

Calculation of Chimneys according to EN 13384-1

Date 2/2/2013

Design of Plant - "Σύντομη περιγραφή έργου"

Calculated according to EN 13384-1
 Chimney House Chimney
 Position/Run Inside Building
 Fresh Air Supply Raumluf (Dependent on Room Air)
 Air Supplied by From Installation From (A, B, C, D)
 Sections Connector: 1, Chimney
 Outlet Open Outlet Z

Environment

Installation Site "Περιοχή έργου"
 Geodetic Height 350 m
 Safety Factor SE 1
 Correction Factor SH ()
 Ambient Air Temperatures (Standard) 15 °C (Temperature Requirement)
 At top Outlet 15 °C (Temperature Requirement)
 Outside Area 15 °C (Temperature Requirement)
 In Unheated Areas 15 °C (Temperature Requirement)
 In Heated Areas 15 °C (Temperature Requirement)
 Ambient Air 15 °C (Pressure Requirement)

Appliance

Category Gas Condensing Appliance
 Manufacturer, Model "Επιλογή κατασκευαστή λέβητα συμπύκωσης" "Επιλογή μοντέλου λέβητα συμπύκνωσης"
 Fuel Natural Gas

	High Fire	Low Fire
Nominal Output (kW)	35 kW	10 kW
Nominal Output (kW) (class)	36,06 kW	10,42 kW
CO2 Level	9 %	8,4 %
Mass Flow	20,64 g/s	6,12 g/s
Temperature	68 °C	63 °C
Maximum Feed Pressure	130 Pa	15 Pa
Actual Feed Pressure	126,6 Pa	5,6 Pa
Appliance Outlet	Round 80 mm	
Kind of Connection	Reduction Conic 60°	
Required Air (Factor Beta)	0,9	

Installation Room

Category Installation Room
 Fresh Air Windows, Opening from Outside
 Extract Air None

Connector - Construction

Category Connector
 Manufacturer, Model Almeva East Europe STARR PPH
 Cross Section Round 76 mm (DN 80)

Layers	Material	Thickness	Thermal Cond.
	Polypropylen h	2 mm	0,22 W/mK

Rugosity 1 mm
 Product Classification EN 14471 - T120 H1 O W 2 O20 I D L
 Registrations CE-0036-CPD-9165-001 ()

Connector - Geometrie

Resistances None
 Effective Height 0,2 m
 Drawn Length 1,5 m
 Portion in outside areas 0 %
 Portion in unheated areas 0 %
 Portion in heated areas 100 %

Chimney - Construction

Category Chimney with Flue
 Manufacturer, Model Almeva East Europe STARR PPH
 Cross Section Round 76 mm (DN 80)

Layers	Material	Thickness	Thermal Cond.
	Polypropylen h	2 mm	0,22 W/mK

Rugosity 1 mm
 Gap Full Access without D-P (60 mm)
 Cross Section Square 200 mm
 Thermal Resistance 0,2 m²K/W
 Thickness 5 mm
 Inner Wall Material Brickwork High Strength
 Rugosity 5 mm
 Product Classification EN 14471 - T120 H1 O W 2 O20 I D L
 Chimney Classification EN 15287 - T120 H1 W 2 O00 L90 (R0,42)
 Registrations CE-0036-CPD-9165-001 ()

Chimney - Geometrie

Resistances None
 Effective Height 15 m
 Drawn Length 15 m

Chimney - Course (Inside Building)

Length in outside areas 15 m
 Length in unheated areas 0 m
 Length in heated areas 0 m
 Height above Shaft 0,4 m
 Building Contact None
Additional Insulation
 Outside Area No
 In Unheated Areas canceled

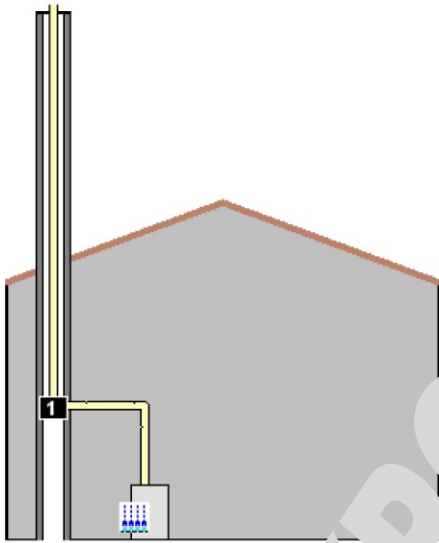
Outlet Resistance

Outlet Resistance
Zeta Open Outlet
0

Entry

Resistance L-Bow 87 °

Schematic Representation of the Plant



Result of Calculation - Chimney

Mode Planned With Positive Pressure, Wet

Requirement	Form.	Unit	High Fire	Low Fire
Pressure Requirement	$P_{Z0e}-P_{Z0}$	Pa	0 +++	0 +++
Pos. Pressure at Entry	$P_{exc}-P_{Z0}$	Pa	4889,5 +	4998,4 +
Pos. Pressure inside Connector	$P_{exc}-P_{Z0}$	Pa	4876,4 +	4997,4 +
Temperature Requirement	$t_{iob}-t_g$	°C	35 +++	4,2 +

Additional Information

Chimney
Velocity

w_m	m/s	High Fire	Low Fire
		4,53	1,28



The plant fits all conditions of standard EN 13384-1.

Hints

The actual feed pressure of the heating appliance is 126,6 at nom. output and 5,6 at min. output.

The reserve of pressure $P_{exc} - P_{z0}$ which is given in the results is the difference between the maximum allowed pressure for the flue system P_{exc} and the actual pressure inside the flue P_{z0} . If there is negative pressure inside the flue this difference is of course greater (!) than the maximum allowed pressure P_{exc} itself.