

## DEAP 4.2 INPUTS

Add New Item To Library

### Create Library Item

#### BASIC PROPERTIES

#### HEAT PUMP TEST DATA

Item Type \*

Heat Source

Item Name \*

LG R32 14kW 300L

Keywords \*

LG Therma V R32

Manufacturer \*

LG

Model \*

HM141M.U33

Heating Source Type \*

Heat Pumps

Heat Pump Type \*

Air to Water

Space Heating Standard \*

I.S. EN 14825

Water Heating Standard \*

I.S. EN 16147

Season Space Heating Efficiency,  $\eta_s$  [%] \*

124

Water Heating Efficiency,  $\eta_{wh}$  [%] \*

105.3

Temperature Control (Capacity Control) \*

Variable Outlet

Integrated Immersion

Flow Temperature  $\geq$  [60/65°C]

TOL \*

-15

WTOL \*

65

CANCEL

SAVE

## Create Library Item

### BASIC PROPERTIES

### HEAT PUMP TEST DATA

Heating System Test Data: I.S. EN14825

#### Test Condition Low (35°C)

	A(88%)	B(54%)	C(35%)	D(15%)	E*(100%)
	-7°C	2°C	7°C	12°C	TOL
Source	A-7	A2	A7	A12	A-10
Sink	W52	W42	W36	W30	W55
Heating Capacity (kW)	<u>9.30</u>	<u>5.70</u>	<u>6.50</u>	<u>7.70</u>	<u>10.50</u>
Coefficient of Performance (KW/KW)	<u>2.90</u>	<u>4.38</u>	<u>6.24</u>	<u>8.30</u>	<u>2.50</u>

#### Test Condition High (55°C) \*

	A(88%)	B(54%)	C(35%)	D(15%)	E*(100%)
	-7°C	2°C	7°C	12°C	TOL
Source	A-7	A2	A7	A12	A-10
Sink	W52	W42	W36	W30	W55
Heating Capacity (kW)	<u>10.60</u>	<u>6.50</u>	<u>6.30</u>	<u>7.70</u>	<u>10.00</u>
Coefficient of Performance (KW/KW)	<u>1.93</u>	<u>3.00</u>	<u>4.80</u>	<u>7.00</u>	<u>1.65</u>

Heating System Test Data: I.S. EN16147

<b>Source of Data *</b>	Coefficient of Performance (KW/KW)	<b>Water Heating Efficiency, η<sub>wh</sub> [%]</b>
<b>Water Heating Efficiency</b>		<u>105.3</u>
<b>Reference Hot Water Temperature (°C) *</b>		<b>Capacity of Heat Pump (kW) *</b>
<u>52</u>		<u>12</u>
<b>Declared Load Profile *</b>	<b>Standby Heat Loss [kWh/day] *</b>	<b>Volume of DHW accounted for in test (Litre) *</b>
<u>XL</u>	<u>2.09</u>	<u>300</u>

CANCEL

SAVE

### Edit Primary Heat Source

Product Details		Survey Details	
Type	Heat Pumps	Heat % *	100
Heat Pump Type	Air to Water	Fuel Type	Electricity
Manufacturer	LG	<input checked="" type="checkbox"/> Heats Water	
Model	HM141M.U33	Design Flow Temperature (°C) *	As Required
Seasonal Space Heating Efficiency, $\eta_s$	124	Daily Operation (h) *	24
<p>This is the Ecodesign Seasonal Space Heating Efficiency, <math>\eta_s</math>. When the survey is completed, the efficiency will be updated to reflect the performance of the heat pump in this dwelling.</p>		Backup Space Heater Fuel	Electricity
Eff. Adj. Factor	1	Backup Space Heater Efficiency (%) *	100
<p><a href="#">VIEW DETAILS IN LIBRARY</a></p>		Backup Water Heater Fuel	Electricity
		Backup Water Heater Efficiency (%) *	100



## Hot Water Tab

### Options & Storage

### Solar

### Heat Source

#### Options

Distribution Losses     Storage Losses     Is supplementary electric water heating used in summer     Is there a combi boiler

#### Storage

Is hot water storage indoors or in group heating scheme?    **Storage Type** Cylinder, indirect    **Storage Volume (l)** 300    **Heat Pump Type of DHW \*** Integral Hot Water Storage

Is manufacturers declared loss available    Kingspan HP300L    2.09

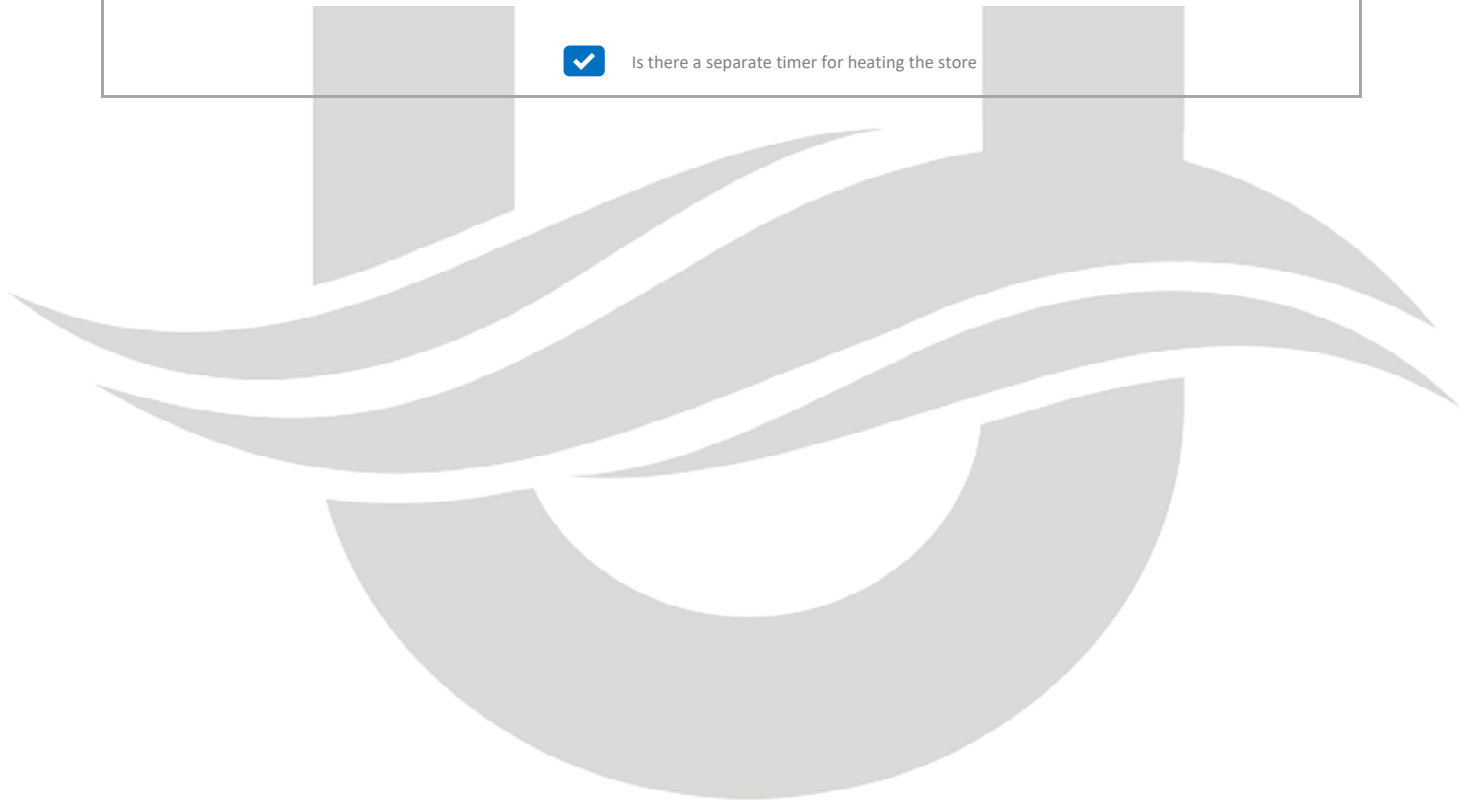
Insulation Type

Insulation Thickness (mm)

#### Primary Circuit Loss Type

Boiler with insulated primary pipework and with cylinder thermostat

Is there a separate timer for heating the store



# THERMA V AIR-TO-WATER HEAT PUMP

Please find below the required data for the SEAI Heat Pump Tool for DEAP 2016:

\*Where information is blank, please enter project specific information.

LG declares compliance to the following EU Directives:

811/2013/EU

812/2013/EU

813/2013/EU

## Section 4 – Heat Pump Data

Manufacturer of the installed heat pump(s)	LG Electronics
Model of the installed heat pump(s)	HM141M.U33
Type of Heat Pump	Air to water
Temperature control	Variable Outlet
Does the installation provide	Space Heating & Domestic Hot water
Space Heating Test Standard	I.S. EN 14825
Water Heating Test Standard	I.S. EN 16147
Operation Limit Temperature	-15.00
Heating water operating Limit Temperature	65°C

## Section 5 – Heating

Annual space heating requirement taken from DEAP	
Is there a fixed secondary heater present?	
Is there a CHP present?	
Fraction of main space and water from CHP	
Annual space heating provided by Heat Pump	
Design Outdoor Temperature	-3
Indoor Design Temperature (Mean internal Temperature)	
Heat emission type served by Heat Pump within the dwelling	Select all that apply:
1 or more Radiators	
1 or more Fan Coil Units	
Underfloor Heating	
Air used as Emitter (to Air Units)	No
Design Flow Temperature Use "Default Supply Temperature" unless other evidence available	
Exponent n, characterising type of emission system	1.2
Emitter Temperature Drop	10
No of hours per day Heat Pump in operation	
Cut-out hours	24
Return Temperature at design conditions	8
Electricity Primary Energy Factor	2.08
Is a Back Up Space Heater Present within Dwelling	No
Back Up Space Heater Fuel	
Primary Energy Factor for Back Up Space Heater	
Efficiency of Back Up Space Heater	
Adjusted efficiency of Back Up Space Heater relative to Direct Electric Heating	
Is there a water heater installed as back up for the Heat Pump?	No
Back up Water Heater Fuel	
Primary Energy Factor for Back Up Water Heater	
Efficiency of Back up Water Heater	
Adjusted efficiency of Back Up Water Heater relative to Direct Electric Heating	

# THERMA V AIR-TO-WATER HEAT PUMP

## Section 6 – Domestic Hot Water

Output from Main Water Heater	
Type of DHW	Integral
Annual water heating provided by main water heating system	
Cold Water Inlet Temperature	10
Required Flow Temperature from Heat Pump to Hot Water Storage	60
Volume of DHW Storage	300

## Section 6 – Product Performance Data

Test Condition EN 14825:2013						
Additional Test Points available at:					Low Temperature	Yes
					Medium Temperature	No
					Very High Temperature	No
Maximum Test Temperature allowed for in EN14825 testing						55
Low Temperature Application (35°C)	Test Conditions EN 14825:2013	A (88%)	B (54%)	C (35%)	D (15%)	E (100%)
	Source	A-7	A2	A7	A12	A-15
EN 14825:2013 – Table 12 (ASHP) or Table 24 (GSHP)	Sink	W34	W30	W27	W24	W35
	Heating Capacity (kW)	9.3	5.7	6.5	7.7	10.5
	Coefficient of Performance (kW / kW)	2.9	4.38	6.24	8.3	2.5
High Temperature Application (55°C)	Source	A-7	A2	A7	A12	A-15
	Sink	W52	W42	W36	W30	W55
EN 14825:2013 – Table 18 (ASHP) or Table 30 (GSHP)	Heating Capacity (kW)	10.6	6.5	6.3	7.7	10.0
	Coefficient of Performance (kW / kW)	1.93	3.0	4.8	7.0	1.65

## Test Condition EN 16147:2017

Source of data	Water heating energy efficiency, nwh
Water heating energy efficiency, nwh	105.3%
Equivalent Coefficient of Performance	
Reference Hot Water Temperature	52°C
Required Source Temperature	N/A
Capacity of Heat Pump	12
Declared Load Profile	XL
Standby Heat Loss (kW)	1.76
Volume of DHW accounted for in test	300

# THERMA V AIR-TO-WATER HEAT PUMP

Technical parameters for heat pump space heaters and heat pump combination heaters

Model(s):	HM141M U33		
Air-to-water heat pump:	YES	≠0	
Water-to-water heat pump:	YES	NO	
Brine-to-water heat pump:	YES	NO	
Low-temperature heat pump:	YES	NO	
Equipped with a supplementary heater:	YES	NO	
Heat pump combination heater:	YES	NO	

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps.  
For low-temperature heat pumps, parameters shall be declared for low-temperature application.  
Parameters shall be declared for average climate conditions.

## Low temperature application

Item	Symbol	Value	Unit
Rated heat output (*)	$P_{rated}$	11	kW
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature $T_j$			
$T_j = -7\text{ °C}$	$P_{dh}$	9.3	kW
$T_j = +2\text{ °C}$	$P_{dh}$	5.7	kW
$T_j = +7\text{ °C}$	$P_{dh}$	6.5	kW
$T_j = +12\text{ °C}$	$P_{dh}$	7.7	kW
$T_j =$ bivalent temperature	$P_{dh}$	10.5	kW
$T_j =$ operation limit temperature	$P_{dh}$	10.5	kW
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	$P_{dh}$	x,x	kW
Bivalent temperature	$T_{biv}$	-10	°C
Cycling interval capacity for heating	$P_{cyc}$	x,x	kW
Degradation co-efficient(**)	$C_{dh}$	0.9	

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	$\eta_s$	175%	
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature $T_j$			
$T_j = -7\text{ °C}$	COPd or PERd	2.90	- or %
$T_j = +2\text{ °C}$	COPd or PERd	4.38	- or %
$T_j = +7\text{ °C}$	COPd or PERd	6.24	- or %
$T_j = +12\text{ °C}$	COPd or PERd	8.30	- or %
$T_j =$ bivalent temperature	COPd or PERd	2.50	- or %
$T_j =$ operation limit temperature	COPd or PERd	2.50	- or %
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	COPd or PERd	x,xx	- or %
Cycling interval efficiency	COPcyc or PERcyc	x,xx	- or %
Heating water operating limit temperature	WTOL	65	°C

## Medium temperature application

Item	Symbol	Value	Unit
Rated heat output (*)	$P_{rated}$	12	kW
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature $T_j$			
$T_j = -7\text{ °C}$	$P_{dh}$	10.6	kW
$T_j = +2\text{ °C}$	$P_{dh}$	6.5	kW
$T_j = +7\text{ °C}$	$P_{dh}$	6.3	kW
$T_j = +12\text{ °C}$	$P_{dh}$	7.7	kW
$T_j =$ bivalent temperature	$P_{dh}$	10.6	kW
$T_j =$ operation limit temperature	$P_{dh}$	10.0	kW
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	$P_{dh}$	x,x	kW
Bivalent temperature	$T_{biv}$	-7	°C
Cycling interval capacity for heating	$P_{cyc}$	x,x	kW
Degradation co-efficient(**)	$C_{dh}$	0.9	

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	$\eta_s$	124%	
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature $T_j$			
$T_j = -7\text{ °C}$	COPd or PERd	1.93	- or %
$T_j = +2\text{ °C}$	COPd or PERd	3.00	- or %
$T_j = +7\text{ °C}$	COPd or PERd	4.80	- or %
$T_j = +12\text{ °C}$	COPd or PERd	7.00	- or %
$T_j =$ bivalent temperature	COPd or PERd	1.93	- or %
$T_j =$ operation limit temperature	COPd or PERd	1.65	- or %
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	COPd or PERd	x,xx	- or %
For air-to-water heat pumps: Operation limit temperature	TOL	-15	°C
Cycling interval efficiency	COPcyc or PERcyc	x,xx	- or %
Heating water operating limit temperature	WTOL	65	°C

Power consumption in modes other than active mode			
Off mode	$P_{off}$	0.060	kW
Thermostat-off mode	$P_{to}$	0.060	kW
Standby mode	$P_{sb}$	0.060	kW
Crankcase heater mode	$P_{ck}$	0.050	kW

Supplementary heater			
Rated heat output (*)	$P_{sup}$		kW
Type of energy input			

Other items			
Capacity control		Variable	
Sound power level, indoors/outdoors	$L_{WA,indoor}$	NA	dB
	$L_{WA,outdoor}$	63	dB
Annual electricity consumption (Low Temp)	Q HE, (Low Temp)	4875	kWh
Annual electricity consumption (Mid Temp)	Q HE (Mid Temp)	7795	kWh

For air-to-water heat pumps: Rated air flow rate, outdoors (Low Temp)		7200	m <sup>3</sup> /h
For air-to-water heat pumps: Rated air flow rate, outdoors (Mid. Temp)		4800	m <sup>3</sup> /h
For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger		x	
Water Pump EEI	≤	0.23	

"The benchmark for the most efficient circulators is EEI ≤ 0.20,"

For heat pump combination heater			
Declared load profile		x	
Daily electricity consumption	$Q_{elec}$	x,xxx	kWh
Annual electricity consumption	AEC	x	kWh

Water heating energy efficiency	$\eta_{wh}$	x	%
Daily fuel consumption	$Q_{fuel}$	x,xxx	kWh
Annual fuel consumption	AFC	x	GJ

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(\*) For heat pump space heaters and heat pump combination heaters, the rated heat output  $P_{rated}$  is equal to the design load for heating  $P_{designh}$ , and the rated heat output of a supplementary heater  $P_{sup}$  is equal to the supplementary capacity for heating  $sup(T_j)$ .

(\*\*) If  $C_{dh}$  is not determined by measurement then the default degradation coefficient is  $C_{dh} = 0.9$ .

THERMA V AIR-TO-WATER HEAT PUMP

