



POLITECNICO
MILANO 1863

POLITECNICO DI MILANO - DIPARTIMENTO DI ENERGIA

Laboratorio Misure Ricerche Termotecniche M.R.T. - Notified body number: 1695

Laboratorio notificato ai sensi del “Regolamento (UE) n. 305/2011” dal Ministero dello Sviluppo Economico.
Notified Laboratory according “Construction Products Regulation n. 305/2011/EU” by Italian Ministry in charge.
Laboratorio di Riferimento secondo la Norma EN 442:2014 - Annex I e conforme a ISO 9001 e ISO 17025.
Reference Laboratory according EN 442:2014 - Annex I, in conformity to ISO 9001 and ISO 17025.

Indirizzo/ Address: Via Raffaele Lambruschini, 4A (Zona Bovisa) – 20156 Milano – ITALY

Phone: ++39 02 2399 3825; e mail: mrt@polimi.it; <http://www.mrt.polimi.it>

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POLITECNICO DI MILANO
Department of ENERGY

M.R.T. Laboratory (Misure Ricerche Termotecniche)
Via Raffaele Lambruschini, 4
20156 - MILANO - ITALY

“YEAR 2023”
TARIFF & PROCEDURES”

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Validity: from 1st January 2023
ALL PRICES EXCLUDING VAT



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TESTS IN CONFORMITY WITH THE STANDARD EN442-1/2:2014

1	<p>Tariff of a test carried out on RADIATOR model in conformity with the Standard EN442-1/2:2014</p> <p><i>The tariff includes the following costs:</i></p> <p>Accredited tests by ACCREDIA:</p> <ul style="list-style-type: none"> - Measure of thermal output, based on three points with different temperatures;¹ - Strength and tightness pressure tests;¹ <p>Not Accredited test:</p> <ul style="list-style-type: none"> - Measure of pressure drop; <p>Lab MRT will issues:</p> <ul style="list-style-type: none"> - Official Test Report issue - Elaboration for the type (if requested by the client). 	<p>€ 600.00 See note 1 & 2</p>
2	<p>Tariff of a test carried out on a CONVECTOR model in conformity with the Standard EN442-1/2:2014</p> <p><i>The tariff includes the following costs:</i></p> <ul style="list-style-type: none"> - All the items included in the above Point 1; - Determination of the Thermal Output values as function of the mass flow rate $\Phi = f(q)$ maintaining $\Delta T = 50 K$, measure of Thermal Output when $q = q_n/2$ and $q = 2 q_n$ <p>Lab MRT will issues:</p> <ul style="list-style-type: none"> - Official Test Report issue 	<p>Number of models to be tested $n \leq 5$ € 1,000.00/model</p> <hr style="border-top: 1px dashed black;"/> <p>$5 < n \leq 10$ € 900.00/model</p> <hr style="border-top: 1px dashed black;"/> <p>$n > 11$ € 800.00/model</p>
3	<p>Tariff of a test carried out on a PROTOTYPE:</p> <p><i>The tariff includes the following costs:</i></p> <ul style="list-style-type: none"> - RADIATOR type: Measure of thermal output as described at point 1; - CONVECTOR type: Measure of thermal output as described at point 2; - Non-official Test Report issue; <i>results shall be only for Applicant internal use.</i> 	<p>€ 400.00</p>

¹ Accredited test LAB 1275 Site I



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4A	<p>Tariff of a pressure test with deformation measures: i.e.: steel plate, steel rolled section.</p> <ul style="list-style-type: none"> • <i>Strength and tightness pressure tests: accredited test</i> • <i>deformation measures: NON accredited test (for NF)</i> 	€ 100.00
4B	<p>Tariff of pressure drop measures: Measurement of 5 values of pressure drop as a function of water flow rate. <i>NON accredited test</i></p>	€ 100.00
4C	<p>Tariff for a single point thermal output test: EN442 reference chamber test on single ΔT value.</p>	€ 200,00
5	<p>Tariff of paint durability test (Accredited test by ACCREDIA)¹. <i>(when order, please specify the test duration)</i> Followings EN 442-2: 2014 Annex K; and where applicable ISO 2409:2020 and BS 3900 F2. In the case in which Applicant AT THE SAME TIME request the execution of tests on models and / or plate-specimens in a number equal or greater than 5, the cost of the test for each individual sample is reduced by 50%.</p>	<p>100 hours test: € 250.00 200 hours test: € 400.00</p>

note_1: If the test in compliance with EN442-2: 2014 is carried out as part of the "RADMAC" controls, the cost is subject to international agreements and is always set at € 600,00 + VAT.

note_2: Except as stated in Note_1, for Customers who require a number of tests equal or greater than 10 (ten), the rate indicated in point 1 is reduced to € 510.00 + VAT for each test.



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TESTS IN CONFORMITY WITH THE STANDARD EN 16430

<p>6</p>	<p>Tariff for a test carried out on <u>radiators with integrated fan</u>, according to the Standard EN16430-2:</p> <p><i>The tariff includes the following costs:</i></p> <ul style="list-style-type: none"> a) Thermal Output measurement done on three points Δt_{30}, Δt_{50} e Δt_{60} FAN setting position: <u>FAN OFF</u> (following EN442); b) Thermal Output measurement done on three points Δt_{30}, Δt_{50} e Δt_{60} FAN setting position: <u>FAN AVERAGE SPEED</u>; c) Thermal Output measurement done on one point Δt_{50} FAN setting position: <u>FAN MIN SPEED</u>; d) Thermal Output measurement done on one point Δt_{50} FAN setting position: <u>FAN MAX SPEED</u>; e) Pressure drop measurements; f) Strength and tightness pressure tests; g) Official Test Report issue. 	<p>Tariff for each tested model:</p> <p>---</p> <p>Number of tests n ≤ 5</p> <p>€ 1,400.00</p> <p>Number of tests n > 5</p> <p>€ 1,200.00</p>
<p>6.1</p>	<p>Tariff for a test on <u>prototype radiators with integrated fan</u> according to the Standard EN16430-2:</p> <p><i>The following costs are included:</i></p> <ul style="list-style-type: none"> - All measures reported in the above point 6. items a, b, c, d - Non official Test Report delivering; <i>results shall be only for Applicant internal use.</i> 	<p>€ 1,000.00</p>
<p>6.2</p>	<p>Measurement of Acoustic Power, measured at various speeds of fans rotation, performed in a semi anechoic chamber test and according to ISO 3744 class 2.</p>	<p>€ 500.00</p>



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TEST OF "RADIATORS AND TOWEL RAIL WARMER MIXTE"

7	<p>Models defined as "Radiators and/or Towel Radiators MIXTE".</p> <p>Model <u>with electrical heating resistance inserted</u>:</p> <p>Characteristic to be verified:</p> <ul style="list-style-type: none"> - surface temperature of heating body; - electric power absorbed by the heating element; - abnormal condition of operation (<i>see below</i>) - pressure drop measured with electrical heating resistance inserted; - strength and tightness pressure tests. <p>To characterize a Type the following models must be sent to MRT Lab.:</p> <p>A. a model having <u>minimal</u> dimensions (i.e.: H900 L500) together with n. 2 chronothermostats and n. 2 <u>electrical heating resistances</u> having W_{min} e W_{MAX} (es:500W e 750W).</p> <p>B. a model having <u>maximal</u> dimensions (es: H1800 L750) together with n. 2 chronothermostats and n. 2 <u>electrical heating resistances</u> having W_{min} e W_{MAX} (es:1000W e 1500W).</p> <p>For each model, the following items are included in the rate:</p> <ul style="list-style-type: none"> - Measurement of the maximum temperature reached on the external surface of the heating body when electrical heating resistances W_{min} and W_{MAX} are inserted and ON. - Measurement of the power exchanged by electrical heating resistance during operation. - Evidence of data acquired during abnormal condition operation. - Pressure drop measured with electrical heating resistance inserted. - Tightness and resistance to pressure tests [$P = P_n * (1.3 \text{ and } 1.69)$] <p><i>All as defined in the version of the document « Référentiel de certification NF047 de la Marque NF - Partie 9-D» in force at the date of the request.</i></p>	<p>Rate of 2 tests (with W_{min} & W_{MAX}) performed on the model having <u>minimal dimension</u> as written in A)</p> <p>€ 1000.00</p> <p>====</p> <p>Rate of 2 tests (with W_{min} & W_{MAX}) performed on the model having <u>maximal dimension</u> as written in B)</p> <p>€ 1000.00</p>
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8	<p>Models defined as “Towel Radiators MIXTE with FAN”.</p> <p>Model <u>with fan (blower) assembled on the heating body:</u></p> <ul style="list-style-type: none"> - surface temperature of the fan body; - air temperatures at the outlet of the fan; - electric power absorbed by the fan. <p><i>For each model, the following items are included in the rate:</i></p> <ul style="list-style-type: none"> - Measurement of the maximum temperature reached by the fan body’s surface. - Measurement of the maximum temperature reached by the air at the outlet of the fan in different positions. - Measurement of the power absorbed by fan during operation. <p><i>All as defined in the version of the document «Référentiel de certification NF047 de la Marque NF - Partie 9-D» in force at the date of the request.</i></p>	€ 1000.00
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ISSUE DUPLICATE OF TEST REPORTS OR NEW ELABORATIONS

A1) Issue of duplicate test report	€ 100.00 + VAT
A2) Issue of declaration of thermal output equivalence of a type	€ 200.00 + VAT
A3) Issue of duplicate type report	€ 200.00 + VAT

Further discounts may be applied for a particularly significant number of test requests.

Milan, 11th November 2022

Laboratory Manager

Prof. Fabio Rinaldi

Please don't hesitate to contact us for further information



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PROCEDURE

1. Selection of the models to be tested

Selection and number of models to be tested necessary to characterise a range must comply with the Standard EN442:2014; it must possibly be agreed and validated by the Technical Manager of the M.R.T. Laboratory after the Applicant has sent the documentation necessary for the complete definition of all the models composing the range.

If the models to be tested have been selected or withdrawn by a Certification Body (NF, AENOR, BSI, RAL, DIN...), all documents useful for identifying the sampled models and any accompanying document signed by the inspector must also be sent to the laboratory.

2. Delivery and reception of models

Models to be tested, must be sent by Applicant to Lab. M.R.T.

The samples to be tested must be sent to the M.R.T. Laboratory under the care and responsibility of the Customer.

A delegate of the Laboratory may only take samples to be tested following a specific request by a Certification Body and/or the Customer, it being understood that the costs of the outward journey and sampling must be agreed in advance.

The receipt of models at the Lab. M.R.T. is mainly delegated to the technical personnel of the Laboratory; only in special cases may this task be performed by other personnel belonging to the Energy Department.

Incoming samples, conditionally accepted, will subsequently be inspected by the Technical Test Manager; depending on the findings, the samples may be accepted or rejected, in which case the Customer will be immediately notified of the non-conformity found.



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3. Terms & modality of payment

Shipping costs and customs charges are always paid by the customer.

Shipping costs for paper format test reports charges are always paid by the customer.

- Terms of payment:

In accordance with Directive 2011/7/EU, transposed by DL No. 192 of 9 Nov. 2012, payment for the tests, including VAT, shall be made within thirty days of receipt of the invoice issued by the Administrative Secretariat of the Department.

(Should the number of tests requested exceed ten, the Customer may request a maximum deferment of sixty days from the date of receipt of the invoice).

- Modality of payment:

- **Bank check** referred to Politecnico di Milano - Dipartimento di Energia.
- **Banking transfer at**

“BANCA POPOLARE DI SONDRIO”

Agenzia 21 di Milano, via Bonardi 4,

**“POLITECNICO DI MILANO
DIPARTIMENTO DI ENERGIA - Lab. M.R.T.”**

Via Raffaele Lambruschini, n. 4 - 20156 Milano

VAT CODE:	04376620151
TAX CODE:	80057930150
BANK DATA:	N. C/C 000001880X58
CIN:	C ABI: 05696 – CAB 01620
IBAN:	IT93C0569601620000001880X58
SWIFT:	POSO IT 22
C/C TESORERIA UNICA:	308201

and indicate the reason of the transfer.

For more information contact “Segreteria Amministrativa del Dipartimento di Energia”, phone.: +39 02 2399 2086

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4. Models delivering and working time

The estimated time for test execution and the delivering of test report is about 15 days from the reception of all documentations and models; given variable workloads, the timing must however be agreed with the Responsible of the Tests.

5. Documents that must be sent from Applicant to M.R.T. laboratory before carrying out the tests

5.1 Order for testing radiators and convector in conformity to standard EN 442-2 (see attachment A – ENE/MRT.MOD.20.001A),

which must report: Applicant identification data, radiators data, operating pressure, required test(s).

This document will be reviewed by the MRT Lab and the Customer will be contacted ONLY in the event of non-acceptance or incongruity with this Rate and Procedures.

5.2 Sampling Sheet (see attachment B – ENE/MRT.MOD.20.001B) must be filled for every model or group of similar models to be tested; to be specified the date and the place of withdrawal, the Quality Responsible that has carried out the operation, the denomination trades and every ulterior information useful to identify every model.

5.3 Constructive mechanical design, identified from a code and the date of issue, indicating all the dimensions and related tolerance. A stating that drawing refer to actual production shall be added.

5.4 Declaration of Conformity assessment under Construction Products Regulation n. 305/2011/EU (see attachment C – ENE/MRT.MOD.20.001C), “Manufacturer has sole and ultimate responsibility for the conformity of the product to the applicable Directive/Regulation”.



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6. Results delivering

Following the type of test requested of the Customer, the results will be recorded in a Test Report (valid nationally and internationally) or in a Test Relation (valid only for the Customer's internal use).

Test report or appropriate document, will be sent to the Applicant after the payment of the due amount.

If the NF (EUROVENT-CERTITA) or RADMAC testing authority has commissioned the test, the test report will be sent by the laboratory to the authority for verification. The body itself will be responsible for sending the document to the tested manufacturer.

A copy of the documents is stored in Laboratory archive for at least 10 years from its issues. In case of whichever dispute, the copy conserved at Laboratory will make faith.

7. Tested models back dispatching

In order to guarantee possible and immediate retesting, verification and/or control, the Lab. M.R.T. will keep stored the tested models for a maximum of 2 months after issuing the test report. After this period, in the absence of any communication to the contrary, the M.R.T. Lab will dispose of them. Upon written request, the Customer may withdraw the samples, which the Laboratory will keep for a further 30 days, at the end of which they will be disposed of if not yet withdrawn.