Termoplam Ltd.
Testing laboratory

Republic of Bulgaria, Sofia,
http://www.termoplam.eu, e-mail: termoplam2011@abv.bg, GSM 0885 449 216

Test Report

№ 292
12.07.2023

I. NAME AND SIGNATURE OF THE TESTED SAMPLE:
Production boiler model: TEMY PRO P 25

II. NAME AND DESCRIPTION OF THE TESTED SAMPLE:
Wood heating boiler model: TEMY PRO P 25 with a rated thermal output of 25 kW, one unit per test.

III. LEGAL DOCUMENT: EN 303-5:2021, EN 304:2017, EN 45001 and EN ISO/IEC 17025:2018.



Picture of the sample

IV. QUANTITY OF THE TESTED SAMPLES: One sample per model.

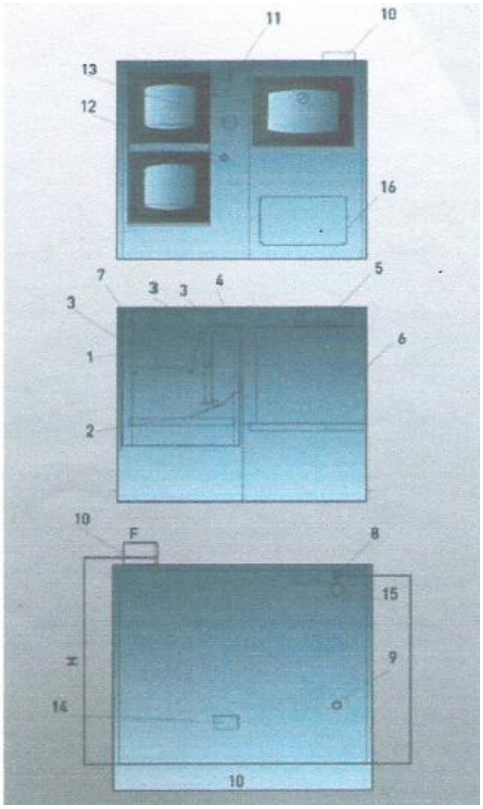
V. MANUFACTURER: "TERMOMONT" d.o.o , Serbia; City: Prhovacka bb, 22310 Simanovci.

VI TEST APPLICANT: "TERMOMONT" d.o.o , Serbia; City: Prhovacka bb, 22310 Simanovci

VII. PURPOSE AND OBJECT OF THE TEST:

Heating boiler thermal test for defining of:
7.1. Nominal heat output;
7.2. Test for determining heating boiler efficiency.
7.3. Determining emissions from the heating boiler.
7.4. Pressure test of the boiler plumbing parts.
7.5. Calculation of the seasonal space heating emissions.
7.6. Calculation of the seasonal space heating energy efficiency.
7.7. Calculation of the energy efficiency index (EEI).

VIII. TECHNICAL FEATURES:



Scheme (drawing of the boiler)

8.1. Heat input $Q_в$ - according to section 3.13 from EN 303-5:2021;

8.2. Thermal capacity P - according to section 3.6 from EN 303-5:2021;

8.3. Efficiency $\eta_к = P/Q_в$ - according to section 4.4.2 and 5.9.3 from EN 303-5:2021.

8.4. Boiler weight – without water/ total weight (with water content):
8.4.1. TEMY PRO P 25 - 235/ 283 kg.;

IX. TEST CONDITIONS:

9.1. Executor: Termoplam Ltd. Sofia
9.2. Weather conditions: Ambient temperature t_a=19/19˚C (from 15˚C to 30˚C according to section 5.6.1 от EN 303-5:2021).
9.3. Starting Date: 10.07.2023 y. Date of completion: 12.07.2023 y.
9.4. Test fuel weight:
9.4.1. B_n = 5.4 kg/h (wood at rated heating output for two semi periods of 2 hour with continuous combustion according according to 5.6.4.1 and 4.4.5 from EN 303-5:2021).
9.4.2. B_{red} = 1.8 kg/h (wood at reduced heating output for two semi periods of 2 hour with continuous combustion according according to 5.6.4.1 and 4.4.5 from EN 303-5:2021).
9.5. Draft (low pressure in the flue pipe) ≤ 0,15÷0,28 mbar (see section 4.4.4 from EN 303-5:2021).
9.6. Fuel type:
9.6.1. Wood with calorific value Hu = 18350±60 kJ/kg according to test report № 12577/16.12.2022 issued by the EUROTEST - Control SA (see section 5.3 and table 9 from EN 303-5:2021 and specified in the maintenance book).
9.7. Temperature of outgoing water 86.3/84.5˚C (70 °C °÷ 90 C see section 5.7.2 from EN 303-5:2021).
9.8. Other conditions :
9.8.1. The test is made under the conditions quoted above and observing the following additional ones:
9.8.1.1. Complied with the safety measures according to EN 303-5:2021 и EN 304;

9.8.1.2. The tested sample meets the instruction for installation and operation according to EN 303-5:2021 and EN 304.
9.9. Used equipment - according to section 5.2 from EN 303-5:2021.
9.10. Recording devices:
9.10.1. Auxiliary devices: PC with software application package.

X. RESULTS FROM THE TEST:

10. Parametres**.**
10.1. Rated heating output of the boiler P_N according to section 3.7 from EN 303-5:2021.
10.2. Duration of the test rated heating output (two semi periods):
10.2.1. Wood duration of the test ≥ 2 h according to section 5.6.4.1 and 4.4.5 from EN 303-5:2021.
10.3. Maximum temperatures of the elements:
10.3.1 For heating boiler service:
10.3.1.1. Handle of the upper door ≤ 56,6°C – according to 4.3.7 from EN 303-5:2021;
10.3.1.2. Handle of the lower door ≤ 53,0°C – according to 4.3.7 from EN 303-5:2021.
10.4. Real values of the thickness measurement, etc. with additional certificates enclosed.
10.5. After the test of the plumbing parts at pressure p_{outg}=2xPS=2x3=6 [bar] there are no leaks and visible deformations (elastic and plastic) in accordance with section 5.4.1 from EN 303-5:2021.
10.6. Testing of thermal protection at the outflow (safety) – ordering electrical valve on the unloading spiral is not installed – according to section 4.3.9 from EN 303-5:2021.
10.7. The value of water pressure losses of the boiler is between 90 ÷ 280 mm H_2O according to A.10 from EN 304.
10.8. For calculation of the values of Q_B, P and η_K are used formulas from items 5.9.1, item 5.9.2 and item 5.9.3.2 from EN 303-5:2021.

* Values before the slash refer to the test at nominal power, and after it are for minimum power.

Table 1

Measurement	TEMY PRO P 25		Limit
Regime	nom	min	-
t_A °C	220	205	
t_L °C	≤19	≤19	15÷30
$t_{1\ upper\ surface}$ (average value)	≤56.8	≤54.2	≤60+t_L*= 79
$t_{2\ left\ wall}$ (average value)	≤55.6	≤50.5	≤60+t_L*= 79
$t_{3\ right\ wall}$ (average value)	≤55.4	≤49.9	≤60+t_L*= 79
$t_{floor\ max}$	≤39.0	≤38.3	≤ 79 *
$t_{upper\ handle}$	≤56.6	≤54.2	≤60+t_L*= 79
$t_{lower\ handle}$	≤53.0	≤51.1	≤60+t_L*= 79
$P_{outg.}$ =2xPS bar	6	6	= 6 bar
W_1 m^3/h	1220	360	-
t_V °C	86.3	84.5	-
t_R °C	68.5	64.5	70 ÷ 90
Bn kg/h	5.4	1.8	-
P kW	25.34	8.40	
Q_B kW	27.48	9.16	
$\acute{\eta}_K$= P/Q_B [%]	92.0	91.3	class 5
CO mg/m^3 ** at 10% O_2	618.8	587.6	≤700
CO_2 % vol. part.	10.54	11.70	-
OGC mg/m^3 at 10% O_2***	23.7	21.0	≤ 30
Dust mg/m^3 at 10% O_2*****	49.9	41.9	≤60
W % ****	≤30	≤30	-
O_2 % vol. part.	10.1	8.9	10
NOx mg/m^3 at 10% O_2	134.5	101.9	
P_N kW	25	-	

* According to section 4.3.7 from EN 303-5:2021.
** Emission class 5 of the boiler at rated heating output ≤50 kW according to section 4.4.7 and table 7 from EN 303-5:2021.
*** Emission class 5 of the boiler at rated heating output ≤50 kW according to section 4.4.7 and table 7 from EN 303-5:2021.
**** Fuel – wood according to section 5.3, table 9 from EN 303-5:2021.
***** Emission class 5 of the boiler at rated heating output ≤50 kW according to section 4.4.7 and table 7 from EN 303-5:2021.

XI. Seasonal space heating emissions: acc. to table 8, Annex F from EN 303-5:2021, Annex II and Annex III of the REGULATION (EU) 2015/1189:

Table 2

Results	Model boiler	In accordance REGULATION (EU) 2015/1189.
	TEMY PRO P 25	[mg/Nm^3]
Dust [mg/Nm^3]	43	[PM] [1] ≤ 60
CO [mg/Nm^3]	592	[CO] [2] ≤ 700
OGC [mg/Nm^3]	21	[OGC] [3] ≤ 30
NO_x [mg/Nm^3]	107	[NO_x] [4] ≤ 200

Dust content of exhaust gases [PM] [1] ≤ 60 mg/Nm^3 for manual stoked boilers in accordance with point 1 (c), of Annex II of the REGULATION (EU) 2015/1189.

CO of exhaust gases [CO] [2] ≤ 700 mg/Nm^3 for manual stoked boilers in accordance with point 1 (e), of Annex II of the REGULATION (EU) 2015/1189.

OGC of exhaust gases [OGC] [3] ≤ 30 mg/Nm^3 for manual stoked boilers in accordance with point 1 (d), of Annex II of the REGULATION (EU) 2015/1189.

NO_x of exhaust gases [NO_x] [4] ≤ 200 mg/Nm^3 for biomass boilers in accordance with point 1 (f), of Annex II of the REGULATION (EU) 2015/1189.

XII. Seasonal space heating energy efficiency: acc. to Annex F from EN 303-5:2021, Annex II and Annex III of the REGULATION (EU) 2015/1189:

Table 3

Model boiler	Seasonal space heating energy efficiency η_s %	In accordance REGULATION (EU) 2015/1189 [η_s] [%]
TEMY PRO P 25	80	[η_s] [1] ≥ 77

Where:

- η_s % - the seasonal space heating energy efficiency:

[η_s] [2] ≥ 77 % for boilers with a rated heat output of more than 20 kW in accordance with point 1 (b), of Annex II of the REGULATION (EU) 2015/1189.

XIII. Energy efficiency index (EEI): acc. to Annex F from EN 303-5:2021, Annex II and Annex VIII of the REGULATION (EU) 2015/1187:

Table 4

Model boiler	Energy efficiency index EEI	Energy efficiency class
TEMY PRO P 25	118	A+

The energy efficiency index is calculated according to:
13.1. The requirements and the formulas of ANNEX VIII of REGULATION (EU) 2015/1187;
13.2. The energy efficiency index is calculated on the database provided by manufacturer for boiler burning wood;
13.3. The energy efficiency index is set for preferred fuel: wood according section 5.6.4.1 and section 5.3 from EN 303-5:2021.
13.4. Energy efficiency class is determined based on the energy efficiency index EEI according to Table 1 of ANNEX II of REGULATION (EU) 2015/1187.

XIV. ENCLOSURES:

14.1. Prints of the results from page 5.
14.2. Instruction for installation and operation - Yes.
14.3. Assembly drawing of the sample - 1.
14.4. Certificates (annexs A, B, C, D, and E) – 5.

"ТЕРМОПЛАМ" ЕООД * СОФИЯ *

MANAGER: .....
(eng. Pl. Iliev)

NOTE:
The test results relate only to the tested samples.
Extracts from the test report can't be reproduced without written agreement of the testing laboratory.
This document is only informative.

Annex A

Certificate of steel sheet with a thickness of 5 mm

HBIS GROUP Serbia Iron & Steel llc Belgrade, Bulevar Mihajla Pupina 6,
Belgrade-New Belgrade,
11000 Belgrade, Republic of Serbia

CE
13
0045-CPR-0761

INSPECTION CERTIFICATE: 3.1 EN 10204:2004 PAGE No: 1
-uverenje o ispitivanju- (strana br):

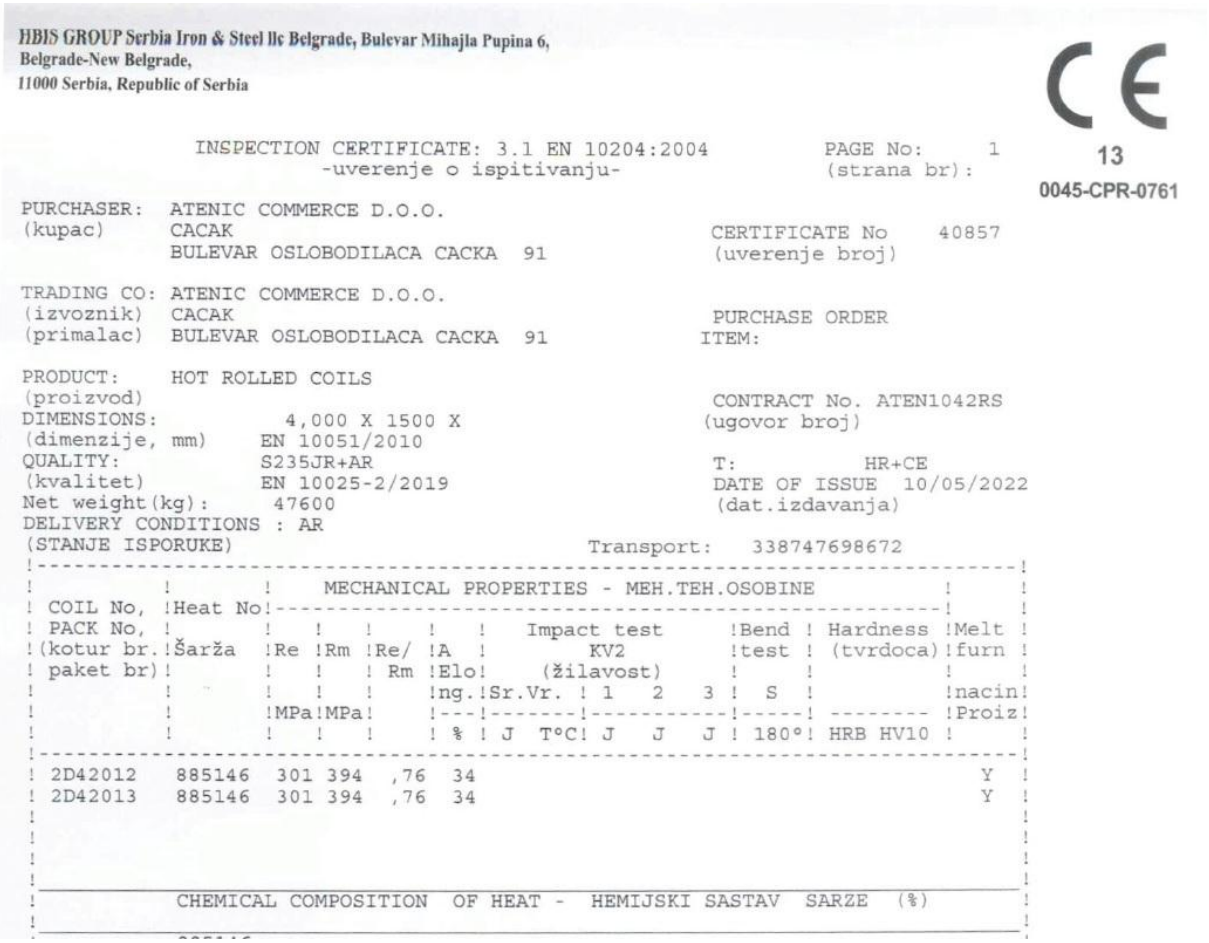
PURCHASER: ATENIC COMMERCE D.O.O.
(kupac) CACAK CERTIFICATE No 40356
BULEVAR OSLOBODILACA CACKA 91 (uverenje broj)
TRADING CO: ATENIC COMMERCE D.O.O.
(izvoznik) CACAK PURCHASE ORDER
(primalac) BULEVAR OSLOBODILACA CACKA 91 ITEM:
PRODUCT: HOT ROLLED COILS
(proizvod) CONTRACT No. ATEN1042RS
DIMENSIONS: 5,000 X 1500 X (ugovor broj)
(dimenzije, mm) EN 10051/2010
QUALITY: S235JR+AR T: HR+CE
(kvalitet) EN 10025-2/2019 DATE OF ISSUE 07/05/2022
Net weight(kg): 47160 (dat.izdavanja)
DELIVERY CONDITIONS : AR
(STANJE ISPORUKE) Transport: 315647715004

COIL No, PACK No, (kotur br. paket br)	Heat No Šarža	MECHANICAL PROPERTIES - MEH.TEH.OSOBINE										
		Re	Rm	Re/ Rm	A Elong.	Impact test KV2 (žilavost) Sr.Vr.	1	2	3	Bend test S	Hardness (tvrdoca)	Melt furn nacin
		MPa	MPa		%	J T°C	J	J	J	180°	HRB HV10	Proiz
2D35025	380650	330	457	,72	31							Y
2D35026	380650	330	457	,72	31							Y
2D35027	380650	330	457	,72	31							Y
2D35028	380650	330	457	,72	31							Y

CHEMICAL COMPOSITION OF HEAT - HEMIJSKI SASTAV SARZE (%)

Annex B

Certificate of steel sheet with a thickness of 4 mm



HBIS GROUP Serbia Iron & Steel llc Belgrade, Bulevar Mihajla Pupina 6,
Belgrade-New Belgrade,
11000 Serbia, Republic of Serbia

CE 13 0045-CPR-0761

INSPECTION CERTIFICATE: 3.1 EN 10204:2004 PAGE No: 1
-uverenje o ispitivanju- (strana br):

PURCHASER: ATENIC COMMERCE D.O.O.
(kupac) CACAK
BULEVAR OSLOBODILACA CACKA 91
CERTIFICATE No 40857
(uverenje broj)

TRADING CO: ATENIC COMMERCE D.O.O.
(izvoznik) CACAK
(primalac) BULEVAR OSLOBODILACA CACKA 91
PURCHASE ORDER
ITEM:

PRODUCT: HOT ROLLED COILS
(proizvod)
DIMENSIONS: 4,000 X 1500 X
(dimenzije, mm) EN 10051/2010
QUALITY: S235JR+AR
(kvalitet) EN 10025-2/2019
Net weight(kg): 47600
DELIVERY CONDITIONS : AR
(STANJE ISPORUKE)
CONTRACT No. ATEN1042RS
(ugovor broj)
T: HR+CE
DATE OF ISSUE 10/05/2022
(dat.izdavanja)
Transport: 338747698672

COIL No, PACK No, (kotur br. paket br)	Heat No Šarža	MECHANICAL PROPERTIES - MEH.TEH.OSOBINE											
		Re MPa	Rm MPa	Re/ Rm	A Elong. %	Impact test KV2 (žilavost) Sr.Vr. J T°C	1 J	2 J	3 J	Bend test S 180°	Hardness (tvrdoca) HRB HV10	Melt furn nacin Proiz	
2D42012	885146	301	394	,76	34							Y	
2D42013	885146	301	394	,76	34							Y	

CHEMICAL COMPOSITION OF HEAT - HEMIJSKI SASTAV SARZE (%)

Annex C

Certificate of welding electrode

voestalpine Böhler Welding Austria GmbH

voestalpine Böhler Welding Austria GmbH
Böhler-Welding-St. 1 | 8605 Kapfenberg
Austria
T. +43 50304/31
welding.austria@voestalpine.com
www.voestalpine.com/welding

ICI D.O.O.

Macvanska 8
11080 Beograd, Zemun
Serbia

Inspection certificate 3.1

as per : EN 10204
No. : 2022-2031016099-10-425107-014
Rev. 0 Page 1 of 1

PO no.	eMail15.04.2022	of	15.04.2022
Order no.	1031013361		
Delivery note/pos./split	2031016099/000000/000010	of	28.04.2022
Product	GMAW wire electrode		
Trade name	**ECOspark 420**		
Standard designation	EN ISO 14341 -A - G 42 5 M21 3Si1 / G 42 4 C1 3Si1 AWS A5.18: ER70S-6		
Dimension	1,0 mm		
Heat no.	425107		
Quantity	900,0 KG		

Chemical composition in % of the product

C	Si	Mn	P	S	Cr	Mo	Ni	V	Cu	Ti	Al	Zr		
0,06	0,83	1,48	0,011	0,012	0,01	0,01	0,01	0,01	0,01	< 0,01	< 0,01	< 0,01		

Mechanical properties **EN 10204: 2.2**

Tensile test — according to : EN ISO 6892-1/09
Specimen preparation — according to : EN 876

T	ReL / Rp 0,2 MPa	Rp 1,0 MPa	Rm MPa	A (Lo = 5d) %	Z %	WBH PWHT	Remarks
20°C	≥ 420		500 - 640	≥ 20			M21

Impact test — according to : EN ISO 148-1/10
Specimen preparation — according to : EN 875 VWT Q/b

T	Impact energy KV / J	Average KV / J	Lateral expansion mm	Shear fracture %	WBH PWHT	Remarks
-50°C	≥ 47					M21

The product ECOspark 420 meets the requirements of the filler metal specification ASME sec II, part C, AWS A5.18: ER70S-6 when tested in accordance with that specification. Produced according to AWS A5.01, class S1

Town: Kapfenberg
Date: 29.04.2022
This certificate was issued by DP-equipment and does not require signature.
Authorized representative
Gugimejer

voestalpine

Annex D

Certificate of seal

FIREWHEEL
QUALITY MANGEMENT
ISO 9001:2000

Firewheel Industrial Corporation

Headquarters: RM2101, 21/F ,Yaojiang International Plaza,
No. 258 Wusong Road, Shanghai 200082, P.R.China.
Tel: 86-21-63096460 to 82 Fax: 86-21-63096483

★ High temperature resistant glass fiber and ceramic fiber textiles
★ Sealing packing and gasket
★ Engineering plastic materials
★ Rubber sheeting and molded parts
★ Thermal and acoustic insulation materials
★ Electrical insulation materials

QUALITY CERTIFICATE

MESSRS
TEHNIKA KB

ISSUING DATE:
AUG.31,2021

SUPPLIER: FIREWHEEL INDUSTRIAL CORPORATION

DESCRIPTION	FG103T TEXTURIZED FIBERGLASS BRAIDED SQUARE PACKING		SIZE		14MM,18MM,30MM
INVOICE.NO.	FWG21NP05		QUANTITY		SEE INVOICE
INSPECTION DATE	**AUG.24,2021**		PRODUCTION DATE		**AUG.27,2021**
ITEM	SPEC. ACC. TO FIREWHEEL TDS		INSPECTION RESULT		COMMENTS
TEMP	500C		500C		GOOD
CONCLUSION:			QUALIFIED		
APPLICABILITY OF THE GOODS			FOR THE GOODS ON STOCK - 2 YEARS, FOR THE GOODS INSTALLED ACC. INSTRUCTIONS - 1 YEAR.OR DEPENDS		
CHECKED BY	王浩然	QUALITY MANAGER	舒菲菲	DIRECTOR	甘露泉

NOTES:

菲亚实业(上海)有限公司
FIREWHEEL INDUSTRIAL CORPORATION

1. STORAGE OF THE GOODS: KEEP IN DRY, CLEAN AND WELL-VENTILATED PLACES AND STOCKS.
2. THE GOODS SHOULD BE KEPT AWAY FROM RAIN, HUMIDITY AND ANY OTHE R UNFAVORABLE CONDITIONS.
3. HANDLE, STORAGE AND TRANSPORTATION WITH CARE TO AVOID ANY DAMAGE.

Annex E

Certificate for the management system according to ISO 9001:2015

CERTIFICATE

for the management system according to ISO 9001:2015 and ISO 14001:2015

The proof of the conforming application with the regulation was furnished and in accordance with certification procedure it is certified for the company

TERMOMONT DOO
Prhovačka bb
SRB - 22310 Šimanovci

Scope

Design, production and sales of thermal water boilers, burners, boilers on pallet and biomass and solar sanitary boilers

Certificate Registration No.:	TIC 15 100 138575 TIC 15 104 131121	Valid until: Valid from:	2022-07-29 2019-08-05
Audit Report No.:	3330 2MNN G0		

This certification was conducted in accordance with the TIC auditing and certification procedures and is subject to regular surveillance audits.

TÜV Thüringen e.V.
Certification body for
systems and personnel

Jena, 2019-08-05

D-ZM-16006-05-01
D-ZM-16006-05-02

Originalzertifikate sind mit einem Hologramm versehen.

The current validity can be demanded at our homepage www.tuev-thueringen.de

Zertifizierungsstelle des TÜV Thüringen e.V. • Ernst-Ruska-Ring 6 • D-07745 Jena • ☎ +49 3641 399740 • ✉ zertifizierung@tuev-thueringen.de