,04kW	Inverter AS24-0925/R2	Heating COP : 3,62 Cooling COP : 3,26	3 Years	Installation	TS 14511, CE, TUV, Rohs
Mitsubishi International	Single Split Units (Cooling/Heat Pumps w/o ventilation with external air) 2.5 – 7,5 kW	2,5kW	MSZ-FD25VA(S) E1	Heating COP : 5,25 Cooling COP : 5,15	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,5kW	MSZ-FD25VABH(S) E1	Heating COP : 5,15 Cooling COP : 5,33	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	MSZ-FD35VA(S) E1	Heating COP : 4,12 Cooling COP : 4,62	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	MSZ-FD35VABH(S) E1	Heating COP : 4,19 Cooling COP : 4,76	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	MSZ-FD50VA (S)	Heating COP : 3,74 Cooling COP : 3,33	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	MSZ-FD50VABH (S)	Heating COP : 3,73 Cooling COP : 3,31	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,5kW	MSZ-GE25VA	Heating COP : 4,57 Cooling COP : 4,59	3 Years	Installation	TS 14511, CE, TUV, Rohs

Supplier name	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
		3,5kW	MSZ-GE35VA	Heating COP : 4,19 Cooling COP : 4,05	3 Years	Installation	TS 14511, CE, TUV, Rohs
		4,2kW	MSZ-GE42VA	Heating COP : 3,70 Cooling COP : 3,46	3 Years	Installation	TS 14511, CE, TUV, Rohs
		5,0kW	MSZ-GE50VA	Heating COP : 3,71 Cooling COP : 3,30	3 Years	Installation	TS 14511, CE, TUV, Rohs
		6,0kW	MSZ-GE60VA	Heating COP : 3,84 Cooling COP : 3,40	3 Years	Installation	TS 14511, CE, TUV, Rohs
		7,1kW	MSZ-GE71VA	Heating COP : 3,83 Cooling COP : 3,33	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,5kW	MSH-GE25VB	Heating COP : 3,64 Cooling COP : 3,25	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	MSH-GE35VB	Heating COP : 3,62 Cooling COP : 3,21	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,65kW	MSH-GE25VB	Heating COP : 3,66 Cooling COP : 3,23	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	MSH-GE35VB	Heating COP : 3,63 Cooling COP : 3,21	3 Years	Installation	TS 14511, CE, TUV, Rohs

Supplier name	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
		2,5kW	MFZ-KA25VA	Heating COP : 4,07 Cooling COP : 4,31	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	MFZ-KA35VA	Heating COP : 3,64 Cooling COP : 3,21	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,5kW	SLZ-KA25VA(L)	Heating COP : 3,61 Cooling COP : 3,62	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	SLZ-KA35VA(L)	Heating COP : 3,64 Cooling COP : 3,30	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,5kW	SEZ-KD25VA(L)	Heating COP : 3,61 Cooling COP : 3,21	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	SEZ-KD35VA(L)	Heating COP : 3,61 Cooling COP : 3,21	3 Years	Installation	TS 14511, CE, TUV, Rohs
Iklimsa (SHARP) International	Single Split Units (Cooling/Heat Pumps w/o ventilation with external air) 2.5 – 7,5 kW	2,5kW	AY-AP9FHR	Heating COP : 3,21 Cooling COP : 3,61	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	AY-AP12FHR	Heating COP : 3,21 Cooling COP : 3,64	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,5kW	AY-XP9FR	Heating COP : 4,25 Cooling COP : 3,38	3 Years	Installation	TS 14511, CE, TUV, Rohs

Supplier name	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
		3,5kW	AY-XP12FR	Heating COP : 3,88 Cooling COP : 3,21	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,5kW	GS-XP12FR	Heating COP : 3,88 Cooling COP : 3,21	3 Years	Installation	TS 14511, CE, TUV, Rohs
		7,0 kW	GS-XP24FR	Heating COP : 3,62 Cooling COP : 3,21	3 Years	Installation	TS 14511, CE, TUV, Rohs
		5,0kW	GS-XP18FGR	Heating COP : 3,61 Cooling COP : 3,01	3 Years	Installation	TS 14511, CE, TUV, Rohs
Demirdöküm Turkish	Single Split Units (Cooling/Heat Pumps w/o ventilation with external air) 2.5 – 7,5 kW	2,60kW	A2 09HP	Heating COP : 3,62 Cooling COP : 3,40	3 Years	Installation	TS EN 14511-2, TS EN 14511-4, CE, TUV, Rohs
		3,5kW	A2 12HP	Heating COP : 3,63 Cooling COP : 3,21	3 Years	Installation	TS EN 14511-2, TS EN 14511-4, CE, TUV, Rohs
		5,7kW	A2 18HP	Heating COP : 3,71 Cooling COP : 3,21	3 Years	Installation	TS EN 14511-2, TS EN 14511-4, CE, TUV, Rohs
		7,04kW	A2 24HP	Heating COP : 3,80 Cooling COP : 3,21	3 Years	Installation	TS EN 14511-2, TS EN 14511-4, CE, TUV, Rohs
		3,0kW	A 410 09HP	Heating COP : 3,70 Cooling COP : 3,40	3 Years	Installation	TS EN 14511-2, TS EN 14511-4, CE, TUV, Rohs

Supplier name	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
		3,6kW	A 410 12HP	Heating COP : 3,61 Cooling COP : 340	3 Years	Installation	TS EN 14511-2, TS EN 14511-4, CE, TUV, Rohs
		5,7kW	A 410 18HP	Heating COP : 3,70 Cooling COP : 3,30	3 Years	Installation	TS EN 14511-2, TS EN 14511-4, CE, TUV, Rohs
		7,04kW	A 410 24HP	Heating COP : 3,70 Cooling COP : 3,25	3 Years	Installation	TS EN 14511-2, TS EN 14511-4, CE, TUV, Rohs
		2,5kW	A 09HP	Heating COP : 3,61 Cooling COP : 3,22	3 Years	Installation	TS EN 14511-2, TS EN 14511-4, CE, TUV, Rohs
		3,5kW	A 12HP	Heating COP : 3,61 Cooling COP : 3,23	3 Years	Installation	TS EN 14511-2, TS EN 14511-4, CE, TUV, Rohs
		5,5kW	A 18HP	Heating COP : 3,61 Cooling COP : 3,24	3 Years	Installation	TS EN 14511-2, TS EN 14511-4, CE, TUV, Rohs
		7,04kW	A 24HP	Heating COP : 3,61 Cooling COP : 3,21	3 Years	Installation	TS EN 14511-2, TS EN 14511-4, CE, TUV, Rohs
LG International	Inverter, R410A Gas, Wall Mounted Single Split Units (Cooling/Heat Pumps) 2.5 – 7,5 kW	2,8 kW, 3,5 kW, 5,6kW, 7,1 Kw	ASW09, ASW12, ASW18, ASW24	A CLASS	2 Years	Installation	TS 14511, CE, TUV, Rohs

Supplier name	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
	Inverter, R410A Gas, Casette Type Split Units (Cooling/Heat Pumps) 7,1 – 14,5 kW	7,1 Kw, 10,5kW, 14kW	UT-UU24W UT-UU36W UT-UU48W	A, B CLASS	2 Years	Installation	TS 14511, CE, TUV, Rohs
		7,1 Kw, 10,5kW, 14kW	UB-UU24W UB-UU36W UB-UU48W	A, B, C CLASS	2 Years	Installation	TS 14511, CE, TUV, Rohs
	Inverter, R410A Gas, Multi Split Units (Cooling/Heat Pumps) 4,5 – 16 kW	4 Kw, 5,6kW, 7,1 kw, 9 kw, 12 kw, 14 kw, 16 kw	A..UW..FA3	A CLASS	2 Years	Installation	TS 14511, CE, TUV, Rohs
		4 Kw, 5,6kW, 7,1 kw, 9 kw, 12 kw, 14 kw, 16 kw	ARUN...LT2	A CLASS	2 Years	Installation	TS 14511, CE, TUV, Rohs
Arçelik-LG Turkish	Single Split Units (Cooling/Heat Pumps w/o ventilation with external air) 2,5 – 7,5 kW	2,8kW	90030, 90040, 7505D, 8500D	3,3	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,8kW	12030, 12040, 7605D, 8600D	3,2	3 Years	Installation	TS 14511, CE, TUV, Rohs
		4,3kW	15030, 15040, 7655D, 8650D	3,2	3 Years		TS 14511, CE, TUV, Rohs

Supplier name	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
		5,6kW	18030, 18040, 7705D, 8700D	3,22	3 Years	Installation	TS 14511, CE, TUV, Rohs
		7,3kW	24030, 24040, 7805D, 8800D,	3,22	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,93kW	90064, 7580D	4,51	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,52kW	12064, 7680D	3,38	3 Years	Installation	TS 14511, CE, TUV, Rohs
		5,28kW	18064, 7780D	3,34	3 Years	Installation	TS 14511, CE, TUV, Rohs
		7,33kW	24064, 7880D	3,22	3 Years	Installation	TS 14511, CE, TUV, Rohs
		3,52kW	12060 7685D	3,63	3 Years	Installation	TS 14511, CE, TUV, Rohs
		5,28kW	18060, 7785D	3,34	3 Years	Installation	TS 14511, CE, TUV, Rohs
		7,33kW	24060, 7885D	3,22	3 Years	Installation	TS 14511, CE, TUV, Rohs
		2,79kW	90070, 9500D	5,16	3 Years	None	TS 14511, CE, TUV, Rohs

Supplier name	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
	Commercial Cooling/Heat Pumps (w/o ventilation with external air) 2.5 – 14 kW	14kW	10604A, 7410A		3 Years	None	TS 14511, CE, TUV, Rohs
	Multi Split Units (Cooling/Heat Pumps w/o ventilation with external air) 5 – 16 kW	5,27kW 7,10kW 8,80kW 15,2kW	10507AA 10506AA 10505AA 10501AA	3,21 3,80 3,68 3,42	3 Years	None	TS 14511, CE, TUV, Rohs
	VRV (Variable Refrigerant Volume) Systems Air Handling Units (AHU): including ventilation of outside air into the building, plus cooling/heat pumps. 5 – 50 kW	100m3/h 150m3/h 250m3/h 350m3/h 500m3/h 800m3/h 1000m3/h 1500m3/h 2000m3/h	EHRV-H0106BA0 EHRV-H0156BA0 EHRV-H0256BA0 EHRV-H0356BA0 EHRV-0506BA0 EHRV-0806BA0 EHRV-H01006BA0 EHRV-H01506BA0 EHRV-H02006BA0	Not Applicable	3 Years	None	TS 14511, CE, TUV, Rohs

Supplier name	Sub Category	Technical Specification	Model	Efficiency	Guarantee and Warranty conditions	Services included	Additional info (certificates etc)
	VRV (Variable Refrigerant Volume) Systems Air Handling Units (AHU): including ventilation of outside air into the building, plus cooling/heat pumps. 5 – 50 kW	16,0kW 22,4kW 28,0kW 33,6kW 39,2kW 44,8kW	ETON06LU ETON08LU ETON10LU ETON12LU ETON14LU ETON16LU	3,76 4,24 3,91 3,70 3,31 3,20	3 Years	None	TS 14511, CE, TUV, Rohs

(<sup>1</sup>) Average seasonal coefficient of performance under reference climatic and operational conditions