TÜV Rheinland Energy GmbH
Test Centre for Energy Appliances

TÜVRheinland®
Precisely Right.

Report No. S 386 2017 E10

Supplement test report
acc. DIN EN 15270:2008-03

Pellet burners for small heating boilers

Type:
SUN P … N
MIKRO P… N
ECO … P N
LANGÅ P…

Trademarks:
FERROLI
FER
LAMBORGINI CALORECLIMA
LANGÅ

Company:
Ferroli S.p.A.

2017

ilac-MRA

DAkkS
Deutsche
Akkreditierungsstelle
D-PL-11120-04-00

Supplement test report
acc. DIN EN 15270:2008-03
Pellet burners for small heating boilers

Manufacturer / Contractor:	**Ferroli S.p.A.** Via Ritonda 78/A I-37047 San Bonifacio (VR)	
Product:	Pellet burners for small heating boilers	
Trademarks:	**FERROLI, FER, LAMBORGINI CALORECLIMA, LANGÅ** *Overview about trademarks see page 3*	
Type designation:	**SUN P7 N**	**SUN P12 N**
Heat input [kW]:	13,7 – 34,1	30,0 – 55,0
Fuel consumption [kg/h]:	2,9 – 7,2	6,3 – 11,6
Pressure in combustion chamber:	-0,10 mbar	-0,20 mbar
Type of operation**:**	5-stages modulating	
Test requirements:	DIN EN 15270:2008-03	

Test result:

The requirements of the above mentioned standards are fulfilled. The local, applicable installation conditions are to be observed.

Remark:

The long term stability test acc. 5.3.6 and the test acc. the electrical safety 5.2.12 was not part of the TÜV assessment. For more details see basic test reports S 267 2007 T1 for Sun P7 and S 386 2011 T1 for Sun P12.

Cologne, 23.08.2017
432/mr

Test Centre for Energy Appliances
DIN- and DVGW-test laboratory

Assessor:

M. Sc. M. Höfinghoff

Report released after review:

Dipl.-Ing. R. Verbert

1 Task and cause of test

The Manufacturer introduces a new electronic control board and a new burner control unit. The tests according electrical safety were performed successfully by IMQ. Furthermore spot tests of the safety relevant functions concerning combustion quality, operational behaviour and maintenance, for conformity were tested according DIN EN15270:2008-03. The existing test results of Sun P7 and Sun P12 are still valid and can be transferred to Sun P7 and Sun P12.
For more details see test reports S 267 2007 T1 for Sun P7 and S 386 2011 T1 for Sun P12.
Overview of different trademarks and type designations:

Trademark:	FERROLI	FER	LAMBORGHINI CALORECLIMA	LANGÅ
Type designation:	SUN P7 N	MIKRO P7 N	ECO 3.4 P N	LANGÅ P7
	SUN P12 N	MIKRO P12 N	ECO 5.5 P N	LANGÅ P12

2 Test history

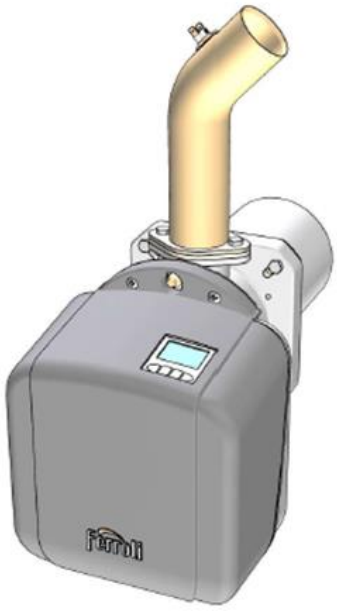
The following tests were performed on the pellet burner system Sun P …:

Report number	Name	Standard
S 267 2007 T 1	SUN P	Type test acc. pr EN 15270
S 267 2008 C 9	Mikro P7	Confirmation acc. EN 15270
S 267 2008 C 8	EP 3.4 P	Confirmation acc. EN 15270
S 267 2008 C 7	AZ 3.4P	Confirmation acc. EN 15270
S 267 2008 C 6	ECO 3.4P	Confirmation acc. EN 15270
S 267 2008 C 5	SUN P7	Confirmation acc. EN 15270
S 267 2008 S 4	EP 3.4 P	New name Eurotherm EP 3.4P
S 267 2008 S 3	AZ 3.4P	New name Joannes-Finterm (ursprgl. SUN P7)
S 267 2008 S 2	ECO 3.4 P	New name Lamborghini, ursprl. SUN P7
S 267 2012 C 15	Mikro P7	Extension Certificates
S 267 2012 C 14	AZ 3.4.P /Joannes	Extension Certificates
S 267 2012 C 13	ECO 3.4.P/ Lamborghini	Extension Certificates
S 267 2012 C 12	Sun P7	Extension Certicates
S 267 2012 C 11	EP 3.4.P / Euroterm	Extension certificates
S 386 2011 T 1	Sun P12	Extension of t he power to 12 kW
S 386 2012 C 3	MIKRO P12	Certificate MIKRO P12
S 386 2015 C 7	Joannes AZ5.5P	Certificate AZ5.5P
S 386 2015 C 6	Eco 5.5P	Certificate Eco 5.5P
S 386 2015 E 5	Eco 5.5P	New name
S 386 2015 E 4	Sun P12	Change of construction
S 386 2017 C 9	MIKRO P7, MIKRO P12	Certipedia FER / S 267 2007 T1 & S 386 2011 T1
S 386 2017 C 8	SUN P7, SUN P12	Certipedia FERROLI / S 267 2007 T1 & S 386 2011 T1
S 386 2017 E 10	Sun P 7+12 N	New Electronic, same construction

3 Description of the test subject

The burner has been designed as a monobloc construction. It is equipped with all the requisite control and safety devices for automatic operation.

Type of construction, operating method:	Monobloc construction, Multi stage control Control: 5 stages burner, stage 1 (Min) to stage 5 (Max) Start between third and fourth stage
Fuel hopper:	Eexternal
Air control:	Air pressure switch
Pellet flow rate:	Fixed setting through step motor.
Pre-purging:	Pre-purging takes place during ignition of the main burner. Duration time is fixed at 5 minutes
Post-purging:	Maximum 100 s after flame shut off; increasing to maximum fan speed (230V)
Ignition device:	Automatic, electrical heat resistor; duration time max. 5 minutes
Monitoring:	The ignition/ and or main flame through optical flame detector
Control for the air/pellet ratio:	Electric and electronic combined control BCU
Miscellaneous:	None



FERROLI SUN P… N

4 Examination

4.1 Equipping the burner (Main parts) Sun P7 N

4.1.1 Automatic burner control systems

Manufacturer	Type	Proof of conformity
Bertelli & Partners	PB2.0100	IMQ report EMC16047

4.1.2 Flame sensor

Manufacturer	Type	Proof of conformity
Bertelli & Partners	VLS02 art. 82650	-

4.1.3 Pellet step motor

Appliance	Manufacturer	Type	Technical data	Proof of conformity
Pellet step motor	Kenta	K9115062	-	-
	Siemens	SBC15	2800/5,6rpm	-

4.1.4 Air switch

Appliance	Manufacturer	Type	Technical data	Proof of conformity
Air switch	Huba Control	401.93000	-	0085BM0306

4.1.5 Safety temperature device

Appliance	Manufacturer	Type	Technical data	Proof of conformity
Thermal cut out	Sensata	Klixon 1NT11L-1769	-	Kema

4.2 Equipment of the burner (Main parts) Sun P12 N

4.2.1 Automatic burner control systems

Manufacturer	Type	Proof of conformity
Bertelli & Partners	PB2.0100	IMQ report EMC16047

4.2.2 Flame sensor

Manufacturer	Type	Proof of conformity
Bertelli & Partners	VLS02 art. 82650	-

4.2.3 Pellet step motor

Appliance	Manufacturer	Type	Technical data	Proof of conformity
Pellet step motor	Bitron	MR 330	-	-

4.2.4 Air switch

Appliance	Manufacturer	Type	Technical data	Proof of conformity
Air switch	Huba Control	401.93000	-	0085BM0306

4.2.5 Safety temperature device

Appliance	Manufacturer	Type	Technical data	Proof of conformity
Thermal cut out	Sensata	Klixon 1NT11L-1769	-	Kema

4.3 Components and aggregates Sun P7 N

4.3.1 Burner system

Burner tube		
Tube diameter external	mm	139,7
Outlet internal	mm	133,9
Basic length	mm	200
Stabilising flange		
External diameter	mm	180
Internal air diameter	mm	See drawing
Opening pellet	mm	61/52
Opening flame sensor	mm	6
Opening air supply prim.	mm	4 x 5mm
Opening air supply sek.	mm	8mm
Opening ignition resistance	mm	11
Burner retorte		Cast Iron
Width		128,7 x 117,9
Length		164,5
Air openings	mm	3 x 57,5mm x 2,5 mm 3 x 25,5mm x 2,5 mm 1 x 17,5mm x 2,5 mm

4.3.2 Fan

Fan impeller		Radial
Manufacturer		Ferroli S.p.A.
Diameter	mm	146
Width	mm	48
Blades	-	40
Fan motor		
Manufacturer		SIMEL/Rotomatica/AACO
Type		E9701
Speed	min^{-1}	2735
Power input	kW	0,07
Voltage	V	230

4.3.3 Ignition resistance

Manufacturer		Cartuccia Ultrawatt
Type		1CZAJ865F
Primary voltage	W	350
Secondary current	V	230

4.4 Components and aggregates SUN P12 N

4.4.1 Burner system

Burner tube		
Tube diameter external	mm	168,3
Outlet internal	mm	133,9
Basic length	mm	220
Stabilising flange		
External diameter	mm	210
Internal air diameter	mm	See drawing
Opening pellet	mm	68x57,5
Opening flame sensor	mm	6
Opening air supply prim.	mm	Bow shaped 76° 82mm width/8mm
Opening air supply sek.	mm	2x4 and 2x5mm
Opening ignition resistance	mm	11
Burner retorte		Stainless Steel
Width		156
Length		120

4.4.2 Fan

Fan impeller	Type	Radial
Manufacturer		Ferroli S.p.A.
Diameter	mm	146
Width	mm	48
Blades	-	40
Fan motor		
Manufacturer		SIMEL/Rotomatica/AACO
Type		E9701
Speed	min^{-1}	2735
Power input	kW	0,07
Voltage	V	230

4.4.3 Ignition resistance

Manufacturer		Cartuccia Ultrawatt
Type		1CZAJ865F
Primary voltage	W	350
Secondary current	V	230

5 Type testing

The examinations were carried out in April 2017 by the impartial test centre of TÜV Rheinland in the manufacturer test laboratory in San Bonifacio/Italy.

5.1 Requirements acc. DIN EN 15207:2008

P – Pass
N – N
F – Fail

Chapter	Requirements	Results
5	Requirements	
5.1	Design	
5.1.1	General design	
5.1.1.1	Materials	P
5.1.1.2	Design	P
5.1.1.3	Mounting	P
5.1.1.4	Accessibility for maintenance and use	P
5.1.1.5	Handling of ashes	P
5.1.2	Equipment	
5.1.2.1	Motors and fans	P
5.1.2.2	Burner controls	P (see annex A06)
5.1.2.3	Ignition devices	P
5.1.2.4	Fuel hopper	N
5.1.2.5	Cell feeder or fire damper	N
5.1.2.6	Water sprinkler system	N
5.1.3	Interface to the boiler	P
5.2	Safety,	
5.2.1	General, Software Class C	P See report IMQ
5.2.2	Safety against back burning	P See report IMQ
5.2.3	Safety against fuel overload of the boiler or interruption In fuel supply	P
5.2.4	Voltage variation	P
5.2.5	Surfaces temperatures of accessible parts	P
5.2.6	Leakage of combustion products	P
5.2.7	Resistance to over- heating	P
5.2.8	Lock –out an re-start	P (see annex A06)

Chapter	Requirements	Results
5.2.9	Safety against overheating the boiler water	P
5.2.10	Safety against loss of combustion air supply	P
5.2.11	Safety against variation of combustion chamber pressure	P
5.2.12	Electrical safety	
5.2.12.1	Electrical safety of devices	P See report IMQ
5.2.12.2	Electrical safety of the pellet burner	P (see annex A07)
5.3	Performance requirements	
5.3.1	Emissions of carbon monoxide (CO), organic gaseous compound (OGC) and dust	P, Class 5
5.3.2	Proportion of unburned fuel in the residue	P
5.3.3	Excess air ratio	P
5.3.4	Electrical consumption	P
5.3.5	Start and ignition	P
5.3.6	Long term stability (optional)	Not tested
5.3.7	Noise	P
6.7	Replacement of individual parts and equil. components	P
8	Marking	P
9	Operating instructions	
9.1	Instruction manual	P
9.2	Product description	P
9.3	Installation instructions	P
9.4	Operation and maintenance instructions	P
9.5	Instructions for the installer	P

5.2 Summary of test results SUN P7 N

		Achieved	Achieved
Working point		**Max**	**Min**
Type of fuel		Pellet, see analysis	Pellet, see analysis
Control stage		Max 5	Min 1
Heat input	kW	35,08	13,81
air excess ratio	1,...	1,647	2,197
CO-content	mg/m³	116,9	91,8
NOx-content	mg/m³	388,9	317,7
OGC-content	mg/m³	1,4	0,4
Dust-content	mg/m³	7,1	10,1
max. electrical consumption.	W	100/350	100/350
Noise	dB	68	-

For more details see basic test reports S 267 2007 T1.

5.3 Summary of test results SUN P12 N

		Achieved	Achieved
Working point		**Max**	**Min**
Type of fuel		Pellet, see analysis	Pellet, see analysis
Control stage		Max 5	Min 1
Heat input	kW	59,61	32,64
air excess ratio	1,...	1,841	1,892
CO-content	mg/m³	233,8	117,8
OGC-content	mg/m³	3,0	1,0
Dust-content	mg/m³	9,0	8,4
max. electrical consumption.	W	100/350	100/350
Noise	dB	65	-

For more details see basic test reports S 386 2011 T1.

6 Confirmation of conformity with test standard

The pellet burner

SUN P7 N **SUN P12 N**	Trademark: **FERROLI**
MIKRO P7 N **MIKRO P12 N**	Trademark: **FER**
ECO 3.4 P N **ECO 5.5 P N**	Trademark: **LAMBORGHINI CALORECLIMA**
LANGÅ P7 **LANGÅ P12**	Trademark: **LANGÅ**

of the company

Ferroli S.p.A.

fulfils the requirements of the standards stated, as far as they are applicable. Conformity with the normative DIN EN 15270:2008-03 is confirmed.

The long term stability test acc. 5.3.6 and the test acc. electrical safety 5.2.12 was not a part of the TÜV assessment.

For more details see test reports S 267 2007 T1 for Sun P7 and S 386 2011 T1 for Sun P12.

The test statement was made on the basis of the documentation submitted by the manufacturer and by means of the prototypes presented. It only applies to such appliances, which have been manufactured in accordance with the prototypes.

The requirements of the above mentioned standards are fulfilled. The local, applicable installation conditions are to be observed.

7 Test documentation

Annex	Content	Date
A 01	Data plates SUN P N	2017
A 02	Manual SUN P N	05/2017
A 03	Manufacturer declaration	22.08.2017
A 04	Drawing – Siemens – SBC15	18.12.2012
A 05	Service parameters – Firmware 0.8	05.04.2017
A 06	EMC report BCU - PB2.0100	17.02.2017
A 07	EMC test report R17106701 EMC test report R17112201 EMF test report R17112101	07.07.2017 07.07.2017 07.07.2017