PUBLIC SELECTION ESTABLISHED WITH DIRECTOR'S DECREE NO. 3828 OF 20/02/2025 PURSUANT TO THE NOTICE PUBLISHED IN THE OFFICIAL GAZETTE NO. 07/03/2025, n. 19 FOR 1 POSITION AS FULL PROFESSOR FOR THE GROUP OF ACADEMIC DISCIPLINES 09/IIND-04 - MANUFACTURING TECHNOLOGIES AND SYSTEMS - ACADEMIC DISCIPLINE IIND-04/A - MANUFACTURING TECHNOLOGIES AND SYSTEMS, PURSUANT TO ART. 18 - LAW 240/2010, AT THE POLITECNICO DI MILANO - DEPARTMENT OF MECHANICAL ENGINEERING (PROCEDURE CODE 2025_PRO_DMEC_1).

FINAL REPORT

The Selection Board, appointed with RD Index No. 7804 ref. No. 95012 of 14 April 2025, composed by the following professors:

- Prof. DARGUSCH Matthew - University of Queensland (Australia)
- Prof. KIETZIG Anne-Marie - McGill University (Canada)
- Prof. MORONI Giovanni - Politecnico di Milano (Italy)

met on Wednesday, July 9th at 00:00 (UTC+02:00), for the first teleconference meeting. Each Selection Board member was connected from his/her workstation.

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

- Prof. KIETZIG Anne-Marie, full professor at McGill University, Chairperson,
- Prof. MORONI Giovanni, full professor at Politecnico di Milano, Secretary.

Each member of the Selection Board declared 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 other members of this Selection Board and that there were no reasons for abstention pursuant to arts. 51 and 52 of the Civil Procedure Code.

The members of the Selection Board declared, 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 established the criteria and the parameters according to which the assessment was carried out and set the minimum score below which the candidate shall not be included in the ranking of candidates.

On Tuesday, July 29th at 23:00 (UTC+02:00), the Selection Board met for the second teleconference meeting. The Selection Board inspected the list of applicants, who were:

1) DEMIR, Ali Gökhan

Each member of the Selection Board declared 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 Candidate Ali Gökhan DEMIR and stated that there were no reasons for abstention pursuant to arts. 51 and 52 of the Civil Procedure Code.

Each member of the Selection Board also declared to not be co-author with the Candidate in a percentage exceeding 50% of the publications attached by them for evaluation purposes.

Pursuant to the examination and after adequate evaluation, the Selection Board assigned a score to each of the established criteria and a judgment to each publication submitted by the Candidate; furthermore, the board evaluated the knowledge of the English language.

Therefore, considering the sum of the scores given, the Selection Board expressed a collective judgment in relation to the quantity and the quality of publications, evaluating the overall productivity of the Candidate,

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also with regard to his period of activity. The above-mentioned judgments are attached to this report, and they are an integral part of it (Attachment No. 1 to this final report).

The Selection Board drew up, according to the majority of its members, a ranking of candidates selected to carry out the scientific/teaching functions for which the selection was called, in a number equal to a maximum of five times the number of positions available in the competition (Attachment No. 2 to this final report).

THE SELECTION BOARD

Prof. KIETZIG Anne-Marie (Chairperson) ______________________

Prof. DARGUSCH Matthew (Member) ______________________

Prof. MORONI Giovanni (Secretary) ______________________

Firmato digitalmente da:GIOVANNI MORONI
Organizzazione:
POLITECNICO DI MILANO/80057930150

PUBLIC SELECTION ESTABLISHED WITH DIRECTOR'S DECREE NO. 3828 OF 20/02/2025 PURSUANT TO THE NOTICE PUBLISHED IN THE OFFICIAL GAZETTE NO. 07/03/2025, n. 19 FOR 1 POSITION AS FULL PROFESSOR FOR THE GROUP OF ACADEMIC DISCIPLINES 09/IIND-04 - MANUFACTURING TECHNOLOGIES AND SYSTEMS - ACADEMIC DISCIPLINE IIND-04/A - MANUFACTURING TECHNOLOGIES AND SYSTEMS, PURSUANT TO ART. 18 - LAW 240/2010, AT THE POLITECNICO DI MILANO - DEPARTMENT OF MECHANICAL ENGINEERING (PROCEDURE CODE 2025_PRO_DMEC_1).

ATTACHMENT N. 1 to the FINAL REPORT

CRITERIA	Quality of scientific production, assessed on the basis of criteria and parameters recognized by the international scientific community of reference (Maximum 50/100)	Teaching activities carried out in Italian or foreign Universities or bodies (Maximum 15/100)	Scientific responsibility for funded research projects (Maximum 25/100)	Results obtained in technology transfer in terms of participation in the creation of new enterprises (spin off), development, use and marketing of patents (Maximum 10/100)	**Total**
DEMIR Ali Gökhan	46	15	21	8	**90**

OVERALL COLLECTIVE JUDGEMENT

CANDIDATE: DEMIR Ali Gökhan

CURRICULUM:

Ali Gökhan DEMIR is an Associate Professor at the Department of Mechanical Engineering of Politecnico di Milano (Italy), where he received his PhD in Mechanical Engineering in 2014. During his PhD, he spent six months as a visiting researcher at the Centre for Industrial Photonics, Institute for Manufacturing, University of Cambridge (UK). After a one-year postdoctoral fellowship in the Department of Mechanical Engineering of Politecnico di Milano, he joined the faculty of Politecnico di Milano as a Researcher (since March 2015) and then, since October 2021, as an Associate Professor in Manufacturing Technology and Systems (Scientific Disciplinary Sector: ING-IND/16, now Academic Discipline IIND-04/A).

He is an Associate Editor of Additive Manufacturing Letters, a member of the Editorial Board of Lasers in Engineering, and the Youth Editorial Board of the Journal of Extreme Manufacturing. He is a member of AITeM, the Italian Manufacturing Association, and a member of Photonics21 - European Technology Platform.

His research area focuses on laser-based advanced manufacturing processes, with applications in emerging sectors such as electric mobility and more established sectors such as biomedical implant manufacturing, electronics, and energy. His main research topics include the development of laser micromachining processes, additive manufacturing processes and systems, and beam shaping in the temporal, spatial, and wavelength domains for laser manufacturing. On these topics, he has led and supervised several industrial, national, regional, and international research projects. He has authored 237 scientific publications, 140 of which have been published in peer-reviewed international journals and books. He is co-author of 9 patents.

In December 2023, the Candidate obtained the Italian National Scientific Qualification as Full Professor for the Competition Sector 09/B1 “Manufacturing Technology and Systems” - SDS ING-IND/16 “Manufacturing Technology and Systems”, now Group of Academic Disciplines 09/IIND-04 – “Manufacturing Technologies and Systems” - Academic Discipline IIND-04/A - Manufacturing Technologies and Systems.

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Among others, he received the following awards:

- Visiting Scholar Grant, Scientific Committee of École Nationale Supérieure d'Arts et Métiers, Paris, 2025
- Future Mobility Grant, Innovation Campus Future Mobility under the Partnership of University of Stuttgart and the Karlsruhe Institute of Technology (KIT), Stuttgart, 2024
- Best presentation award, FLOW-3D World Users Conference 2024
- Premio Giovane Ricercatore AITeM "Edoardo Capello" 2015 (AITeM Young Researcher Award)

At the Department of Mechanical Engineering of Politecnico di Milano, since 2023 he has coordinated the "Mecc to the Future" group, dedicated to identifying new research fields in Mechanical Engineering, and since 2015 he has been responsible for the safety of teaching and research activities at AddMe Lab, a laboratory dedicated to additive manufacturing.

Since 2021, he has been the scientific coordinator of the LaserEMobility section of the Italian Manufacturing Association (AITeM).

The Selection Board, after having thoroughly analyzed Ali Gökhan DEMIR's curriculum, unanimously expressed an excellent opinion for the completeness and quality of the Candidate's activities to date.

SUBMITTED PUBLICATIONS:

Publications	***Title***	***Overall Collective Judgement***
1	Caprio L., Della Monica G., Milroy C.A., Demir A.G. (2025) Laser Powder Bed Fusion of Pure Zinc Electrodes for the Manufacturing of Biodegradable Batteries: Process Development and Preliminary Electrochemical Testing, *Advanced Engineering Materials*, 2401749	Excellent
2	Boldrin D.M., Molinari Tosatti L., Previtali B., Demir A.G. (2024) Seam tracking and gap bridging during robotic laser beam welding via grayscale imaging and wobbling, *Robotics and Computer-Integrated Manufacturing*, 89, 102774	Excellent
3	Galbusera F., Caprio L., Previtali B., Demir A.G. (2023) The influence of novel beam shapes on melt pool shape and mechanical properties of LPBF produced Al-alloy, *Journal of Manufacturing Processes*, 85, 1024-1036	Excellent
4	Finazzi V., Berti F., Petrini L., Previtali B., Demir A.G. (2023) Additive manufacturing and post-processing of superelastic NiTi micro struts as building blocks for cardiovascular stents, *Additive Manufacturing*, 70, 103561	Excellent and extremely relevant
5	Vasileska E., Demir A.G., Colosimo B.M., Previtali B. (2022) A novel paradigm for feedback control in LPBF: layer-wise correction for overhang structures, *Advances in Manufacturing*, 10(2), 326–344	Excellent
6	Guaglione F., Caprio L., Previtali B., Demir A.G. (2021) Single point exposure LPBF for the production of biodegradable Zn-alloy lattice structures, *Additive Manufacturing*, 48, 102426	Excellent and extremely relevant
7	Caprio L., Demir A.G., Previtali B. (2020) Observing molten pool surface oscillations during keyhole processing in laser powder bed fusion as a novel method to estimate the penetration depth, *Additive Manufacturing*, 36, 101470	Excellent and extremely relevant
8	Finazzi V., Demir A.G., Biffi C.A., Migliavacca F., Petrini L., Previtali B. (2020) Design and functional testing of a novel balloon-expandable cardiovascular stent in CoCr alloy produced by selective laser melting, *Journal of Manufacturing Processes*, 55, 161-173	Excellent and extremely relevant
9	Caprio L., Demir A.G., Previtali B. (2019) Influence of pulsed and continuous wave emission on melting efficiency in selective laser melting, *Journal of Materials Processing Technology*, 266, 429-441	Excellent

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Publications	***Title***	***Overall Collective Judgement***
10	Colopi M., Demir A.G., Caprio L., Previtali B. (2019) Limits and solutions in processing pure Cu via selective laser melting using a high-power single-mode fiber laser, *International Journal of Advanced Manufacturing Systems*, 104(5-8), 2473-2486	Excellent
11	Bruna-Rosso C., Demir A.G., Previtali B. (2018) Selective laser melting finite element modeling: Validation with high-speed imaging and lack of fusion defects prediction, *Materials and Design*, 156, 143–153	Excellent
12	Demir A.G. (2018) Micro laser metal wire deposition for additive manufacturing of thin-walled structures, *Optics and Lasers in Engineering*, 100, 9-17	Excellent
13	Demir A.G., Previtali B. (2017) Additive manufacturing of cardiovascular CoCr stents by selective laser melting, *Materials and Design*, 119, 338-35	Excellent and extremely relevant
14	Demir A.G., Previtali B. (2017) Investigation of remelting and preheating in SLM of 18Ni300 maraging steel as corrective and preventive measures for porosity reduction, *The International Journal of Advanced Manufacturing Technology*, 93 (5-8), 2697-2709	Excellent
15	Demir A.G., Previtali B. (2017) Multi-material selective laser melting of Fe/Al-12Si components, *Manufacturing Letters*, 11, 8-11.	Excellent and extremely relevant
16	Demir A.G., Colombo P., Norgia M., Previtali B. (2016) Evaluation of Self-Mixing Interferometry Performance in the Measurement of Ablation Depth, *IEEE Transactions of Instrumentation and Measurement*, 65 (11), 2621-2630	Excellent
17	Demir A.G., Pangovski K., O'Neill W., Previtali B. (2015) Investigation of pulse shape characteristics on the laser ablation dynamics of TiN coatings in the ns regime, *Journal of Physics D: Applied Physics*, 48(23), 235202	Excellent
18	Demir A.G., Pangovski K., O'Neill W., Previtali B. (2014) Laser micromachining of TiN coatings with variable pulse durations and shapes in ns regime, *Surface and Coatings Technology*, 258, 240-248	Excellent and extremely relevant
19	Ge Q., Dellasega D., Demir A.G., Vedani M. (2013) The processing of ultrafine-grained Mg tubes for biodegradable stents, *Acta Biomaterialia*, 9, 8604-8610	Excellent and extremely relevant
20	Demir A.G., Previtali B., Bestetti M. (2011) Microvalve actuation with wettability conversion through darkness/UV application, *Journal of Micromechanics and Microengineering*, 21, 025019	Excellent and extremely relevant

The Candidate has submitted 20 publications, all published in renowned international journals with referee. Considering the Scopus database to date, the publications presented have been cited 1334 times and the relative H-index is equal to 16. On average, the publications have a number of authors in line with common scientific practice in the field and the Selection Board has assumed the contribution of the candidate identical to the one of the other authors. The publications demonstrate a solid collaboration with other national and international colleagues and with his team. All the publications submitted are consistent with the profile required by this call. The publications consistently cover a research period from 2011 to 2025.

All submitted publications were deemed by the Selection Board to be of excellent or excellent and extremely relevant quality, according to criteria and parameters commonly recognized in the scientific community. All articles are based on sound and rigorous methodologies and present original and significant contributions to the field of laser manufacturing, therefore coherent with the research topics of the Group of Academic Disciplines 09/IIND-04 – "Manufacturing Technologies and Systems".

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Specifically, the research activities are focused on:

- Process and system development for additive manufacturing [1, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15],
- Laser micromachining process development [16, 17, 18, 19, 20],
- Beam shaping in temporal, spatial, and wavelength domains for laser-based manufacturing [2, 3, 9].

Consequently, the Selection Board unanimously believes that the publications submitted by the Candidate Ali Gökhan DEMIR strongly qualify him in the field of Manufacturing Technology and Systems.

QUALITY OF SCIENTIFIC PRODUCTION, ASSESSED ON THE BASIS OF CRITERIA AND PARAMETERS RECOGNIZED BY THE INTERNATIONAL SCIENTIFIC COMMUNITY OF REFERENCE:

The Candidate has obtained the Italian National Scientific Qualification as Full Professor for the Competition Sector 09/B1 "Manufacturing Technology and Systems" - SDS ING-IND/16 "Manufacturing Technology and Systems", now Group of Academic Disciplines 09/IIND-04 – "Manufacturing Technologies and Systems" - Academic Discipline IIND-04/A - Manufacturing Technologies and Systems.

The Candidate has 237 publications, of which 140 have been published in peer reviewed international journals and books, and 81 in international refereed conferences proceedings. Considering the Scopus database to date, his overall scientific production consists of 190 publications and has been cited 5593 times and his H-index is equal to 42, far beyond the parameters required in the Italian National Scientific Qualification. Over the last 5 years, the Candidate has authored 85 publications, 64 of which were published in international peer-reviewed journals.

All the publications are in line with the methodologies and topics of interest for the Group of Academic Disciplines 09/IIND-04 – "Manufacturing Technologies and Systems" and concentrate in the field of laser based advanced manufacturing processes with application in emerging fields such as electric mobility as well as more consolidated ones such as biomedical implant manufacturing, electronics, and energy fields.

The Selection Board unanimously believes that the overall scientific production of the Candidate Ali Gökhan DEMIR is of excellent quality and that his productivity is significant compared to the scientific field.

TEACHING ACTIVITIES CARRIED OUT IN ITALIAN OR FOREIGN UNIVERSITIES OR BODIES:

The Candidate's teaching activities have been mainly focused on typical subjects of the Academic Discipline IIND-04/A – "Manufacturing Technologies and Systems" since Academic Year 2011/12.

At Politecnico di Milano, as associate professor he has been teaching an average of 12 ECTS per academic year on Bachelor and Master of Science degree programs of the School of Industrial and Information Engineering. In particular, he currently teaches Computer Aided Manufacturing (10 ECTS, MSc in Automation and Control Engineering) and Manufacturing Process and Technology Selection for Automotive (5 ECTS, MSc in Mechanical Engineering). Previously, he gained experience in teaching Manufacturing (10 ECTS, BSc in Mechanical Engineering) and Advanced Manufacturing Technologies (10 ECTS, MSc in Mechanical Engineering).

In AY 2019/20 and 2022/23, he was external lecturer in Additive Manufacturing in the Master of Science in Mechanical and Mining Engineering at University of Queensland.

The Candidate is or has been the supervisor of 6 PhD candidates and 43 MSc students, and co-supervisor of 5 PhD candidates and 46 MSc students.

The Selection Board appreciates the teaching activity carried out by the candidate and expresses a positive evaluation on the coherence between the teaching activity and the research activity carried out by the candidate. Therefore, the Selection Board unanimously considers adequate the teaching activity of the Candidate, which qualify Ali Gökhan DEMIR as a highly experienced teacher.

SCIENTIFIC RESPONSIBILITY FOR FUNDED RESEARCH PROJECTS:

Since 2012 the Candidate has been involved in projects financed by industrial (12) or public (15) funds. Since 2021, as Principal Investigator, the total funding received from industrial projects amounts to 1M€, with a matching amount from public projects.

The following projects deserve mention:

- STELLAR - Safe, sustainable, and high-throughput production of reliable lithium metal anodes for gen 4B/4C/5 batteries, Horizon Europe, Polimi Unit Leader (2025 – ongoing)
- CELL - Laser cutting & Assembly: flexible lithium-ion battery cell production. Funded through MADE Competence Centre within PNRR. Principal Investigator (2024 – ongoing)

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- BLM Group Adige - RoboScan - Laser remote welding of lightweight and high-efficient components with robotic systems. Principal Investigator (2023 – ongoing)
- IMA Automation Atop within project Spark - Soluzioni avanzate di lavorazioni laser mobilità elettrica, funded by MISE. Principal Investigator (2024 – ongoing)

The Selection Board unanimously considers the scientific commitment carried out to date by the Candidate Ali Gökhan DEMIR to be of a high level and well balanced between prestigious academic projects and relevant industrial applications, as demonstrated by the scientific results in terms of publications and patents.

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 co-author of 9 national and international patents. He collaborated with several companies in Italy and from other parts of the world resulting in technology transfer in the form of exploitable results towards new machine tools, processes, products, and patent applications.

Therefore, the Selection Board unanimously believes that the results obtained by the Candidate Ali Gökhan DEMIR in the field of technology transfer are adequate for the required profile.

SCRUTINY OF THE DEGREE OF KNOWLEDGE OF THE ENGLISH LANGUAGE:

Considering that:

- The Candidate has been visiting researcher for 6 months at the Centre for Industrial Photonics, Institute for Manufacturing, University of Cambridge (UK), and a visiting researcher or scholar in other international universities,
- The Candidate has experienced teaching in international programs abroad (AY 2019/20 and 2022/23) and in Italy (since AY 2013/14),
- The Candidate is Associate Editor of Additive Manufacturing Letters, member of the Editorial Board of Lasers in Engineering and of the Youth Editorial Board of Journal of Extreme Manufacturing,
- The Candidate is member of Photonics21 – European Technology Platform,
- The Candidate has been involved in international scientific projects, being principal investigator or scientific responsible,
- The Candidate has been invited as a lecturer or speaker in 20 international events,
- The Candidate is co-author of 227 scientific contributions written in English, nineteen of which are result of international collaborations,

and considering the curriculum and publications submitted by the Candidate, the Selection Board unanimously evaluates the Candidate Ali Gökhan DEMIR's knowledge of the English language as excellent and declares that he satisfies all the requirements established by the public selection under analysis.

FINAL OVERALL COLLECTIVE JUDGEMENT

The Selection Board unanimously recognizes Ali Gökhan DEMIR's international standing as an expert in his discipline and strongly recommends his promotion to professor.

THE SELECTION BOARD

Prof. KIETZIG Anne-Marie (Chairperson) ________________

Prof. DARGUSCH Matthew (Member) ________________

Prof. MORONI Giovanni (Secretary) ________________

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ATTACHMENT N. 2 to the FINAL REPORT

MERIT RANKING

SURNAME AND NAME	Overall Score
DEMIR Ali Gökhan	90/100

Milano, 30/07/2025

THE SELECTION BOARD

Prof. KIETZIG Anne-Marie (Chairperson)

Prof. DARGUSCH Matthew (Member)

Prof. MORONI Giovanni (Secretary)