

Heat pump Dimensioning Report

Anne Marie McCullagh

Solution 1 - Atec 6

Anne Marie McCullagh
Clonlea Lodge
- Dublin
IRELAND
Phone:
Email:

Installation Address
Anne Marie McCullagh
Clonlea Lodge
- Dublin
IRELAND

Date
15/11/2016

Reseller
-
Roberto Margara
-
- -
-
Phone:
Email:
-

**With the selected Thermia heat pump solution you can
save up to €479 per year!**



Savings Calculation

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	Energy	Cost
The Building's Energy demand		
Heat	8,291 kWh/year	€691/year
Hot Tap Water	3,500 kWh/year	€292/year
Total	11,791 kWh/year	€983/year
Energy use with quoted Heat Pump		
Heat	2,151 kWh/year	€323/year
Hot Tap Water	1,206 kWh/year	€181/year
Total	3,357 kWh/year	€504/year
Savings with quoted Heat Pump, net	8,434 kWh/year	€479/year
Savings with quoted Heat Pump, gross	4,934 kWh/year	€479/year
<i>Seasonal Performance of the system* = 3.51</i>		
<i>Cost calculation based on current Oil and Solar prices, €750/m³</i>		
<i>Electricity price for the heat pump €0.15/kWh.</i>		

* The seasonal performance factor is the relationship between the amount of heat generated and the amount of electricity consumed during one year. Heating of domestic hot water is included

** The Seasonal Energy Efficiency Ratio shows the relationship between delivered cooling energy and bought electricity during a period of one year.

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Installation Address: Anne Marie McCullagh Clonlea Lodge Dublin	Reseller:	Project: Anne Marie McCullagh Solution 1 - Atec 6 Date: 15/11/2016	Id: 49658 Page 2/11
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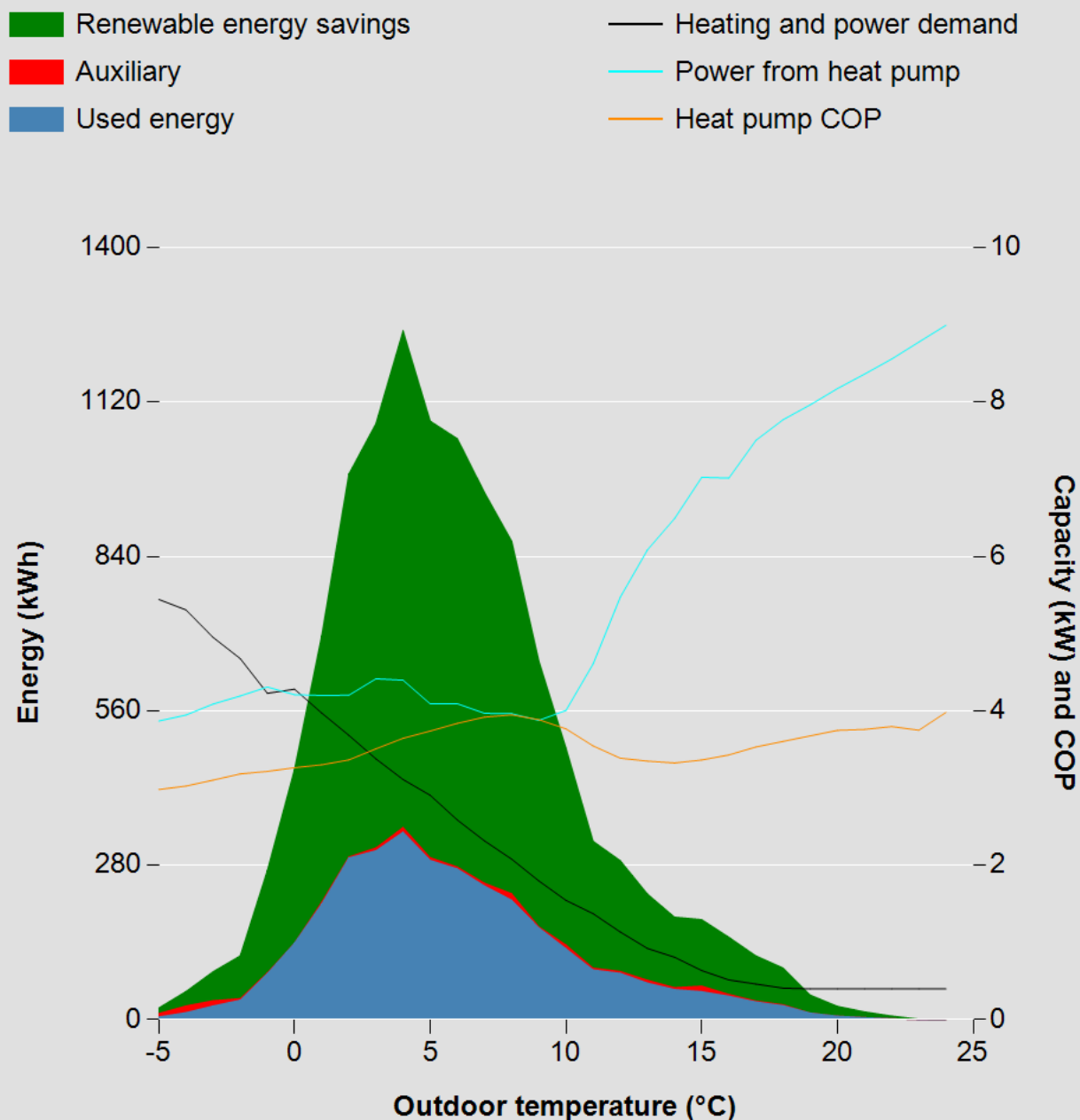
Savings Calculation

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Distribution of Energy and Capacity Requirement



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Installation Address: Anne Marie McCullagh Clonlea Lodge Dublin	Reseller:	Project: Anne Marie McCullagh Solution 1 - Atec 6 Date: 15/11/2016	Id: 49658 Page 3/11
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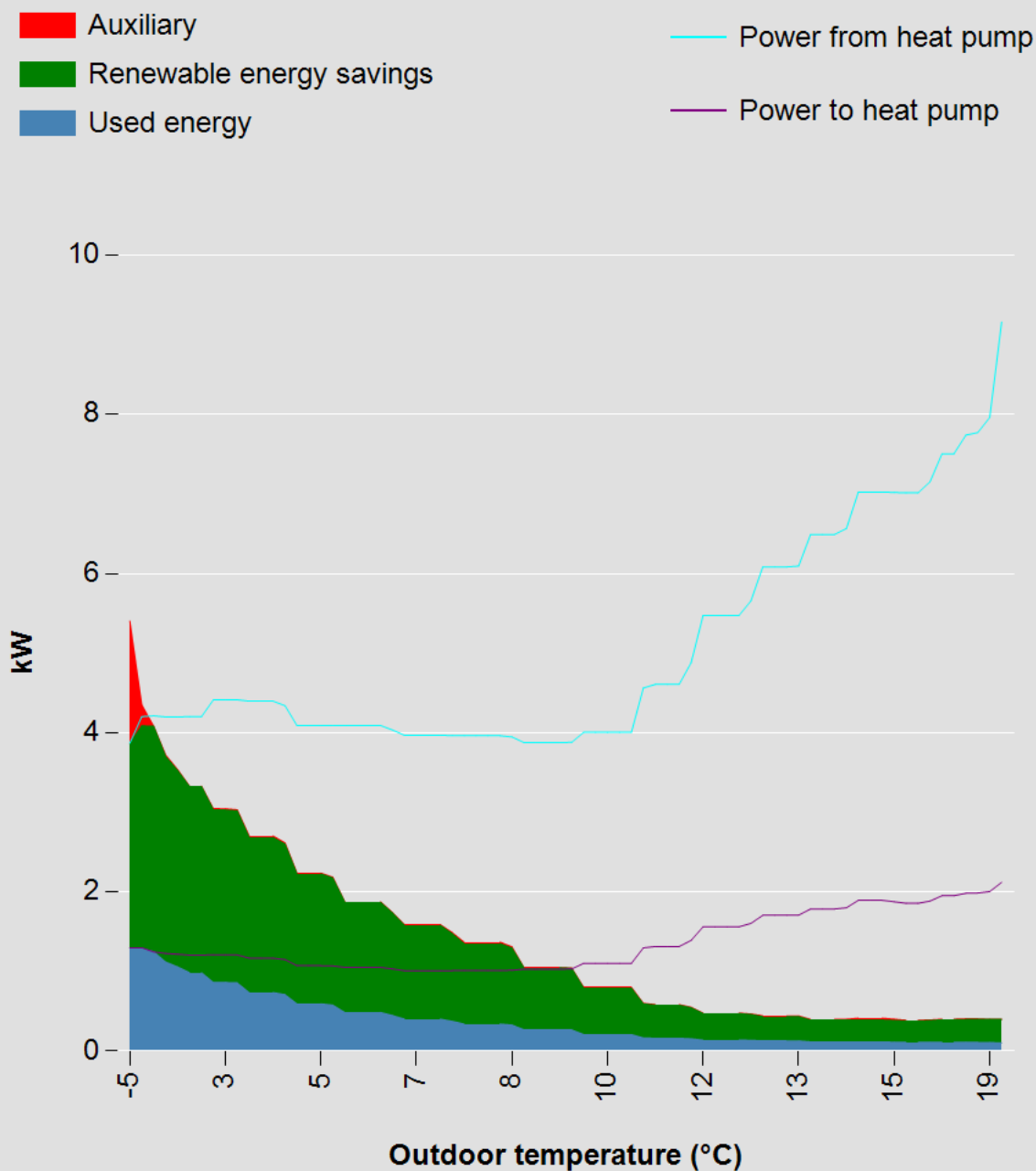
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Distribution of Energy and Capacity Requirement



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Installation Address: Anne Marie McCullagh Clonlea Lodge Dublin	Reseller:	Project: Anne Marie McCullagh Solution 1 - Atec 6 Date: 15/11/2016	Id: 49658 Page 4/11
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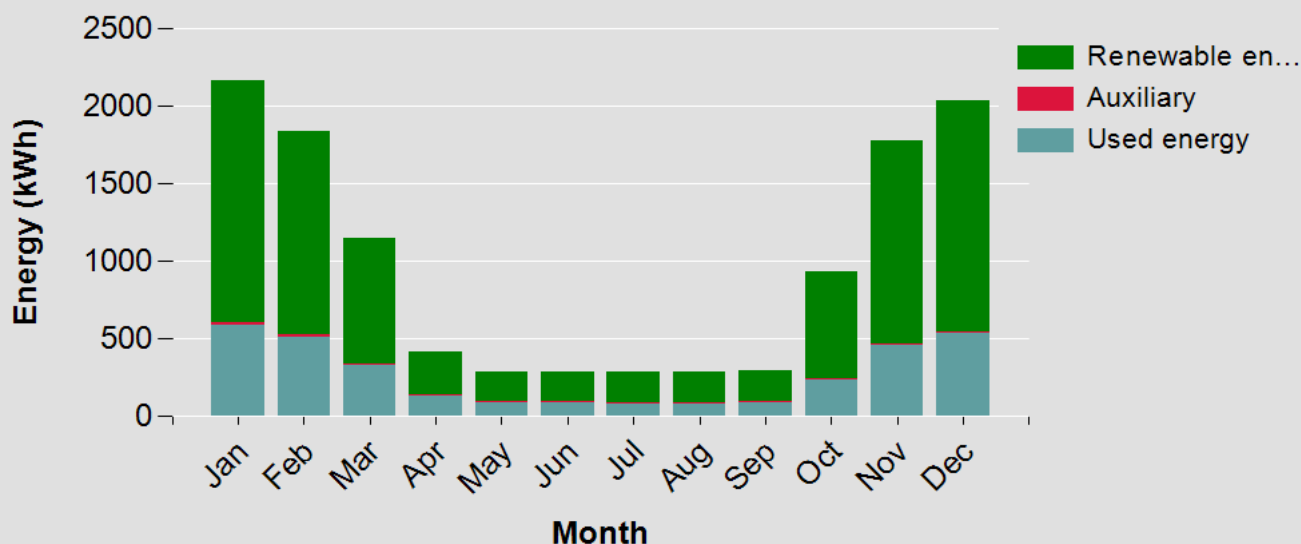
Savings Calculation

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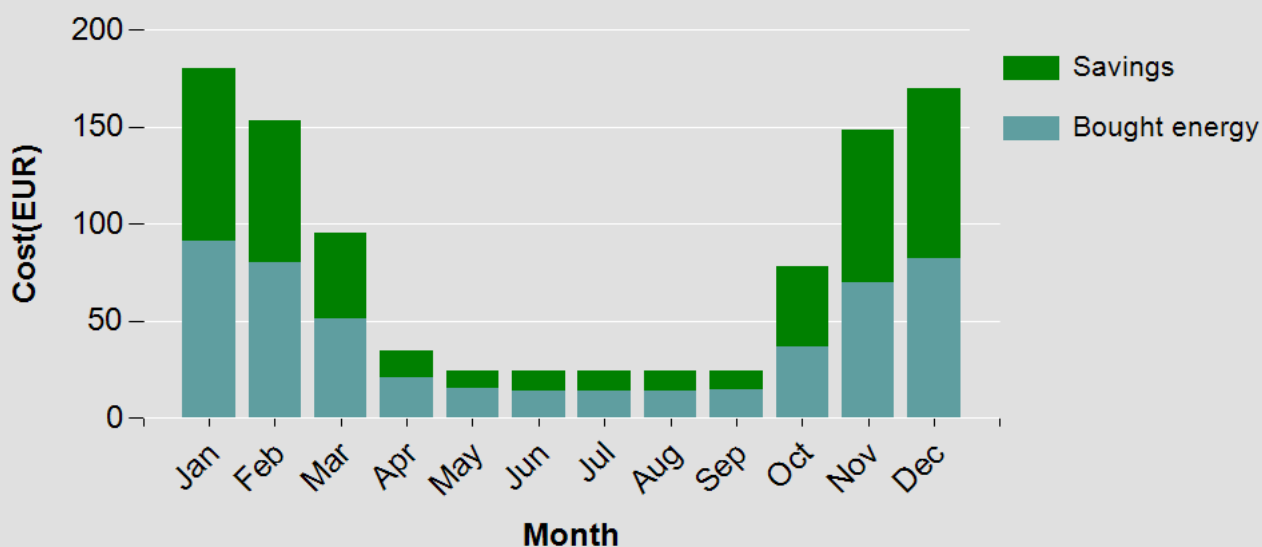
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Energy savings



Cost comparison of heat pump to oil and solar



Cost calculation based on current Oil and Solar prices, €750/m³
Electricity price for the heat pump €0.15/kWh.

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Installation Address:
Anne Marie McCullagh
Clonlea Lodge
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Project: Anne Marie McCullagh
Solution 1 - Atec 6
Date:
15/11/2016

Id: 49658
Page 5/11

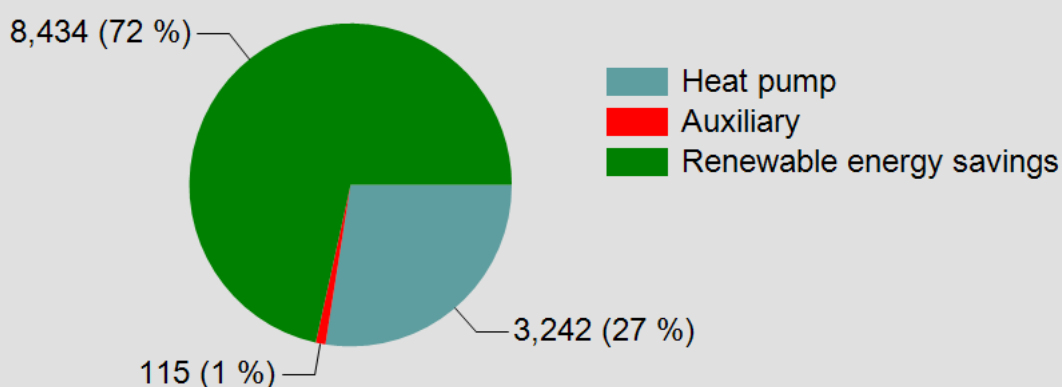
Savings Calculation

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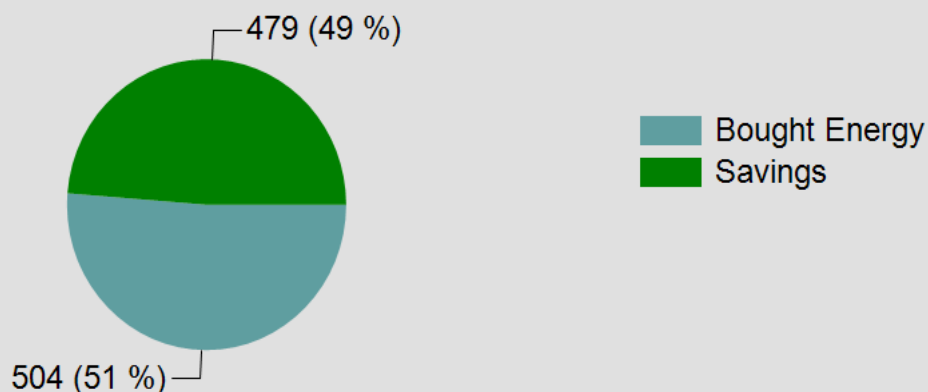
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Energy savings (kWh/year)



Cost comparison(EUR)



Cost calculation based on current Oil and Solar prices, €750/m³
Electricity price for the heat pump €0.15/kWh.

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Installation Address: Anne Marie McCullagh Clonlea Lodge Dublin	Reseller:	Project: Anne Marie McCullagh Solution 1 - Atec 6 Date: 15/11/2016	Id: 49658 Page 6/11
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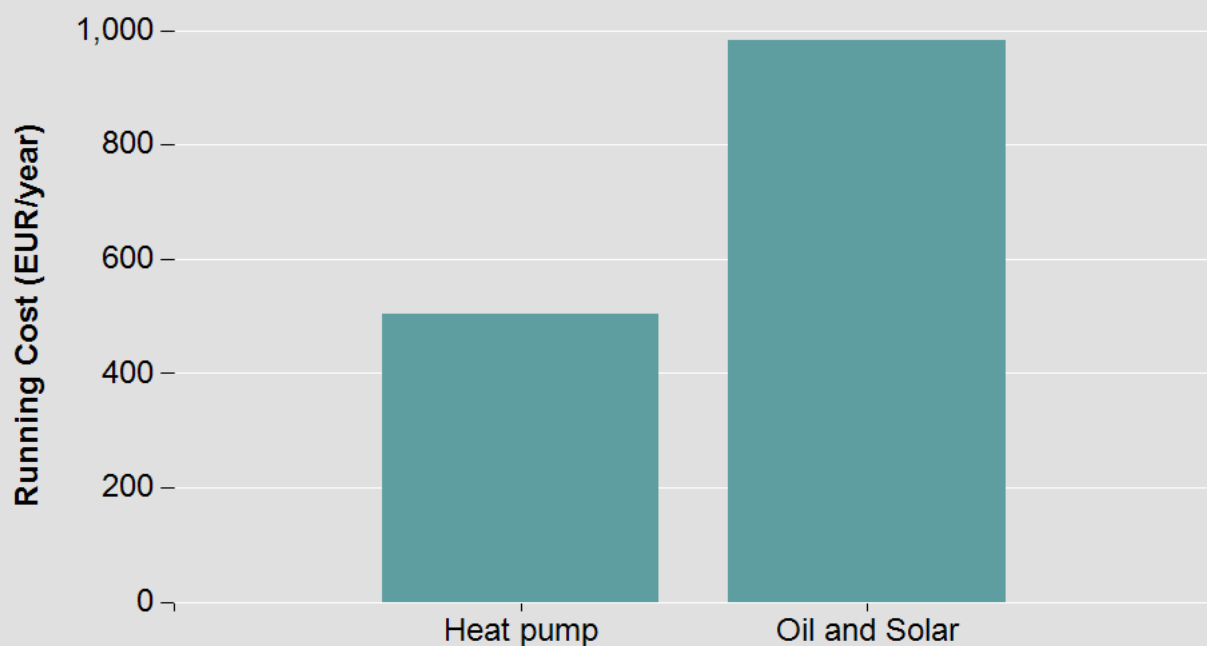
Savings Calculation

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Running Cost and Payback Period



Calculation Results

	Heat pump	Oil and Solar
Investment cost	€8,632	€8,000
Running cost	€504	€983
Payback period(yrs)		1.3

Cost calculation based on current prices:

Electricity to heat pump: €0.15/kWh

Oil and Solar: €750/m³

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Installation Address: Anne Marie McCullagh Clonlea Lodge Dublin	Reseller:	Project: Anne Marie McCullagh Solution 1 - Atec 6 Date: 15/11/2016	Id: 49658 Page 7/11
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Calculation details – results

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Heating and Domestic Hot Water

Total supplied energy, incl hot water	11,791 kWh
Energy supplied by heat pump(s)	11,676 kWh
Energy used by heat pump(s)	3,242 kWh
thereof for internal circulation pump(s)	161 kWh
Energy used by auxiliary heater	115 kWh
Integrated ($\eta=100\%$)	115 kWh
Total energy used(bought)	3,359 kWh
Energy saving	8,432 kWh
Seasonal Performance Factor, excl auxiliary heater	3.6
Seasonal Performance Factor	3.5
Required power at DOT	4.7 kW
Heat pump power at DOT	3.9 kW
Required aux. power at DOT	0.8 kW
Energy coverage rate	99 %
Power coverage at DOT, heat pump only	83 %
Running hours	2,130 h

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Installation Address: Anne Marie McCullagh Clonlea Lodge Dublin	Reseller:	Project: Anne Marie McCullagh Solution 1 - Atec 6 Date: 15/11/2016	Id: 49658 Page 8/11
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Calculation details - input data

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Climate data

Location: Dublin (53.2752N, -6.2446E)

Annual mean temperature	9.5 °C
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Building: Building1

Heated area	155 m ²
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Window area (%)	41 m ²
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Total number of floors	2
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Indoor temperature	21.0 °C
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Internal heat gains	5.0 °C
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Dimensioning Outdoor Temperature	-2 °C
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Heating system	Custom
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Supply line temperature at DOT	33 °C
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Return line temperature at DOT	25 °C
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Specific power	28 W/m ²
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Domestic Hot Water Energy

3,500 kWh

Total tank volume	180 l
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Heat pump(s)

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Installation Address: Anne Marie McCullagh Clonlea Lodge Dublin	Reseller:	Project: Anne Marie McCullagh Solution 1 - Atec 6 Date: 15/11/2016	Id: 49658 Page 9/11
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Ecolabel product information

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Heat pump(s)	Atec 6
Declared load profile	XL
Energy efficiency class water heater	B
Energy efficiency class space heating	A+
Energy efficiency class space heating built in temperature control package	A+
Energy efficiency class space heating, low temp. app.	A+
Energy efficiency class space heating, low temp. app. Built in temp. control	A+
Rated heat output (average climate)	6 kW
Rated heat output (colder climate)	6 kW
Rated heat output (warmer climate)	7 kW
Rated heat output, low temp. app. (average climate)	5 kW
Rated heat output, low temp. app. (colder climate)	5 kW
Rated heat output, low temp. app. (warmer climate)	7 kW
SCOP (average climate)	2.70
SCOP (colder climate)	2.42
SCOP (warmer climate)	3.45
SCOP, low temperature application (average climate)	3.56
SCOP, low temperature application (colder climate)	3.12
SCOP, low temperature application (warmer climate)	4.72
Seasonal space heating Energy efficiency (average climate)	105 %
Seasonal space heating Energy efficiency (colder climate)	94 %
Seasonal space heating Energy efficiency (warmer climate)	135 %
Seasonal space heating Energy efficiency, temp. control (average climate)	139 %
Seasonal space heating Energy efficiency, temp. control (colder climate)	122 %
Seasonal space heating Energy efficiency, temp. control (warmer climate)	186 %
Seasonal space heating Energy efficiency, low temp. app. (average climate)	106 %
Seasonal space heating Energy efficiency, low temp. app. (colder climate)	95 %
Seasonal space heating Energy efficiency, low temp. app. (warmer climate)	137 %
Seasonal space heating Energy efficiency, low temp. app., temp. control (average climate)	141 %
Seasonal space heating Energy efficiency, low temp. app., temp. control (colder climate)	123 %
Seasonal space heating Energy efficiency, low temp. app., temp. control (warmer climate)	187 %
Annual energy consumption (average climate)	4337 kWh
Annual energy consumption (colder climate)	6013 kWh
Annual energy consumption (warmer climate)	2779 kWh
Annual energy consumption, low temp. app. (average climate)	2941 kWh
Annual energy consumption, low temp. app. (colder climate)	3571 kWh
Annual energy consumption, low temp. app. (warmer climate)	2110 kWh
Sound power levels outdoors	61 dB
Possibility to work only during off-peak hours	Yes

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Installation Address: Anne Marie McCullagh Clonlea Lodge Dublin	Reseller:	Project: Anne Marie McCullagh Solution 1 - Atec 6 Date: 15/11/2016	Id: 49658 Page 10/11
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Disclaimer

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This report is based upon data provided by the person who generated this report and a set of standard assumptions including but not limited to a "normal year" according to METEONORM. The results and recommendations assume the correct installation and use.

As the results and recommendations of this report including, without limitation, the calculated savings can vary according to the concrete circumstances these are only indicative and are given without any obligation and responsibility for Thermia Värmepumpar or any of its affiliates ("Thermia"). The calculated savings are not guaranteed or warranted by Thermia. Thermia accepts no responsibility for errors and omissions in the information and calculations.

This report should only be used with the assistance of an authorized installer.

Installation Address: Anne Marie McCullagh Clonlea Lodge Dublin	Reseller:	Project: Anne Marie McCullagh Solution 1 - Atec 6 Date: 15/11/2016	Id: 49658 Page 11/11
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