PERSONAL INFORMATION Marialuisa Volta

Department of Mechanical and Industrial Engineering
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https://www.unibs.it/en/ugov/person/494
Gender female | Nationality Italian

Current position

Full professor of Control Systems (2016-present), leader of the **Integrated assessment modeling and control of dynamic systems** (https://iamc.unibs.it/) research unit (2008-present) and of the **Transition Intelligence Lab** (https://transitionslab.unibs.it/) (2023-present) at the Department of Mechanical and Industrial Engineering, University of Brescia (IT).

Research interests

Non linear system modelling and control; Machine Learning and Data mining; Decision modelling: Multi-objective, cost-effective, cost-benefit, multi-criteria modelling, Integrated Assessment Modelling. Health impact modelling assessment.
Air quality modelling. Efficient low carbon, air pollution and health policies including energy, end-of-pipe and behavioural mitigation measures. Energy transition modelling. Energy production and consumption policies (automotive/mobility, industrial, agriculture, hard-to-abate sectors).

WORK EXPERIENCE

Previous positions

2005-2016	Associate Professor of Control Systems, University of Brescia (IT)
1999-2005	Assistant Professor of Control Systems, University of Brescia (IT)
April - October 1999	Research Fellow, Politecnico di Milano (IT)

EU projects and initiatives

2023-2026	Unit leader: European Linkage of Initiative from Science to Action in Health (Elisah), EU4Health (The ELISAH project aims to reduce the burden of breast cancer by acting on modifiable risk factors (environmental pollution, built environment, life style).
2017-2018	Third part: CAMS use case on air quality planning in urban areas using the ATMOSYS-CAMS application ECMWF/COPERNICUS/2017/CAMS_95f_VITO (Assessment of ATMOSYS-CAMS applications in urban areas in the framework of Copernicus activities)
2012-2015	Project coordinator: EU FP7 APPRAISAL, Air Pollution Policies foR Assessment of Integrated Strategies At regional Local scales, EU FP7 308395. Designing an Integrated Assessment Modeling framework for efficient AQ&LC policies. Communicating to key stake-holders and policy-makers the state-of-the-art scientific knowledge on emission abatement assessment.

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2010-2013	Unit leader, scientific coordinator: OPERA (Operational Pollution Emission Reduction Assessment), EU LIFE09ENV/IT/092 - Best Environmental Life projects Award 2015 (EC DG-ENV). Defining and implementing an Integrated Assessment tool (RIAT+) to support regional/local authorities in the designing air quality policies.
2009-2010	PI: RIAT (Regional Integrated Assessment Tool), EC JRC 384364. Implementing a Decision Support System to define air quality strategies at sub-national scale, assessing economic and health impacts.
2009-2010	Unit leader: POMI - the Po Valley Modelling Intercomparison, EC JRC (http://aqm.jrc.it/POMI/).
2008-2010	MoU: University di Brescia - International Institute for Applied System Analysis (AT)
2005-2010	Associate partner: EU NoE ACCENT - Atmospheric Sustainability: Mesoscale secondary pollution multi-objective control, EC DG-RTD FP6. Promoting a common European strategy for research on atmospheric composition change, optimize two-way interactions with policy-makers and the general public.
2002-2004	Unit leader: CITYDELTA - CAFE, EC JRC (http://aqm.jrc.it/citydelta/)

National projects

2025- present	Participant: FOSFORO, POR-FESR Regione Lombardia (IT). Technologies to recover phosphorus and other nutrients from wastewater sludge, reducing waste and impacts while turning residues into resources and new materials within a circular-economy approach.
2023-2025	Participant: MOST (National Centre for Sustainable Mobility). Nationwide R&D and industry ecosystem to develop and deploy greener and more digital automotive/mobility solutions (RRP).
2021-2023	Project coordinator: Data science to reduce agri-food impact on air quality in the Po Valley (AgriAir). Fondazione Cariplo (IT) [peer reviewed]
2019-2022	Unit Leader: BIOMASS Hub. Innovation Hub. POR-FESR Regione Lombardia (IT). Circular economy of organic waste: air quality, GHG emission, health impact assessment of biomethane and hydrogen production and use in Lombardy Region [peer reviewed]
2016-2018	Project coordinator: ATHLETIC (Air qualiTy and Life styles: HeaLTh Cobenefits), University of Brescia (IT). Modelling assessment of health (direct and indirect) co-benefits due to behavioral changes (soft mobility, animal protein intake)
2006-2010	Team Co-Leader and WP Leader: QUITSAT, Italian Space Agency (I/035/06/0). Air Quality (AQ) monitoring, forecast and planning through the fusion of observations coming from polar and geostationary satellite sensors and ground-based data collected by DOAS spectrometry, multispectral solar radiometry, lidar techniques, chemical transport modeling, Integrated Assessment Modeling [peer reviewed]

Collaborative research projects at the University of Brescia

2025	PI: Air quality modelling for the Po Valley assessing ZPAP and 2024/2881 EU Directive targets. Polis Lombardia (IT).
2023-2026	PI: The Life Cycle Assessment (LCA), sustainability assessment, and integrated assessment of air quality impact in the Lombardy region of an innovative high-efficiency micro-cogeneration technology, MISE "Accordi per l'Innovazione" 2022. Principal Investigator IVAR (IT).

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2019-2022	PI: Circular economy of organic waste (sludge): air quality, GHG emission, health impact assessment in Lombardy Region. Project FANGHI Innovation Hub. POR-FESR Regione Lombardia (IT). Principal Investigator A2A (IT).
2018-2019	PI: models identification and validation based on CTM results, EC JRC n.C686554.X0. *Artificial intelligence techniques to identify source-receptor models for Europe as a component of an AQ Integrated Assessment Model.*
2014-2015	PI: VALUTA (Assessing the impact and the economic value of the Lombardia Region Air Quality Plan), ARPA Lombardia (IT). *Modelling assessment of the air quality, GHG emissions, health impacts due to the implementation of the Lombardy Region Air Quality plan*, ARPA Lombardia.
2010-2011	PI: NINFA. Design of a modelling system to assess the emission reduction costs in Emilia Romagna, ARPA Emilia Romagna (IT) *Design of a modelling system to assess the emission reduction costs in Emilia Romagna,* ARPA Emilia Romagna (IT)

National and international organisations

2024-present	Member of the Scientific Advisory Board on Air Quality - Regione Lombardia (IT)
2022-present	Member for University of Brescia at the EU Biomethane Industrial Partnership - Task force 5 Research, Development and Innovation needs
2021-present	Member of the Global Air Pollution and Health Technical Advisory Board (World Health Organization)
2020-present	Chair of the Technical Committee TC8.3 "Modelling and Control of Environmental Systems", IFAC - International Federation of Automatic Control
2020-present	Member of the Air Quality Observatory - Municipality of Brescia (IT)
2019-present	Research Advisor of Clean Air work group at the Lombardy Energy Cleantech Cluster, (IT)
2018-present	EU-TAIEX expert. Topics: Air, Climate change, Macro-regional strategies, Regional development, Sustainable urban development
2018-present	REPRISE (Register of Expert Peer-Reviewers for Italian Scientific Evaluation) expert, Italian Research Ministry. Topics: Fundamental research, Competitive industry and better society research, Scientific culture spread.
2017	Member of the Expert panel on Air Quality Directive (EU2008/50) review - European Court of Auditors, Luxembourg
2015-2020	Vice-chair of the Technical Committee TC8.3 "Modelling and Control of Environmental Systems", IFAC - International Federation of Automatic Control
2015-2022	Scientific board of B+ Labnet, Laboratory for environmental health and sustainability, University of Brescia
2013-2016	Member of the Advisory board of EU FP7 SEFIRA (Socio-economic implications for individual responses to Air Pollution Policies in EU +27) project, EU FP7 603941
2012-present	EU Project reviewer/rapporteur, European Commission Directorate Research and Innovation
2012-present	Member of EU FAIRMODE (Forum for Air Quality Modeling), AQ management (http://fairmode.jrc.ec.europa.eu)
2006-present	Member of the UNECE - Convention on Long-range Transboundary Air Pollution, Task Force on Integrated Assessment Modelling

Academic Appointments / Institutional Roles

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2025-present	Member of the Research Board of the University of Brescia (IT)
2024-present	Research coordinator of the Department of Mechanical and Industrial Engineering, University of Brescia (IT)
2022-present	Coordinator of the PhD program in Energy Transition and Sustainable production Systems, University of Brescia (IT)
2021-2023	Member of the National Scientific Qualification Committee (Abilitazione scientifica Nazionale, ASN, ING-INF/04 AUTOMATICA). Italian Ministry of University (IT)
2015-2022	Scientific board of B+ Labnet, Laboratory for environmental health and sustainability, University of Brescia (IT)

EDUCATION AND TRAINING

PhD degree in Information Engineering (EQF level 8) University of Brescia (Italy)
Laurea degree in Electrical Engineering (EQF level 7) Politecnico di Milano (Italy)

PERSONAL SKILLS AND COMPETENCES

Communication skills	Scientific presentations to large audiences. Science communication and dissemination to policy makers, stakeholders and general public. Course teaching. Author of several commentaries on various print media.
Organisational/ managerial skills	Project management and capacity planning. Research planning. Management of working teams. Management of scientific communication and dissemination events. Organization of conferences and scientific committees. Project communication strategy management.
Technical skills and competences	Use of office and mathematical software suites. Development of optimization and forecasting algorithms and software. Design and implementation of decision support systems.

SELECTED PUBBLICATIONS

Sandrini, G., Zecchi, L., Candela, A., Arrighini, M.F., Magri, P., Chindamo, D., Gadola, M., Volta, M. Climate and air quality co-benefits of electric vehicle fleet lightweighting. A modelling assessment (2025) Energy, DOI: 10.1016/j.energy.2025.138938

Zecchi, L., Arrighini, M.F., Guariso, G., Volta, M.. Efficiently supporting decision-making in a multi-pollutant environment (2025) Journal of Environmental Management, DOI: 10.1016/j.jenvman.2025.128056

Zecchi, L., Arrighini, M.F., Marchesi, C., Donato, F., Volta, M. Progress and policies to achieve the zero pollution action plan and EU 2024/2881 PM2.5 targets in Northern Italy (2025) Scientific Reports, DOI: 10.1038/s41598-025-17176-x

De Angelis, E., Carnevale, C., Di Marcoberardino, G.D., Turrini, E., Volta, M. Low Emission Road Transport Scenarios: An Integrated Assessment of Energy Demand, Air Quality, GHG Emissions, and Costs (2022) IEEE Transactions on Automation Science and Engineering, 19 (1), pp. 37 - 47, DOI: 10.1109/TASE.2021.3073241

De Angelis, E., Renzetti, S., Volta, M., Donato, F., Calza, S., Placidi, D., Lucchini, R.G., Rota, M. COVID-19 incidence and mortality in Lombardy, Italy: An ecological study on the role of air pollution, meteorological factors, demographic and socioeconomic variables (2021) Environmental Research, DOI: 10.1016/j.envres.2021.110777

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Turrini, E., Carnevale, C., Finzi, G., Volta, M. A non-linear optimization programming model for air quality planning including co-benefits for GHG emissions(2018) Science of the Total Environment, 621, pp. 980 - 989, DOI: 10.1016/j.scitotenv.2017.10.129
Cecchel, S., Chindamo, D., Turrini, E., Carnevale, C., Cornacchia, G., Gadola, M., Panvini, A., Volta, M., Ferrario, D., Golimbioschi, R. Impact of reduced mass of light commercial vehicles on fuel consumption, CO2 emissions, air quality, and socio-economic costs (2018) Science of the Total Environment DOI: 10.1016/j.scitotenv.2017.09.081
Guariso, G., Maione, M., Volta, M. A decision framework for Integrated Assessment Modelling of air quality at regional and local scale (2016) Environmental Science and Policy. DOI: 10.1016j.envsci.2016.05.001

ADDITIONAL INFORMATION

Awards	BASALTO project, Oscar Masi Award for Innovation, 2017 OPERA LIFE09ENV/IT/092 project - Best Environmental Life projects Award 2015 (EC DG-ENV)
Publications	ORCID: https://orcid.org/0000-0001-8924-6469 SCOPUS: AU-ID 6602300389
Teaching	Bachelor and master degree courses (University of Brescia, IT): Dynamic system analysis and control, Modelling and simulation, Environmental system modeling and control, Decision theory and modeling.
PhD tutoring	Supervising PhD students in PhD programmes in Technology for Health and in Computer Science, Engineering and Control Systems at University of Brescia (IT)

Brescia, December 15 2025.

Marialuisa Volta

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