



# CARGOINSPECT-OPREMA

## doeel Skopje

Company for inspection of quality and quantity  
of equipment, machinery and technical materials



Skopje, 29.05.2017

### CERTIFICATE No. 11-342-2017/446

FOR PERFORMED INSPECTION OF **AUTOMATIC HYDRO PELLET STOVE**

#### 1. GENERAL DATA

- 1.1. Client and manufacturer: **SMELTING Doo**  
bul. Kuzman Josifovski Pitu 8/2, 1000 Skopje, Macedonia
- 1.2. Inspection Body: **Cargonispect-Oprema Dooel (IB-075)**  
Marsal Tito 2/14a, 1000 Skopje, Macedonia
- 1.3. Place and date of inspection: **Skopje, 23.05.2017**

#### 2. SUBJECT OF INSPECTION

- 2.1. Automatic hydro pellet stove, model TEP 18 kW

#### 3. MODE OF INSPECTION

- 3.1. Review and check of the technical documentation, inspection of design and construction requirements, quality of manufacture, test of performances, functional and safety tests of the tested sample according to the requirements of MKC EN 303-5:2012 Standard using wood pellets as test fuel.

#### 4. INSPECTION RESULTS

- 4.1. Results of the inspection are stated in detail in Test Report No. 11-342-2017/446 – TR01 which is integral part of this Certificate.

#### 5. CONCLUSION

- 5.1. The results of the performed inspection show that the tested sample of **Automatic hydro pellet stove model TEP 18 kW** satisfies the minimum requirements of the reference Standard MKC EN 303-5:2012.

*\* Integral part of this Certificate is Test Report no. 11-342-2017/446-TR01*

Certificate is valid until 29.05.2020

  
Inspector  
Aleksandar Stavrev

CARGOINSPECT-OPREMA  
DOOEL SKOPJE  
Quality and Quantity Inspection

  
Technical Director / Manager  
Dimitrija Risteski



**TEST REPORT No. 11-342-2017/446 – TR01**

Type of inspection	Inspection of performances, functional and safety inspections
Reference Standard	MKC EN 303-5:2012
Subject of inspection	Automatic hydro pellet stove
Model, year of manufacture	TEP 18 kW, 2017
Manufacturer	SMELTING Doo bul. Kuzman Josifovski Pitu 8/2, 1000 Skopje, Macedonia
Test Report consists of	6 pages
Inspection Body	CARGOINSPECT-OPREMA Dooel (IB-075) Marsal Tito 2/14a, 1000 Skopje, Macedonia
Statement	The only reproduction allowed is in full, parts of it only upon written approval of the Inspection Body. The test report refers only to the tested sample and under the conditions described.
Date of beginning of inspection	23/05/2017
Date of finishing of inspection	23/05/2017
Date of issue	29/05/2017





### Tested sample name

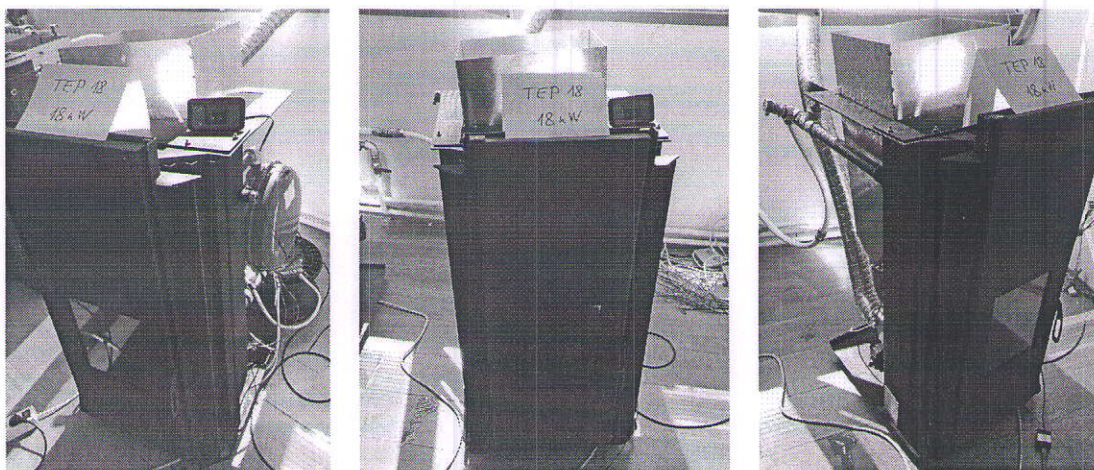
According to client's declaration, the name of the tested sample is "TEP 18 kW".

### Description of the tested sample

The tested sample is **Automatic hydro pellet stove** fired by wood pellets with following dimensions:

- Width 520 mm
- Depth 540 mm
- Height 970 mm

### TESTED SAMPLE VIEW



### Declared characteristics by manufacturer

Model	TEP 18 kW
Nominal output (kW)	18
Efficiency (%)	90-92
Min. fuel consumption (kg/h)	≈ 2,0
Max. fuel consumption (kg/h)	≈ 3,0
Flue gas temperature (nom.) (° C)	140

### Reference documents

Inspection was performed according to the requirements of the following documents:

- MKC EN 303-5:2012 Standard for Heating boilers – Part 5: Heating boilers for solid fuels, hand and automatically stocked, nominal heat output of up to 300 kW – Terminology, requirements, testing and marking
- U 7.1.01 Internal guide for inspection of residential heating boilers for solid fuels, hand and automatically stocked, nominal heat output of up to 300 kW



### Test equipment

The following test and measuring equipment was used during the inspection:

#### Test apparatus

Description	Manufacturer	Type	Measuring range
Digital camera	Canon	A490	
Digital thermometer with inner and outer thermo couple	TFA	21055	-10 ÷ 60°C (inner t-couple) -50 ÷ 70°C (outer t-couple)
Digital thermometer for contact surfaces	SKF	TMTP1	-30 ÷ 200°C
Digital thermometer with K-type thermo couple	Voltcraft	K101	-200 ÷ +1370°C
Gas analyzer (CO meter)	Greisinger Electronics	GCO 100	0 ÷ 1250 mg/m <sup>3</sup>
Gas analyzer (CO <sub>2</sub> meter)	Voltcraft	CM-100	0 ÷ 4000 ppm
Meter	Tesar	Intersilver art. 215	0-3000 mm
Vernier calliper	/	/	0-150 mm
Weight scale		Digital	0 – 3500 g

#### Mode of inspection

1. Review and check of technical documentation
2. Review of the design and construction requirements
3. Test of performances at nominal heat output
4. Test of performances at reduced heat output
5. Temperature safety test
6. Review and check of the user and operating instructions
7. Inspection of marking

#### Inspection team

Inspection team was the following:

Position	First and last name
Manager / Technical Director	Dimitrija Risteski
Inspector	Aleksandar Stavrev

#### Test fuel

During the inspection test fuel according to the requirements of Table B.1 of the reference standard was used. The test fuel was with the following characteristics:

Characteristics	Unit (value)
Fuel	Wood pellets
Manufacturer	Masterfix, Bulgaria
Dimensions	φ 6 mm L=10-25 mm
Moisture content	< 8 %
Ash content	< 0,6 %
Upper calorific value	5,3 kWh/kg







### Test sample assembly

Tested sample was assembled in test room, measuring section was installed according to the requirements of standard.

### Inspection results

#### 1. Review and check of technical documentation

After performed detailed analysis of the technical documentation, used materials and the tested sample, it is concluded that the material used for construction is according to the requirements of Table 1, the thickness of the material is according to the requirements of Tables 3-5.

The documentation includes the minimum required technical specifications for the product according to Par. 4.1.2 of referenced standard.

#### 2. Check of the general construction requirements

Check has shown that the tested sample satisfies the minimum general construction requirements according to Par. 4.1 of the reference standard.

#### 3. Test of performances at nominal heat output

Tested sample was prepared and set-up for inspection according to Par. 5.7 and 5.8 of the reference standard.

The sample was loaded with fuel for successful ignition and pre-test period and then started. After the ignition was achieved, the sample was set-up for nominal heat output. After the pre-test period, stable condition was achieved, where the temperature of the exhaust gases was not changing for more than  $\pm 5K$ . At this time the pre-test period was finished.

Then the test period at nominal heat output has started. The temperature of exhaust gases, ambient temperature, temperature of different parts of the fireplace (to record the maximum temperature), temperature of the fuel reservoir (to record the maximum temperature), concentration of CO and CO<sub>2</sub> in exhaust gases were recorded on regular intervals.

Using the recorded values during the test period as well as the methods for calculation of the reference standard, the following values were calculated and recorded:

Test results of performance at nominal heat output		Tested sample	TEP 18 kW
Fuel type		Wood pellets	
Nominal	Heat output	---	Nominal
	Mean temperature of exhaust gases	°C	141,4
	Mean value of CO at 13% O <sub>2</sub>	mg/m <sup>3</sup> (%)	287 (0,0251)
	Heat input	kW	20,48
	Heat output	kW	18,6
	Efficiency	%	90,8





#### 4. Test of performances at reduced heat output

Tested sample was prepared and set-up for inspection according to Par. 5.7 and 5.8 of the reference standard.

The sample was loaded with fuel then started at reduced output.

After the start of the test period, the temperature of exhaust gases, ambient temperature, temperature of different parts of the sample (to record the maximum temperature), temperature of the fuel reservoir (to record the maximum temperature), concentration of CO and CO<sub>2</sub> in exhaust gases were recorded on regular intervals.

Using the recorded values during the test period as well as the methods for calculation of the reference standard, the following values were calculated and recorded:

Test results of performance at reduced heat output		Tested sample	TEP 18 kW
Fuel type		Wood pellets	
Reduced	Heat output	---	Reduced
	Mean temperature of exhaust gases	°C	132,7
	Mean value of CO at 13% O <sub>2</sub>	mg/m <sup>3</sup> (%)	304 (0,0265)
	Heat input	kW	15,84
	Heat output	kW	14,1
	Efficiency	%	89

#### 5. Temperature safety test

During the performance test at nominal heat output, the temperatures of the body and reservoir were measured and recorded to notify the maximal reached temperatures during the operation. These temperatures are according to the following:

Maximal temperatures		Tested sample	TEP 18 kW
Nominal	Heat output	---	Nominal
	Temperature of body	°C	/
	Temperature of door	°C	154
	Temperature of fuel reservoir	°C	39
	Ambient temperature	°C	27,9

#### 6. Review and check of the user and operating instructions

The user and operating instructions have the minimum required information according to Par. 8 of the reference standard.

#### 7. Inspection of marking

The marking of the tested sample has the minimum required information according to Par. 7 of the reference standard.







### Evaluation of the inspection results

The inspection results and calculation show that the characteristics of the tested sample satisfy the minimum requirements of Par. 5 of the MKC EN 303-5:2012 Standard for Heating boilers – Part 5: Heating boilers for solid fuels, hand and automatically stocked, nominal heat output of up to 300 kW – Terminology, requirements, testing and marking.

### CONCLUSION

The inspection performed on the tested sample of **Automatic hydro pellet stove model "TEP 18 kW"** submitted by manufacturer **SMELTING Doo**, bul. Kuzman Josifovski Pitu 8/2, 1000 Skopje, Macedonia and the results of the inspection **confirm the declared technical characteristics** by the manufacturer and are as follows:

Model	TEP 18	CO at 13% O <sub>2</sub> (mg/m <sup>3</sup> ) / (%)	287 / (0,0251)
Nominal heat output (kW) total	18	Type of fuel	wood pellets
Efficiency (%)	90,8	Fuel reservoir capacity (kg)	25
Heating capacity (m <sup>3</sup> )	≈ 350	Fuel consumption (max) (kg/h)	≈ 2,2
Chimney (mm)	80	Fuel consumption (min) (kg/h)	≈ 2,9
Dimensions (mm)	520x540x970	Exhaust gases temperature (° C)	141,4
Max. el. consumption (W)	425	Weight (kg)	170
		Electrical supply (Voltage/Frequency)	230 V / 50 Hz

\*\*\*\*\*  
Test results refer only to the tested sample and are valid  
only under the same conditions of the inspection using the same test fuel  
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This document is valid until: 05.2020

Inspector  
(Aleksandar Stavrev)

CARGOINSPECT-OPREMA  
DOOEL SKOPJE  
Quality and Quantity Inspection

Technical Director / Manager  
(Dimitrija Risteski)