

MANENTI FLAVIO – CURRICULUM VITAE ET STUDIORUM

PROFESSOR OF CHEMICAL PLANTS AND OPERATIONS

PERSONAL DATA

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Status	Married with Valeria Tarchini; 3 children (Leonardo, Rebecca, Riccardo)
Researcher Unique ID	Scopus ID: 23470382500

CURRENT POSITIONS

- **Italy** Professor of Chemical Plants, Politecnico di Milano, CMIC Dept. "Giulio Natta"
- **Germany** Alexander von Humboldt Professor of Chemical Plants and Operations, Technical University of Berlin
- **Europe** President-elect of the Computer Aided Process Engineering (CAPE) Working Party (at EFCE)
- **Italy (hobby)** UEFA-licensed and Federal Soccer Coach for the SGS Italia U13 National Team

EDUCATION & PAST POSITIONS

- **Adj. Full Professor** 2016-2017, Tomsk Polytechnic University, Dept. of Chemical and Nuclear Plants, Russian Federation
- **Ass. Professor** 2010-2015, Politecnico di Milano, CMIC Dept. "G. Natta"
- **Research Fellow** 2008-2010, Politecnico di Milano, CMIC Dept. "G. Natta"
- **Post-doc Fellow** 2008, Chemical Engineering Department, NTNU, Trondheim, Profs. Skogestad, Preisig
- **Fellowship (PhD Stud.)** 2005, IWR Dept., Interdisciplinary Centre for Scientific Computing, "Ruprecht-Karls" University of Heidelberg, Profs. Bock, Diehl
- **Ph. D., M. Sc.** Ph.D. and M.Sc. Degree in Chemical Engineering, Politecnico di Milano

SCIENTIFIC COMMITMENTS

- **PhD Committees**
 - Italy, 2016-Today Politecnico di Torino, 2 candidates; Alma Mater University, Bologna, 8 candidates
 - Denmark, 2016 Dept. of Chemical and Biochemical Engineering, Denmark T.U., Candidate: A. Anantpinijwatna
 - Finland, 2016 Department of Chemical Engineering, Abo Akademy, Turku, Candidate: C. Galletti
 - Germany, 2012, 2015-2018 DBTA Faculty, Technische Universität Berlin, Candidates: S. Kuntsche, R. Kraus, D.C. Lopez, A. Merchan
 - Norway, 2011, 2014, 2017 Department of Chemical Processes, NTNU, Trondheim, Candidates: A. Rafiee, J. Solsvik, M. Ostadi
- **Professorships**
 - Russia, 2016-2017 Department of Chemical and Nuclear Plants, Tomsk Polytechnic University
 - Germany, 2014-2018 Dynamic und Betrieb Technischer Anlagen (DBTA) Faculty, Technische Universität Berlin
 - Argentina, 2011-2013 Planta Piloto de Ingeniería Química (PLAPIQUI), Southern National University, Bahia Blanca
- **Lectures**
 - Appointed 2019 Plenary speaker – ECCE-12/ECAB-5 Congress, Firenze
 - UAE, 2017, 2018 Plenary Speaker – ICFMCE-17 Conference, Dubai; ICFMCE-18 Conference, Abu Dhabi
 - Italy, 2017 Plenary Speaker – ICHEAP-13 Conference, Milano
 - USA, 2016 Seminar – Process Systems Centre, Purdue University, Invitation: Prof. Reklaitis
 - Russia, 2016 PhD Course, Dept. Chemical and Nuclear Plants, Tomsk PU, Invitation: Profs. Goryunov, Kozin, Mikhalevic
 - USA, 2016 Seminar – TechnipFMC Houston, Invitation: Dr. P. Sharma
 - China, 2016 Plenary Speaker – World Carbon-to-X 2016, Beijing
 - Belgium, 2013 Lecturer – OPTEC lab, KU Leuven, Invitation: Profs. van Impe, Logist, M.Sc. Course: Process Control
 - Brazil, 2013 Process Engineering Dept., Unicamp, Invitation: Prof. M. Mori
 - Germany, 2011, 2013, 2015 Chemical Engineering Dept., TU Berlin, Invitations: Dr. F. Beuster, Prof. G. Wozny
 - Argentina, 2011 PLAPIQUI, Southern National university, Invitation: Prof. M. S. Diaz

HONOURS AND AWARDS

- **Alexander von Humboldt** Alexander von Humboldt Award for senior scientist, Berlin, Germany, 18.March.2014
- **Best lecturer award** Several best presentation awards at different international congress series (3 at ESCAPE, 1 at PRES)
- **Excellence in simulation** Simulation Science, Invensys, Lake Forest, California, USA, 09 August 2007
- **Z. Burianec Memorial** "Zdenek Burianec Memorial" Award, The 10th Congress on Process Integration, Modelling and Optimisation for Energy Saving and Pollution Reduction, Prague (CZ), 26 August 2007
- **Elsevier awards** Most cited papers of Computers & Chemical Engineering and Chemical Engineering Science
Most downloaded papers of Computers & Chemical Engineering

TEACHING

- **Politecnico di Milano**
 - Professor, 2016-today M.Sc.: Chemical Plants II
 - Professor, 2007-2016 M.Sc.: Chemical Process Dynamics and Control
 - Professor, 2014-2018 B.Sc.: Calculations for the Process Industry
- **Tomsk Polytechnic Univ.**
 - Professor, 2016-2017 Ph.D.: Process Dynamics and Control
- **Università dell'Insubria**
 - Adj. Professor, 2011-2012 M.Sc.: Chemical Plants
- **Industry**
 - Professor, 2016-Today Sotacarbo SpA, Graduate course, Thermal treatment of solid fuels
 - Professor, 2015 Austep SpA, Graduate course, Process Operations Management

LIABILITIES

- **Research Group** Sustainable Process Engineering Research (SuPER), Coordinator
Staff, Facilities 8 permanent staff, 7 labs (about 600 m², distillation, LV equilibrium, scrubbers, reactors)
- **Supervision** Ongoing: 3 postdocs, 7 PhD, 12 MSc, 3 BSc
Accomplished: 15 PhD/postdocs, 100+ MSc, 20+ BSc
- **Recent Public Funding**
 - COWBOY, 2016-2018 Biogas to methanol, Fond. CARIPL0, 0.3 M€, Principal Investigator (PI)
 - BioMAN, 2014-2016 Bio-remediation of the Chemical District of Mantova, Fond. CARIPL0, 0.5M€; PI
 - CITY WISE-NET, 2013-2015 Integrated urban waste and wastewater treatment; Fond. CARIPL0 & Reg. Lombardia, 4M€; WP Leader
 - BIOREFILL, 2013-2015 Biorefinery Integrated Lombardy Labs, Fond. CARIPL0, 1.6M€; PI
 - LIDIA, 2012-2016 Lignocellulosic Dicarbossilic Acids, Green Chemistry National Cluster, 10.88M€; WP Leader
- **Private Funding** Coordinator of 30+ industrial projects on CAPE topics in the last 5 years (see attachment)
- **International Agreements**
 - France, 2018-Today Scientific Coordinator, Joint PhD Programme, Politecnico di Milano – ENSIACET Toulouse
 - Belgium, 2014-Today Scientific Coordinator, Double PhD Programme, Politecnico di Milano – KU Leuven
 - USA, 2013-Today Scientific Coordinator, Double PhD Programme, Politecnico di Milano – Purdue University
 - Hungary, 2013-2015 Scientific Coordinator, Bilateral Agreement, Politecnico di Milano – University of Pannonia
 - Brazil, 2012-Today Rector's Delegate, Bilateral Agreement, Politecnico di Milano – Unicamp
 - UK, 2012-2015 Scientific Coordinator, Bilateral Agreement, Politecnico di Milano – University of Bradford
 - Argentina, 2011-2013 Scientific Coordinator, Bilateral Agreement, Italia – Argentina
- **(Guest) Editor/Board** Peer-reviewed journals (ISI/Scopus Journal): Energy (IF 5), Journal of Cleaner Production (IF 6)
- **Executive Boards**
 - CAPE WP, 2018-Today President Elect of Computer Aided Process Engineering (CAPE) Working Party (www.wp-cape.eu)
 - EFCE, 2016-Today Charity Trustee at the European Federation of Chemical Engineering (www.efce.info)
 - CAPE WP, 2014-Today Italian Delegate of the CAPE (Computer Aided Process Engineering) Working Party (EFCE)
 - Italy, 2015-Today Executive Board of the Italian Association of Chemical Engineers (AIDIC)
 - Brazil, 2015-Today Consultant of Chemical Plants for the Research National Council (CNPq)
 - Germany, 2015-Today Panel Member of DAAD (German Service for Academic Exchange)

SCIENTIFIC INDICES

- Scopus Since 2008, 248 papers, 1705 citations, Hirsch Index 21 (December the 06th 2018)
- Scholar Since 2008, 331 papers, 2192 citations, Hirsch Index 25 (December the 06th 2018)
- Books Series of 5 books edited Wiley-VCH "... for the Chemical Engineer: Solving Numerical Problems"

TECHNOLOGY TRANSFER

- Patents PoCi – New materials for sport training, Priority: 102017000073797, Sep 2017
Biogas-to-liquids; Priority: 102017000073797, June 2017
Concentrating solar reactor-receiver, Priority: 102017000001505, Jan 2017
Process for reducing CO₂ and producing syngas, WO 2015/015457 A1
Process to produce hydrogen, WO 2015/015463 A1
New process for air enrichment, WO 2014/161713
Plant to exploit geothermal energy, MI2012A001028, 2012
Use of geothermal energy for seawater desalination, MI2012A001030, 2012
- Trademarks AG2S™ process – Acid Gas to Syngas™ technology
AG2L™ process – Acid Gas to Liquid™ technology
RobOpt™ technique – Robust Optimization technique (for design and operations)
BIG SQUID™ module - BioGaS-to-ILQUID™ technology
- Process licensor Acid gas to syngas; Acid gas to methanol; Acid gas to fuels; Acid gas to power; Acid gas to hydrogen
Biogas-to-methanol; Biogas-to-DME; Biogas-to-Acetic Acid

HOBBY

- Soccer
 - 2018-Today U15 Federal Soccer Coach at the Centro Federale Tecnico, SGS Nazionale Italiana
 - 2016 Coaching activities with Arsenal Academy for U15 categories
 - 2014-Today Lecturer – UEFA licensed coach candidates course
 - 2014-Today Executive Board of the Italian Association of Soccer Coaches (Lombardy Section)
 - UEFA, 2013-Today UEFA licensed soccer coach
 - Coach, 2012-Today Coach of U15 category at Virtus Bergamo 1909 (formerly, AlzanoCene 1909)
 - Honours 2012-2017, League winner
Virtus Bergamo – U15 Italian Champions in 2015 and 2017
Gazzetta Cup National finalist in 2016 at the Stadio Olimpico, Roma
Fairplay Cup regional winner in 2015 and 2017
Winner of several International Cup Competitions
 - FIGC, 1993-2006 Soccer player, 3 promotions to higher divisions, Fairplay cup in 1996

Milano, December the 06th 2018



(Flavio Manenti)

Attachment No. 1: INDUSTRIAL ACTIVITIES

According to Italian and international laws, I grant the treatment of the personal data contained in this resume.

ATTACHMENT NO. 1: INDUSTRIAL ACTIVITIES

1. SAIPEM - ONGOING (2018 – 2019)
Urea Zero Emissions
Plant: Fertilizers - Sites: EPC activities
2. VISCOLUBE - ONGOING (2017 – 2019)
AG2S™ application to oil refineries / hydrofinishing
Plant: Lubricants - Sites: PIEVE FISSIRAGA, CECCANO
3. BITOLEA - ACCOMPLISHED (2018)
Techno-feasibility study for methyl-acetate process
Plant: Lubricants - Sites: PIEVE FISSIRAGA, CECCANO
4. TECHNIPFMC - ACCOMPLISHED (2017 – 2018)
AG2S™ application to oil refineries and gas fields
Plant: oil&gas - Site: KAZAKHSTAN, SAUDI ARABIA
5. SIIRTECNIGI - ONGOING (2018-2019)
Reactive CFD
Plant: LNG/SRU - Site: EPC activity, ITALY
6. RADICI CHIMICA SPA - ACCOMPLISHED (2016)
Pre-feasibility of industrial processes
Plant: Chemical - Site: Novara, ITALY
7. TECHINT SPA - ONGOING (2016-2021)
Robust optimization
Plant: oil refinery - Site: different sites, ITALY, IRAN, EAST EU, RUSSIA
8. RADICI CHIMICA SPA - ACCOMPLISHED (2016)
Optimization of distillation unit
Plant: downstream/amine - Site: Novara, ITALY
9. SOTACARBO - ONGOING (2015-2021)
Syngas production from acid gases and application to the S-rich coal gasification
Plant: coal/biomass gasification - Site: Carbonia, ITALY
10. SARTEC - ACCOMPLISHED (2015-2018)
Pilot-scale project for the syngas production from acid gases
Plant: flue gas plants - Site: Sarroch, ITALY
11. VMGe – ACCOMPLISHED (2015-2016)
Rigorous simulation of sulfur recovery units
Plant: Claus - Site: Tecnimont plants, WO
12. AUSTEP SpA - ACCOMPLISHED (2014-2016)
Mass and energy data reconciliation and predictive performance monitoring
Plant: Waste water treatment - Site: ACSDOBFAR, ITALY
13. MOSSI & GHISOLFI BIOCHEMTEX SpA - ACCOMPLISHED (2013-2015)
Multi-scale modeling of the catalytic production and purification of bio-based glycols of industrial interest from polyols hydrogenolysis
Plant: Biorefinery - Site: Crescentino, ITALY
Activation of funded PhD

14. FBM HUDSON ITALIANA SpA - ACCOMPLISHED (2013)
Detailed simulation of thermal reactor furnace for SRUs for design purposes
Plant: Claus process - Site: Antipisnky, RUSSIA

15. DOW AGROSCIENCE Srl - ACCOMPLISHED (2013-2014)
Dynamic Simulation and Optimization of Batch Distillation Column
Plant: Batch amine distillation - Site: Mozzanica (BG), ITALY

16. MOSSI & GHISOLFI CHEMTEX SpA - ONGOING (2013-2018)
Development of Conceptual Layout and Industrial scale-up for LIDIA Biorefinery
Plant: Biorefinery - Site: ITALY
Process steady-state and dynamic simulation for industrial scale-up purposes for the techno-economical assessment of LIDIA biorefinery (project of the National Cluster Green Chemistry, in collaboration with Engico, Entsorga, Spike
Renewables, Politecnico di Torino, Politecnico di Bari, Università di Torino)

17. TECHINT SpA - ACCOMPLISHED (2012-2013)
Characterization of the reduction process of SO₂ using methane
Plant: Sulfur recovery unit - Site: Norilsk, RUSSIA

18. DANIELI SpA - ACCOMPLISHED (2012-2013)
Gas-solid modeling of furnace coking and decoking phenomena
Plant: Preheater of natural gas - Site: Monterrey, MEXICO

19. WHIRLPOOL EUROPE Srl - ONGOING (2012)
Dynamic simulation of the transformation processes of food matrices subject to thermal treatments
Site: ITALY
Activation of funded PhD

20. DG IMPIANTI - ACCOMPLISHED (2011-2012)
Modeling of non-conventional upstream units
Plant: Refinery - Site: Dijla, SYRIA

21. ALTRAN SpA/SIEMENS GmbH/PEMEX - ACCOMPLISHED (2011-2012)
DCS for oil&gas
Plant: Oil refinery - Site: Salamanca and Tula, MEXICO

22. LINDE GAS Srl - ONGOING (2011-2014)
SCOOP Technology for the Corporate Bulk Supply Chain Management
Plant: Air separation units, Hydrogen - Sites: Trieste, Bologna, Terni, ITALY
Activation of funded PhD

23. LINDE GAS Srl - ACCOMPLISHED (2011)
Assessment of existing Level-3 solutions
Plant: Air separation units, Hydrogen - Sites: Terni, Trieste, Bologna, Milazzo, ITALY

24. ENI SpA - ACCOMPLISHED (2011)
Process dynamic simulation
Plant: Natural gas - Site: Kashagan, KAZAKHSTAN

25. POLIMERI EUROPA-ENI SpA/HONEYWELL Inc - ACCOMPLISHED (2011)
Online application of rigorous models
Plant: Oil refinery, petrochemical - Site: Porto Marghera, ITALY

26. HONEYWELL Ltd - ACCOMPLISHED (2011)
Online application of rigorous models

27. ALTRAN SpA/SIEMENS GmbH - ACCOMPLISHED (2010-2011)

Value proposition of DCS product line to address the Italian refinery market
Site: Raffinerie di Roma, API Falconara, ISAB Impianti Sud, ITALY

28. CHEMPROD Srl/LUKOIL Inc - ACCOMPLISHED (2010)

Oil refinery process simulation (hydroprocessing)

Site: Khabarovsk Refinery, RUSSIA

29. INVENSYS OPERATIONS MANAGEMENT Inc USA - ACCOMPLISHED (2010)

Dynamic Optimization

Plant: large-scale cracking furnace

30. ERG ENERGY SpA/TECHNIP-KTI SpA - ACCOMPLISHED (2010)

Robust Data Reconciliation

Plant: Oil refinery - Site: Priolo Gargallo (SR), ITALY

31. SAIPEM SpA - ACCOMPLISHED (2009-2010)

Process Dynamic Simulation

Site: Nghi Son, VIETNAM

32. CHEMPROD Srl/HONEYWELL Inc - ACCOMPLISHED (2009)

Plant: Ammonia (Processes: H2S MDEA-treatment, Air Compression Train, Hg Removal, etc.)

Site: QAFCO V, QATAR

33. SAIPEM SpA - ACCOMPLISHED (2009)

Plant: Acid Gas Injection Unit - Site: Confidential

34. TERMOKIMIK SpA/ENEL SpA - ACCOMPLISHED (2009)

Simulation for verification purposes of the MEA process for the CO2 sequestration in the power plant

Plant: Coke Power Plant - Site: Brindisi, ITALY

35. TECHNIP-KTI SpA/GALP ENERGIA Ltd - ACCOMPLISHED (2008-2009)

Integrating HYSYS, AMOCO, and VBA for the off-line nonlinear data reconciliation based on rigorous models

Plant: Sines Oil Refinery, Claus Process - Site: Porto, PORTUGAL

36. CHEMPROD Srl/FOSTER WHEELER ITALIANA Ltd - ACCOMPLISHED (2008-2009)

Stripper design and steady simulation using Electrolyte and specific thermodynamic packages

Plant: H2S/Oil Stripper

37. TECHNIP-KTI SpA/ERG SpA - ACCOMPLISHED (2008-2009)

Developing C++ classes for the on-line data reconciliation and the outlier detection based on PRO/II simulation of the plant

Plant: ERG refinery, Claus Process - Site: Priolo Gargallo (SR), ITALY

38. SAUDI ARAMCO Inc/SNAMPROGETTI SpA - ACCOMPLISHED (2007)

Development of the mass and energy data reconciliation system on KUC, KGC, KCC processes; Data coaptation and node condensation; Definition of the performance monitoring and the production accounting systems

Plant: LNG - Site: Khurais, SAUDI ARABIA

39. APCTECH Srl - ACCOMPLISHED (2007)

Dynamic simulation and training scenarios for grade changes, load changes, pressure peaks, plant-wide control, emergency shutdown procedures

Plant: Three-stages Let-down

40. DEPQUEST Srl/CIMPROGETTI SpA - ACCOMPLISHED (2007 – 2008)

Kinetic modeling and reactor characterization; first-principle modelling; development of a user-friendly interface for the final user

Plant: Cement hydration - Site: Tunisi, TUNISIA

41. INVENSYS PROCESS SYSTEMS Inc - ACCOMPLISHED (2006)

Data reconciliation, Performance monitoring, Scheduling; Setup and implementation of the daily production accounting;

Rigorous modelling of final product storages (apparent volume, floating roof, foam)

Plant: Oil refinery - Site: Samir, MOROCCO

42. INVENSYS PROCESS SYSTEMS Inc/YOKOGAWA MIDDLE-EAST Ltd - ACCOMPLISHED (2006)

Support in modeling, data reconciliation, and outlier detection for Yokogawa Exaquantum system

Plant: LNG - Site: Al Ruwais, UNITED ARAB EMIRATES

43. AIR LIQUIDE SpA - ACCOMPLISHED (2006)

Supply Chain Management, Planning, Enterprise-wide (multisite) optimization of industrial gases production and distribution in the north of Italy, Optimization of branched network and pipelines for gas oxygen transportation

Plant: Air separation - Sites: Limito and San Nazzaro de' Borgundi, ITALY

44. APCTECH Srl - ACCOMPLISHED (2005)

Dynamic simulation, OTS, Development of the operator training simulation, Development of the control system, Emergency shutdown procedures

Plant: LNG

45. TECHNIP-KTI SpA - ACCOMPLISHED (2004)

Development of the detailed kinetic models for sulphur compound pyrolysis and oxydation, modelling of the reaction furnace

Plant: Oil refinery, Claus process - Site: Nanjing (CHINA), Mesajeed (UAE), Mumbai (INDIA), Suez (EGYPT)