



“ITEM Consult” LTD

TESTING LABORATORY

"ITEM Consult" Ltd. Sofia 1220, 8 Istoria Slavianobulgarska Blvd

FK 7.8-1.2

Test Report

№ 204 NA/26.05.2020

1. Object of testing: *Heating appliance (oven) of biofuel (wood)*

Tested appliance: Residential space heating appliance fired by wood pellets

Appliance: Отоплителна готварска печка на дърва, модел/ *Heating stove wood*

Manufacturer: : “PRO - TERMO” DOO

Type: “PANONIA” – 10 KW

Year of manufacture: 2020

Purpose: *Household cooking and heating stoves*

2. Applicant:

Заявка/ *Application* № CPR 161/29.04.2020г.

Фирма/ *Company*: “PRO - TERMO” DOO

Адрес/ *Address*: Jana Kolara 135, 22300 Stara Pazova, Srbija

www.protermo.rs

3. Type of testing:

Testing of solid fuel boiler stove according to:

BDS ISO 9096:2017 Stationary emission sources. Manual determination of the mass concentration of particulate matter.

ILM 01:2016 Determination of emission values from stationary flue gases during testing of boilers and burners.

4. Periods:

Date of receipt: 29.04.2020

Date of testing: from - 11.05.2020 – 26.05.2020

5. Tested sample:

1 pc. - “PANONIA” – 10 KW

6. Place of testing:

ITEM Consult Ltd – Testing laboratory Sofia 1220, 8 Istoria Slavianobulgarska Blvd

7. Description:

Heating of closed spaces

8. Описание/ *Description*:

Битова готварска печка, изгаряща дървени късове, предназначена за печене и готвене. Печката е изпълнена от стомана и чугунени плочи и е със стъкло на вратата. Няма клапа на комина. Регулиране на въздуха за горене – ръчно. / *A wood burning stove for heating and cooking. The stove is made of steel and cast iron plates and has glass doors. There is a baking oven. No chimney valve. Combustion air control - register opening*

9. Технически характеристики/ *Technical Characteristics, declared by the manufacturer*:

Номинална топлинна мощност/ *Nominal heating output*:

10.00 kW



"ITEM Consult" LTD

TESTING LABORATORY

"ITEM Consult" Ltd. Sofia 1220, 8 Istoria Slavianobulgarska Blvd" №8

FK 7.8-1.2

Ефективност/ *Efficiency*:

При номинална топлинна мощност/ *At nominal heating output*:

75 %

Размери/ *Dimensions*:

h=85 / 89x50 sm

Маса/ *Weight*:

100 kg

10. Използвани горива/ *Fuels used*:

Твърдо гориво – дърва - дъб/ Solid fuel – wood-oak

Протокол от изпитване на горивото/ Test report for the fuel № 10368/29.10.2018

- Долна калоричност на работно гориво/ *Net calorific value of the fuel* 15.31 MJ/kg

- Влага/ *Moisture*

14.71 %

11. Technical characteristics:

Nominal heat output :

10.0 kW;

Reduced heat output :

неприложим/ *not applicable*

12. Conditions for conducting the test:

1. Temperature of the environment: – 21,2 °C

2. Humidity – no requirement

3. Deviations, additions and exceptions to the test method. Information on specific test conditions – not available.

4. Conditions:

A. Изпитване на/ Testing on 07.05.2020 – номинален режим/ *nominal mode*

- атмосферно нялагане / *atmospheric pressure*

1013 hPa

- скорост на димните газове/ *flue gas velocity*

1.68 m/s

- тяга/ *draft* –

12.9 Pa

- температура на димни газове/ *flue gas temperature* -

217.65 °C

- кислород O₂/ *oxygen* O₂ -

13.53 %

- диаметър на комина/ *chimney diameter* -

0.31 m

- площ/ *area*

0.075 m²

- пробовземна точка/ *points*

1

- диаметър на дюзата/ *diameter of the nozzle*

10 mm

13. Test results at NOMINAL heat output:

№	Indicator	Measure- ment unit	Test method	Measured value and uncertainty	Value and tolerance of the characte- ristic
1.	NO _x emission at 13% O ₂	mg/Nm ³	ILM 01:2016	195.05±2.23	n/a
1A.	NO _x emission at 10% O ₂	mg/Nm ³	ILM 01:2016	268.19±3.07	n/a
2.	OGC emission at 13% O ₂	mg/Nm ³	ILM 01:2016	41.15±4.23	n/a
2A.	OGC emission at 10% O ₂	mg/Nm ³	ILM 01:2016	56.58±5.82	n/a
3.	Dust emission at 13% O ₂	mg/Nm ³	BDS ISO 9096:2017	22.35±3.96	n/a



“ITEM Consult” LTD

TESTING LABORATORY

"ITEM Consult" Ltd. Sofia 1220, 8 Istoria Slavianobulgarska Blvd" №8

FK 7.8-1.2

3A.	Dust emission at 10% O ₂	mg/Nm ³	BDS ISO 9096:2017	30.73±5.44	n/a
-----	--	--------------------	-------------------	------------	-----

14. Test results at REDUCED heat output - *Неприложимо/ not applicable*

15. Measurement equipment

№	Name, type, manufacturer	Measuring range	Expanded uncertainty U(P)	Calibration certificate; №/date, issued by
1.	Electronic stopwatch, model 696, Hong Kong, 22710	0-600,01 s	±0,01 s/24h	№020-IVC/01.02.2019 BIM GD NCM, Sofia
2.	Digital manometer, type Testo 512, TESTOAG – Germany, № AC 463196/311 TESTOAG	0 ÷ 2 hPa 5.1m/s 5.1m/s 5.1m/s	0.040 0.11m/s 0.00m/s 0.08m/s	№0359/20.03.2019 “UNISIST” LTD №11963/14.12.2016, Total Test
3.	Digital barometer, type Testo 511 – №39112944601	300 – 1200 hPa	0,089- 0,092 hPa	№0698/18.05.2019 “UNISIST” LTD
4.	Flowmeter for air LIFETEK55XP-P, № 55057	1-50l/ min	from 0,11 l/ min to 0,31 l/ min	№809/01.07.2018 Higitest LTD
5.	Resistor convertor Pt 100, type STA, No 49341	-50°C- 400oC	0,063- 0,12 °C	№0981/25.07.2018 “UNISIST” LTD
6.	Resistor convertor Pt 100, type STA, No 49342	-50°C- 400°C	0,063- 0,12 °C	№0982/25.07.2018 “UNISIST” LTD
7.	Sterilizer, Diterm, №0911/2016 Digital thermometer, type 4001	80.0 °C 120.0 °C 160.0 °C	0.26 °C 0.25 °C 0.26 °C	№1299/18.10.2019 “UNISIST” LTD
8.	Electronic scale, 80 gr., 0.0001g Type ABS 80-4N, №S.N.WB16AN0052	0.0201 g 1.0000 g 5.0000 g 10.0000 g 20.0000 g 30.0000 g 40.0000 g 50.0001 g 60.0000 g 80.0001 g	0.13 mg 0.14 mg 0.17 mg 0.23 mg 0.40 mg 0.58 mg 0.76 mg 0.92 mg 1.11 mg 1.11 mg	775 DK-197941/1.10.2019 Marie Bentz LTD



“ITEM Consult” LTD

TESTING LABORATORY

"ITEM Consult" Ltd. Sofia 1220, 8 Istoria Slavianobulgarska Blvd" №8

FK 7.8-1.2

9.	Gas analyzer Anapol EU-5000 E/D №5000499	C ₃ H ₈ - 10,0 ppm 19,6 mg/Nm ³ C ₃ H ₈ - 50,0 ppm 98,0 mg/Nm ³ C ₃ H ₈ - 100,0 ppm 196 mg/Nm ³ NO - 10,03 ppm 13.43mg/Nm ³ NO - 50,0 ppm 67.0 mg/Nm ³ NO - 100,0 ppm 133.9 mg/Nm ³ CO - 12,0 ppm 15.00 mg/Nm ³ CO - 50,0 ppm 62.5 mg/Nm ³	0,7 ppm 1,4 mg/Nm ³ 1,6 ppm 3,1 mg/Nm ³ 3,0 ppm 5,8 mg/Nm ³ 0,6 ppm 0,8 mg/Nm ³ 1,8 ppm 2,5 mg/Nm ³ 2,7 ppm 3,5 mg/Nm ³ 1,0 ppm 1,2 mg/Nm ³ 1,8 ppm 2,2 mg/Nm ³	№ 3 I/12.09.2018 LTC "LIPGEI"
10.	Digital Thermohygrometer Testo-608 H1 № 30115603	30 % RH 60 % RH 15 °C 20 °C 30 °C	1,3 % RH 1,4 % RH ± 0.14 °C ± 0.14 °C ± 0.14 °C	08921/12.06.2014 Total Test LTD



FK 7.8-1.2

11.	Апарат за газов Анализ/ <i>Gas appliance analysis</i> “MRU VARIO Luxx “ фабр. № 063585 Германия/ <i>Germany</i>	O2-10,11 vol % O2 -13,06 vol% O2-21,94 vol% CO-0,1 ppm 0,1 mg/Nm3 CO- 50,7 ppm 63,4 mg/Nm3 CO-101,4 ppm 126,7 mg/Nm3 NO-10,5 ppm 14,1 mg/Nm3 NO-50,9 ppm 68,2 mg/Nm3 NO-102,6 ppm 137,4 mg/Nm3 CO2-5,08 % CO2- 10,23 % CO2-16,79 % C3H8 – 9,8 ppm 19,2 mg/Nm3 C3H8 – 51,3 ppm 100,5 mg/Nm3 C3H8 – 99,2 ppm 194,4 mg/Nm3	0,28 vol % 0,37 vol% 0,48 vol% 0,3 ppm 0,1 mg/Nm3 1,5 ppm 1,9 mg/Nm3 2,9 ppm 3,6 mg/Nm3 0,7 ppm 0,9 mg/Nm3 1,6 ppm 2,1 mg/Nm3 2,9 ppm 3,8 mg/Nm3 0,15 % 0,29 % 0,40 % 0,7 ppm 1,4 mg/Nm3 1,5 ppm 2,9 mg/Nm3 2,6 ppm 5,1 mg/Nm3	№ 4 D/ 06.04.2020 ЛИК “ЛИПГЕИ” към “Пехливанов иженеринг” ООД
	Термометър цифров- Газанализатор/ <i>Digital thermometer-Gas analyzer</i> MRU VARIO Luxx, сонда ТС тип К – ИД №212749/1119 Германия/ <i>Germany</i> обхват 0-1100 °C ср.сп.0,1 °C	49,82 °C 249,65 °C 449,73 °C	0,27 °C 0,60 °C 0,60 °C	№ 4 DT/ 06.04.2020 ЛИК “ЛИПГЕИ” към “Пехливанов иженеринг” ООД



“ITEM Consult” LTD

TESTING LABORATORY

"ITEM Consult" Ltd. Sofia 1220, 8 Istoria Slavianobulgarska Blvd" №8

FK 7.8-1.2

Remarks: 1. The test results relate only to the sample under test.

2. Extracts from the test report can not be reproduced without written consent of the testing laboratory

Date: 26.05.2020

TESTED BY:.....

Dipl. eng. Zdr. Docthev

VERIFIED BY:.....

Dipl.eng.N.Evtimov

THE HEAD OF THE LABORATORY:.....

Dipl. eng. Zdravko Zdravkov

