PUBLIC SELECTION ESTABLISHED WITH DIRECTOR'S DECREE NO. 2023_PRO_DAER_1 OF 24/07/2023 PURSUANT TO THE NOTICE PUBLISHED IN THE OFFICIAL GAZETTE NO. 01/08/2023, n. 58 FOR 1 POSITION AS FULL PROFESSOR FOR THE COMPETITION SECTOR 09/A1 - AERONAUTICAL AND AEROSPACE ENGINEERING AND NAVAL ARCHITECTURE - SDS ING-IND/06 - FLUID DYNAMICS, PURSUANT TO ART. 18 - LAW 240/2010, AT THE POLITECNICO DI MILANO - DEPARTMENT OF AEROSPACE SCIENCE AND TECHNOLOGY (DAER) (PROCEDURE CODE 2023_PRO_DAER_1).

FINAL REPORT

The Selection Board, appointed with RD Index No. 9562 ref. No. 199141 of 01 September 2023, composed by the following Professors:

Prof. GUARDONE Alberto Matteo Attilio - Politecnico di Milano;
Prof. SESTERHENN Jörn - Universität Bayreuth;
Prof. FOSSATI Marco - University of Strathclyde,

met on the 18th of December, 2023, at 10:30, for the first teleconference meeting.
Each board member was connected from his/her workstation.

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

Jorn Sesterhenn, Full Professor at Universität Bayreuth, Chairman;
Alberto Guardone, Full Professor at Politecnico di Milano, Secretary.

Each member of the 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 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 and the Secretary 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 January, 22nd, 2024 at 10:30, the Selection Board met online to inspect the list of applicants, who were:

1) AUTERI, Franco

Each member of the 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 candidates and stated that there were no reasons for abstention pursuant to arts. 51 and 52 of the Civil Procedure Code.

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, the board, considering the sum of the scores given, expressed a collective judgment in relation to the quantity and the quality of publications, evaluating the overall productivity of the applicant, also with regard to his/her 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. SESTERHENN Jörn *(Chairman)*

Prof. FOSSATI Marco *(Member)*

Prof. GUARDONE Alberto Matteo Attilio (*Secretary)*

PUBLIC SELECTION ESTABLISHED WITH DIRECTOR'S DECREE NO. 2023_PRO_DAER_1 OF 24/07/2023 PURSUANT TO THE NOTICE PUBLISHED IN THE OFFICIAL GAZETTE NO. 01/08/2023, n. 58 FOR 1 POSITION AS FULL PROFESSOR FOR THE COMPETITION SECTOR 09/A1 - AERONAUTICAL AND AEROSPACE ENGINEERING AND NAVAL ARCHITECTURE - SDS ING-IND/06 - FLUID DYNAMICS, PURSUANT TO ART. 18 - LAW 240/2010, AT THE POLITECNICO DI MILANO - DEPARTMENT OF AEROSPACE SCIENCE AND TECHNOLOGY (DAER) (PROCEDURE CODE 2023_PRO_DAER_1).

ATTACHMENT No. 1 to the FINAL REPORT

CRITERIA	Quality of scientific and/or project production, assessed on the basis of criteria and parameters recognized by the international scientific community of reference	Teaching activity at the university level in Italy or abroad	Scientific responsibility for funded research projects	Results obtained in technology transfer in terms of participation in the creation of new enterprises (spin off), development, use and marketing of patents	Total
AUTERI Franco	35	20	22	6	83

CANDIDATE: AUTERI Franco

CURRICULUM:

Franco Auteri graduated cum laude in Aeronautical Engineering at Politecnico di Milano in 1995. In 2000, he obtained his PhD in Aerospace Engineering at Politecnico di Milano with a thesis entitled "A hierarchical triangular spectral element method for incompressible fluid dynamics simulation". From 1999 until 2001, he was an Assistant researcher (Assegno di Ricerca) at CIRIC (Computational Engineering Research Centre), Politecnico di Milano. From 2001 until 2004 he worked in the Aerodynamic Laboratory, Dipartimento di Ingegneria Aerospaziale, Politecnico di Milano, as a Laboratory Technician (permanent position). He then became Assistant professor (2005-2015) and Associate professor (2015-) at the Dipartimento di Scienze e Tecnologie Aerospaziali, Politecnico di Milano, in the SSD ING-IND/06 Fluid Dynamics. He achieved the National Scientific qualification as a full professor in the Italian higher education system in the call 2016/2018 (Ministerial Decree n. 1532/2016) for the disciplinary field of 09/A1 - Aeronautical and Aerospace Engineering and Naval Architecture.

Since 2005, he is a Member of the Board of the Aerospace Engineering Bachelor and Master Programme, School of Industrial and Informatic Engineering, Politecnico di Milano. Since 2016, he is a Member of the Board of the Aerospace Engineering Ph.D. Programme, School of Industrial and Informatic Engineering, Politecnico di Milano. Since 2022, he has been a member of the commission for the reform of the bachelor's degree in Aerospace Engineering at the School of Industrial and Informatic Engineering, Politecnico di Milano.

His research interests are the aerodynamics of fixed- and rotary-wing aircraft and of bluff bodies, and fluid dynamic instability and control from the experimental, numerical, and theoretical viewpoints. Franco Auteri achieved original results in fixed-wing aircraft aerodynamics regarding morphing wings, carrying out both experimental and numerical research during the SMS project, including the design of the experiment and the direction of an extensive experimental campaign on a large-scale wing-section model with a morphing flap. As Principal Investigator of the MONNALISA project, he also contributed to the investigation of the aerodynamics of tailplanes of commercial aircraft at high angles of attack. He also conducted original experimental studies on helicopter aerodynamics, investigating flow control techniques such as vortex generators for drag reduction in the ROD project, Gurney flaps on the main rotor blades in the GUM project, and dynamic stall. He participated in the investigation of external and engine-intake aerodynamics of tilt-rotor aircraft during the NICETRIP and TETRA projects. Concerning the stability and control of laminar and turbulent flows, he worked on flow control by traveling waves of spanwise velocity, using experimental, numerical, and theoretical techniques. He also conducted original experimental, numerical, and theoretical investigations of the flow around bluff bodies in different regimes. Franco Auteri contributed to unveiling the nature of the first bifurcation in a driven cavity flow by showing that it consists of a Hopf bifurcation. Franco Auteri developed original experimental techniques in aerodynamics and fluid dynamics used in the GUM, TETRA, and GOHAED projects and original numerical methods for the simulation of flows in the incompressible regime.

Franco Auteri authored 42 publications on international ISI/SCOPUS journals, 27 on proceedings of international conferences, 5 on national Conferences, and 8 contributions to conferences. He is involved in many international/national research collaborations. He has been a reviewer of international scientific journals in fluid mechanics and applied mathematics.

Franco Auteri has an excellent teaching record in Italy and abroad, including numerous courses taught at Bachelor, Master of Science, and Doctoral Schools since 2003. He has a good record of supervising Ph.D. and Master students and a very good record in coordinating international projects.

SUBMITTED PUBLICATIONS:

No. of publications	Type/Title of Publication	Judgment
1	Auteri, F.; Baron, A.; Belan, M.; Campanardi, G.; Quadrio, M., Experimental Assessment of Drag Reduction by Traveling Waves in a Turbulent Pipe Flow, Physics of Fluids, Vol. 22, N. 11, 2010, 115103 (14 pages), DOI: 10.1063/1.349120	Excellent
2	Carini, M.; Giannetti, F.; Auteri, F., On the Origin of the Flip-Flop Instability of two Side-by-Side Cylinder Wakes, Journal of Fluid Mechanics, Vol. 742, 2014, p. 552-576, DOI: 10.1017/jfm.2014.9	Excellent
3	Citro, V.; Luchini, P.; Giannetti, F.; Auteri, F., Efficient Stabilization and Acceleration of Numerical Simulation of Fluid Flows by Residual Recombination, Journal of Computational Physics, Vol. 344, 2017, p. 234-246	Very Good
4	Auteri, F.; Carini, M.; Zagaglia, D.; Montagnani, D.; Gibertini, G.; Merz, C.B.; Zanotti, A., Novel Approach for Reconstructing Pressure from PIV Velocity Measurements, Experiments in Fluids, Vol. 56, N. 2, 45, 2015, p. 1-16, DOI: 10.1007/s00348-015-1912-z	Excellent
5	Carini, M.; Auteri, F.; Giannetti, F., Centre-Manifold Reduction of Bifurcating Flows, Journal of Fluid Mechanics, Vol. 767, 2015, p. 109-145, DOI: 10.1017/jfm.2015.3	Very Good
6	Fani, A.; Citro, V.; Giannetti, F.; Auteri, F, Computation of the Bluff-Body Sound Generation by a Self-Consistent Mean Flow Formulation, Physics of Fluids, Vol. 30, N. 3, 2018, 036102 (12 pages), DOI: 10.1063/1.4997536	Excellent
7	Montagnani, D.; Auteri, F., Non-Modal Analysis of Coaxial Jets, Journal of Fluid Mechanics, Vol. 872, 2019, p. 665-696, DOI: 10.1017/jfm.2019.356	Excellent
8	Auteri, F.; Savino, A.; Zanotti, A.; Gibertini, G.; Zagaglia, D.; Bmegaptche Tekap, Y.; Braza, M., Experimental Evaluation of the Aerodynamic Performance of a Large-Scale High-Lift Morphing Wing, Aerospace Science and Technology, Vol. 124, 2022, 107515 (16 pages), DOI: 10.1016/j.ast.2022.107515	Very Good
9	Chiarini, A.; Quadrio, M.; Auteri, F., On the Frequency Selection Mechanism of the low-Re Flow Around Rectangular Cylinders, Journal of Fluid Mechanics, Vol. 933, A 44, 2022, A44 (25 pages), DOI: 10.1017/jfm.2021.1027	Excellent
10	Chiarini, A.; Quadrio, M.; Auteri, F., A New Scaling for the Flow Instability Past Symmetric Bluff Bodies, Journal of Fluid Mechanics, Vol. 936, R2, 2022, R2 (11 pages), DOI: 10.1017/jfm.2022.99	Excellent
11	Chiarini, A.; Auteri, F., Linear Global and Asymptotic Stability Analysis of the Flow Past Rectangular Cylinders Moving Along a Wall, Journal of Fluid Mechanics, Vol. 966, A22, 2023, A22 (35 pages), DOI: 10.1017/jfm.2023.434	Very Good
12	Auteri, F.; Parolini, N.; Quartapelle, L., Numerical Investigation on the Stability of Singular Driven Cavity Flow, Journal of Computational Physics, Vol. 183, N. 1, 2002, p. 1-25, DOI: 10.1006/jcph.2002.7145	Excellent

Overall collective judgement

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

The publications selected by the candidate have been evaluated singularly using on criteria and parameters acknowledged by the reference scientific community (impact factor, number of citations, candidate's position in the author list). The evaluations are listed in the table of the previous section. The scientific production is significant and continuous since 1995 and consists of 42 publications on international ISI/SCOPUS journals, 27 publications on proceedings of international conferences, 5 on national Conferences, and 8 contributions to conferences. The candidate presented his work at numerous international conferences (1 invited talk). The SCOPUS citation report as of 21 January 2024 list 64 publications, 801 total citations and an h-index equal to 16. Almost 30% of the papers are co-authored by international authors and 30% of the papers are in the top 25% most cited documents worldwide. The evaluation of the quality of the candidate's scientific production, based on criteria and parameters acknowledged by the reference scientific community, is excellent. He was a member of the organizing committee of 3 international seminars on fluid mechanics.
The evaluation is Excellent. Points: 35

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

Since 1998, Franco Auteri has been significant and continuous. His main didactic activity was performed in the framework of the undergraduate and graduate courses at Politecnico di Milano, including course for the Doctoral school, namely,

- Aerodynamics (10 CFU, 2015-), Master degree in Aeronautical Engineering, School of Industrial and Information Engineering, Politecnico di Milano
- Applied Computational Fluid Dynamics (5 CFU, 2017-) , Ph.D. degree in Aerospace Engineering, Politecnico di Milano
- High performance scientific computing in aerospace, Module 1 (5 CFU, 2023-), Master degree in High Performance Computing Engineering, Politecnico di Milano
- Introduction to Quantum Computing (40h, 2021/22), School of Industrial and Information Engineering, Politecnico di Milano.
- Instability and turbulence (8 CFU, 2012-2015), Master degree in Aeronautical Engineering, School of Industrial and Information Engineering, Politecnico di Milano.
- Fluid dynamics (10 CFU, 2009-2012), Bachelor degree in Aerospace Engineering, School of Industrial and Information Engineering, Politecnico di Milano.
- Fluid dynamics I (5 CFU, 2004-2008), Bachelor degree in Aeronautical Engineering, School of Industrial Engineering, Politecnico di Milano),
- Aerodynamics I (5 CFU, 2003-2004), Bachelor degree in Aeronautical Engineering, School of Industrial Engineering, Politecnico di Milano.
- Lectures, exercises and laboratories in the courses of Fluid dynamics and aerodynamics II, Experimental fluid dynamics, Numerical fluid dynamics., (1998-2005), School of Industrial Engineering, Politecnico di Milano.

The students' evaluation of the above courses is mostly High.
Franco Auteri carried out teaching activities at Beihang University, namely,

- Aerodynamics (32h, 2019-2021, Bachelor degree, School of General Engineering, Beihang University, Beijing, P.R.C.)

Franco Auteri supervised to completion 2 Ph.D. theses and 39 Master theses. He participated in numerous Ph.D. evaluation committees in Italy and abroad.
He is a member of the Board of the Aerospace Engineering Bachelor and Master Programme, School of Industrial and Informatic Engineering, Politecnico di Milano (2005-); Member of the Board of the Aerospace Engineering Ph.D. Programme, School of Industrial and Informatic Engineering, Politecnico di Milano (2016-); Member of the commission for the reform of the bachelor's degree in Aerospace Engineering.
The evaluation is Very good. Points: 20

SCIENTIFIC RESPONSIBILITY FOR FUNDED RESEARCH PROJECTS:
Since 2013, Franco Auteri has had the scientific responsibility for numerous national and international research projects (including work packages), as listed below:

- Principal Investigator for Politecnico di Milano and WP 5 (Experimental evaluation of active interfaces on lift, drag performance and noise reduction) leader, Horizon Europe Pathfinder Open project "Bioinspired Electroactive Aeronautical multiscale LIVE-skin" (BEALIVE) (2023-2026). Total funding: 2,495,445.00€, POLIMI funding: 329,600.00€
- Scientific Coordinator of the Department of Aerospace Science and Technology (DAER), Politecnico di Milano, contribution to the Centro di Ricerca in HPC, Big Data and Quantum Computing (HPC, Big Data and Quantum Computing National Centre), 6th Spoke on "Multiscale Modeling and Engineering Applications", DAER funding: 150,000.00€
- Principal Investigator, Clean Sky 2 H2020 project "Modelling Nonlinear Aerodynamics of Lifting Surfaces" MONNALISA (2021-2023). Total funding: 895,130.00€, POLIMI funding: 474,995.00€
- Principal Investigator for Politecnico di Milano and WP 5 (Aerodynamic evaluation) leader, H2020 project Smart Morphing and Sensing (SMS) (2017-2020). Total funding: 3,991,687.50€, POLIMI funding: 377,375.00€
- Leader of WP 2 (Innovative measurement techniques), Clean Sky project GUM (Active Gurney on Main Rotor Blades), VII European Framework Programme, (2012-2015). POLIMI funding: 455,401.00€
- Leader of WP 3 (Wind-tunnel tests) and WP 5 (Result analysis and physical interpretation), Clean Sky project ROD (Rotorcraft Drag reduction) VII European Framework Programme, (2013-2015). POLIMI funding: 797,400.00€
- Principal Investigator CINECA ISCRA C project "SECOND" (Secondary stability of a Blasius boundary layer, 16,667 standard hours), (2023).
- Principal Investigator CINECA ISCRA C project "ONDA" (Optimal Nonlinear perturbations in a Blasius bounDary layer Actuated with wall travelling waves, 43,200 standard hours) (2021).
- Principal Investigator CINECA ISCRA C project "NISI" (Numerical Fluid-Structure Interaction, 50,000 standard hours) (2016).
- Principal Investigator CINECA ISCRA C Project "COAX" (Linear stability analysis of axisymmetric coaxial jets, 50,000 standard hours) (2014).
- Principal Investigator LISA CORE project (250,000 standard hours) (2014).
- Principal Investigator LISA FORE project (Flow Over Roughness Elements, 280,000 standard hours) (2013).

The evaluation is Excellent. Points: 22

RESULTS OBTAINED IN TECHNOLOGY TRANSFER IN TERMS OF PARTICIPATION IN THE CREATION OF NEW ENTERPRISES (SPIN OFF), DEVELOPMENT, USE AND MARKETING OF PATENTS:
Franco Auteri participated in the effort by Regione Lombardia to establish an Italian surgical/FP2 mask supply chain during the early COVID-19 pandemic by setting up and running a laboratory for the breathability tests of the tissues.
The evaluation is Good. Points: 6

SCRUTINY OF THE DEGREE OF KNOWLEDGE OF THE ENGLISH LANGUAGE:
The candidate's degree of knowledge of the English language is excellent, as it appears from his curriculum vitae and from the publications indicating the candidate as the first/last author and/or corresponding author.

THE SELECTION BOARD

Prof. SESTERHENN Jörn *(Chairman)*

Prof. FOSSATI Marco *(Member)*

Prof. GUARDONE Alberto Matteo Attilio (*Secretary)*

POLITECNICO MILANO 1863

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ATTACHMENT No. 2 to the FINAL REPORT

MERIT RANKING

SURNAME AND NAME	Overall score
AUTERI Franco	83

Milan, 22 January 2024

THE SELECTION BOARD

Prof. SESTERHENN Jörn *(Chairman)*

Prof. FOSSATI Marco *(Member)*

Prof. GUARDONE Alberto Matteo Attilio (*Secretary)*