



**EVALUATION PROCEDURE FOR THE APPOINTMENT OF 1 FULL PROFESSOR PURSUANT TO ARTICLE 24, PARAGRAPH 6 - LAW 240/2010, AT THE POLITECNICO DI MILANO - DEPARTMENT OF ELECTRONICS, INFORMATION AND BIOENGINEERING FOR THE ACADEMIC RECRUITMENT FIELD 09/E2 - ELECTRICAL ENERGY ENGINEERING, ACADEMIC DISCIPLINE ING-IND/32 - POWER ELECTRONIC CONVERTERS, ELECTRICAL MACHINES AND DRIVES, PROCEDURE CODE 2023\_VAL\_I\_DEIB\_2.**

## 1st MINUTES

The Selection Board, appointed with RD Index No. 12144 ref. No. 233406 of 10 ottobre 2023, composed by the following professors:

Prof. DEL PIZZO Andrea - Full Professor - Università degli Studi di Napoli Federico II,

Prof. MONTI Antonello - Universitätsprofessor - Rheinisch-Westfälische Technische Hochschule Aachen,

Prof. ROMERO CADAVAL Enrique - Catedrático de Universidad - Universidad de Extremadura.

on November 13 at 11:00, meets in telematic mode.

The members of the Selection Board take note that no objection to the board members in relation to this selection procedure had reached the University and therefore the Selection Board was fully entitled to operate in accordance with the rules of the competition.

At the start of the session the members of the Selection Board named the Chairman and the Secretary:

ANDREA DEL PIZZO, FULL PROFESSOR AT THE UNIVERSITY OF NAPOLI FEDERICO II, CHAIRMAN;

ENRIQUE ROMERO CADAVAL, FULL PROFESSOR AT THE UNIVERSITY OF Extremadura, SECRETARY.

The Selection Board inspects the list of applicants, who are:

### 1) PIEGARI Luigi

Each member of the Selection Board declares not to have conjugal nor family relationship or other degree of kinship or affinity up to the fourth degree, not to be in same-sex civil union (as per art. 1 of Law No. 76 of 20.05.2016) and not to form a cohabiting couple (as per art. 1, paragraphs 37 et seq. of Law No. 76 of 20.05.2016) with the candidates and states that there were no reasons for abstention pursuant to arts. 51 and 52 of the Civil Procedure Code.

The members of the Selection Board also declare, pursuant to art. 35-bis of Legislative Decree 165/2001, not to have criminal convictions, even with non-definitive sentences, for offences provided for in Chapter I, Title II of the second book of the Criminal Code.

The Selection Board notes that the competition procedure must be concluded within **January, 10<sup>th</sup> 2024** (3 months from the date of publication of the decree appointing the Selection Board).

The Selection Board also takes note of the scientific and educational profile indicated by the Department:

*The teaching activity will be focused on all the subjects characterizing the academic discipline covered by the procedure and, in particular, electrical machines, power electronics and electrical drives. The scientific commitment is expected in three main research lines. The first concerns the design of innovative power electronic converters for the automotive industry for both traction and auxiliaries with particular attention to fail-operational characteristics. A second line concerns the design and control of power converters for the integration of renewable sources and storage systems in the grid, taking into account all the emerging issues*

*arising in modern grids with an ever-increasing number of connected power electronic converters. Finally, the third research line is related to the modeling and control of electrochemical storage systems. The development of integrated electrical-thermal and aging models allows the design of dedicated power electronics for the optimal exploitation of batteries in all power applications.*

The Selection Board, referring to the scientific and educational profile indicated above, will make use of the following criteria:

- a) quality of scientific and/or project production, assessed on the basis of criteria and parameters recognized by the international scientific community of reference;
- b) didactic activities carried out in Italian or foreign Universities or bodies;
- c) scientific responsibility for funded research projects;
- d) results obtained in technology transfer in terms of participation in the creation of new enterprises (spin off), development, use and marketing of patents.

After adequate evaluation, based on the scientific and educational profile indicated by the Department, the Selection Board collectively proceeds to express a judgment for each of the established criteria for each candidate, as well as an overall collective judgment.

**CANDIDATE: PIEGARI Luigi**

CRITERIA	JUDGMENT
a) quality of scientific and/or project production, assessed on the basis of criteria and parameters recognized by the international scientific community of reference;	The candidate's overall scientific production is notable for its continuity and intensity and covers various themes characterizing the academic discipline ING-IND/32. In addition to modeling, sizing and control of electrical machines and drives, the candidate has also dealt in depth with research topics of great importance in recent years, such as the modeling of electrical energy storage systems and their integration into networks and transportation systems, also taking an interest in the development of the related power electronic converters. In addition to the papers together with co-authors from the home institution (also from other disciplinary areas), there are numerous papers in collaboration with authors from other Italian and foreign universities or research institutions. The number of publications in international journals is large and the bibliometric indexes associated with the candidate are excellent. The candidate's positioning and international recognition therefore appear to be of an excellent level, as can also be deduced from the role of associate editor and/or member of the editorial boards of some highly relevant journals and from the role of general co-chairman and program chair of some significant international conferences. From the in-depth examination of the 15 publications presented by the candidate, first of all we can deduce the full congruence of each of them with the academic discipline ING-IND/32 and with the profile to be covered. Together with a correct methodological approach and the presence of innovative and original contributions in all the papers presented, particularly remarkable results were obtained in the modeling of supercapacitors (n.13 in the list presented by the candidate), in the definition of MPPT algorithms for photovoltaic systems (n.14 and n.15), in the control of MMC type multilevel converters (n.1 and n.11) and in the evaluation of the impact of the aging of lithium ion batteries on the internal characteristics (n.2 and n.3). The presence of experimental validation is frequent. In addition to the high-level editorial placement of the majority of the papers presented, it is worth highlighting a homogeneous approach to the various topics covered, which characterizes the candidate's production and testifies to his effective contribution to the various publications. In the absence of specific information, for each of the papers presented the individual contribution of the candidate and the other authors is to be considered equal.
b) didactic activities carried out in Italian or foreign Universities or bodies;	The candidate was official teacher of courses for the Bachelor's and Master's Degrees both in Electrical and Electronic Engineering at the Polytechnic of Milan. His teaching activity continuously developed over a long period of time. Intense and entirely congruent with the academic discipline ING-IND/32, this activity involved the teaching of fundamental disciplines for this sector. For the last 6 years he has taught one of his courses in English.
c) scientific responsibility for funded research projects;	The candidate is particularly active in the coordination of scientific research projects. In fact, he was and is locally responsible for some important international research projects primarily in the field of energy storage and electric mobility, with significant amounts funded for his research team.

	Furthermore, he was and is the scientific coordinator of several research contracts with national and international companies on application aspects of characteristic themes of the academic discipline ING-IND/32 and, more generally, of the academic recruitment field 09/E2 (Electrical Energy Engineering).
d) results obtained in technology transfer in terms of participation in the creation of new enterprises (spin off), development, use and marketing of patents.	The candidate is the co-owner of two national patents, of which he has not reported information on commercial use and exploitation.

**OVERALL COLLECTIVE JUDGEMENT**

The candidate has an excellent and intense scientific production, rich in original and innovative ideas. It addresses in depth some of the most characteristic themes for the academic discipline ING-IND/32 and is fully congruent with it. The skill to coordinate research projects, financed both by relevant international institutions and companies, is remarkable. The teaching activity is very good and is characterized by the responsibility for courses of primary importance.

The Selection Board, taking into account the judgments given, selects at unanimity of its members, the following candidate, considered most qualified to carry out the didactic-scientific functions for which the procedure has been activated: **PIEGARI Luigi**.

The meeting ended at 12:30.

Read, approved and signed.

THE SELECTION BOARD

*Prof. Andrea DEL PIZZO (Chairman)*

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*Prof. Antonello MONTI (Member)*

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*Prof. Enrique ROMERO CADAVAL (Secretary)*

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