PERSONAL INFORMATION

Fulvio Re Cecconi

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Sex Male | Date of birth 29/06/1968 | Nationality Italian

EDUCATION AND TRAINING

19/05/1998

PhD building engineer

Politecnico di Milano – Dipartimento di Ingegneria dei Sistemi Edilizi e Territoriali

Title of the thesis: "Metodologie e strumentazioni per previsione della durabilità di componenti edilizi per edifici scolastici ai fini della loro programmazione manutentiva" (Methods and tools for service life prediction of school building components aimed to maintenance planning)

23/02/1994

MSc civil engineer

Politecnico di Milano

Title of the thesis: "Proposta di un metodo di ottimizzazione della scelta progettuale delle chiusure verticali opache per un edificio destinato ad uffici e laboratori" (Tool to optimize design choices for office and lab façades)

WORK EXPERIENCE

Fulvio Re Cecconi is an expert in building technology and construction management. He has been active as project and construction manager, planning director and construction safety manager. After 15 years of professional activity, he moved to university, where he has been lecturer on building technology, maintenance management and project and construction management. Currently, he is active on the subject of Asset Management and Whole Life Performance of Building. In this area, he has worked extensively exploring the opportunities of digitization of the built environment and artificial intelligence in asset management. From January 2022 Fulvio has been the head of the Bachelor in Building engineering at Politecnico di Milano

2014 - now
Associate professor for the *School of Architecture Urban Planning Construction Engineering* at the *Politecnico di Milano*, enrolled in the *Dept. of Architecture, Built Environment and Construction Engineering*

1998 - 2014
Researcher for the 6th School of Engineering of the Politecnico di Milano, enrolled in the *Dept. of Architecture, Built Environment and Construction Engineering*

2010 - 2020
Scientific secretary of the CIB working commission W080 "Prediction of Service Life of Building Materials and Components"

2009 – 2015
Editor of "Ingegneri" a quarterly specialized magazine published by Maggioli Editore and encompassed in ANVUR scientific journal list for sector 08/C1

2004 - 2011
Co-Editor of "Rivista del Consulente tecnico" a quarterly specialized magazine published by Maggioli Editore

2008
Research grant at Politecnico di Milano: experimental assessment of building components performances

1998 - 2002
Research grant at Politecnico di Milano: durability, maintainability and constructability of building components

1994- 2008
Consultant on several public and private construction projects

RESEARCHES

2020 - 2022

Heritage BIM-enhancing digital competences of students of Architecture

Co-funded by the Erasmus+ Programme of the European Union Heritage BIM aim at growing BIM capability in students of Architecture faculties by the creation of a syllabus on how to teach BIM for cultural heritage buildings

2019 - 2022

BE S2ECURe - (make) Built Environment Safer in Slow and Emergency Conditions through behavioUral assessed/designed Resilient solutions

BE S2ECURe is co-founded by the Italian Ministry of Education, University and Research (MIUR) as a research projects of national interest (PRIN). The project aims at overcoming the actual approach to the risk analysis based on separated and stand-alone analysis of the different natural or human-induced events. The project proposes a holistic multi-hazard risk reduction methodology merging in one vision the slow and immediate emergency events.

2019

Predisposizione di un piano di manutenzione tipo per immobili e unità immobiliari a destinazione residenziale

The research, funded by a private company, continues and concludes the work done the year before on the building logbook for Assimpredil-ANCE. The aim is to develop a standardized maintenance plan for residential buildings.

2018

Predisposizione della struttura di un Libretto digitale del Fabbricato

The research, funded by a private company, aims at developing a digital logbook of a building and at using this logbook to collect and sort information relating to the Assimpredil-ANCE headquarters.

2017-2019

ELISIR - Energy, Life Styled and Seismic Innovation for Regenerated Buildings

Business Models and Punctual Innovations for Urban Regeneration as part of the Digitalisation of the Built Environment, R&D+S&I Smart Living, R.L. 26/2015 Widespread creative and technological manufacture 4.0 (Local PI, Funding source: Lombardy Region). WP: design and experimental validation of an "intelligent fenestration system". The objective of the activity is to develop an innovative fenestration system capable of: a) detecting the surrounding environmental conditions and the habits of the users; b) dynamically operating in response to energy and light variations ;c) interfacing with the heating systems' control logic (the window becomes a thermostat); d) providing security and health to the environment

2012 - 2015

BHIMM - Built Heritage Information Modelling/Management

BHIMM is co-founded by the Italian Ministry of Education, University and Research (MIUR) as a research projects of national interest (PRIN). The main aim of the research project is to introduce a new and innovative methodology, based on the so-called Building Information Modeling (BIM), capable of improving the current sustainable preservation policies of the architectural heritage, here including monitoring, management and retrofit.

2011 - 2014

INNOVance – Industria 2015

INNOVance research project, co-funded by the Italian Ministry of Economic Development, wants to push a radical innovation into the Italian Construction sector by creating the Italian construction database, containing information about products, works, spaces, etc., along the whole constructions service life. This research wants to improve the efficiency in using and maintaining objects information, which is achieved by linking continually updated extensible life-cycle objects data to independent software, by using Building Information Models (BIM), throughout the entire life cycle.

2012 - 2013

Building logbook – Development and verification of quality and efficiency indexes for building and/or building components assessment

The one year research project, funded by Opificium - Consiglio Nazionale Periti Industriali, led to a quick but accurate building survey procedure and some KPIs to gather and re-elaborate data to rate buildings (and their parts).

2003-2005

Metodologie di progettazione e valutazione della durabilità dei componenti edilizi in processi di produzione sostenibili: valutazioni sperimentali di durabilità standard e loro correzioni per l'impiego del componente in specifiche condizioni di utilizzo

finalizzate alla programmazione della manutenzione degli edifici

Co-founded by the Italian Ministry of Education, University and Research (MIUR) as a research projects of national interest (PRIN), the project aimed to develop experimental method for reference service life prediction of building components and design tools to modify the RSL into estimated service life for building façade maintenance planning

2001 - 2003 Reingegnerizzazione dei processi costruttivi e gestionali per gli interventi edilizi

Co-founded by the Italian Ministry of Education, University and Research (MIUR) as one of the research projects of national interest (PRIN), the project aimed to develop new tools to manage construction and maintenance of building.

2000 Gara di appalto per i servizi di ricognizione del patrimonio immobiliare di edilizia residenziale civile, economica e popolare del Comune di Milano

The research, funded by the Municipality of Milano, aimed at reviewing the tender documents for the survey of social housing owned by the Municipality.

PUBLICATIONS

BOOKS

M. Antonini, E. Berlini, L. Mussinelli, F. Re Cecconi (2020). Progettare strutture in acciaio, V Edizione. Maggioli editore, Santarcangelo di Romagna (RN)

M. Fiori, F. Re Cecconi (2018). Impianti idrico-sanitari, di scarico e di raccolta delle acque nell'edilizia residenziale. Calcoli e dimensionamenti, materiali, esecuzioni e collaudi. II Edizione. Maggioli editore, Santarcangelo di Romagna (RN)

Di Giuda G., Maltese S., Re Cecconi F., Villa V. (2017). Il BIM per la gestione dei patrimoni immobiliari. Linee guida, livelli di dettaglio informativo grafico (LOD) e alfanumerico (LOI). p. 1-320, Milano: Ulrico Hoepli spa, ISBN: 9788820381639

Dejaco M.C., Re Cecconi F., Maltese S., (2017) Il libretto del fabbricato. Maggioli Editore. Santarcangelo di Romagna (RN)

S. Lupica Spagnolo, D. Pasini, A. Pavan, B. Daniotti, F. Re Cecconi, E. Oliveri, R. D'Alessandro, A. Di Fusco, M. Pola, P. Rigone, (2017) L'ottimizzazione del processo edilizio attraverso una gestione efficiente delle informazioni: classificazione, codifica e schede tecniche digitali, EdilStampa S.r.l., ISBN 978-88-7864-121-1

A. Pavan, S. Lupica Spagnolo, B. Daniotti, F. Re Cecconi, M. Mancini, V. Caffi, (2017) La piattaforma digitale nazionale INNOVance a supporto della filiera delle costruzioni, EdilStampa, ISBN 978-88-7864-120-4

Re Cecconi F., Marcon F. (2012). Manutenzione e durata degli edifici e degli impianti. Maggioli Editore. Santarcangelo di Romagna (RN)

M. Fiori, F. Re Cecconi (2011). Impianti idrico-sanitari, di scarico e di raccolta delle acque nell'edilizia residenziale. Calcoli e dimensionamenti, materiali, esecuzioni e collaudi. Con CD-ROM. Maggioli editore, Santarcangelo di Romagna (RN)

Re Cecconi F., Antonini M. (2012). Manuale del collaudo e dei controlli tecnici. Maggioli Editore, Santarcangelo di Romagna (RN)

Re Cecconi F., Cerutti A. (2011). Verifica e validazione del progetto esecutivo. Maggioli, Santarcangelo di Romagna (RN)

F. Re Cecconi, M. Frassinelli, A. Mainini (2011). Il progetto esecutivo degli edifici in muratura. Maggioli Editore, Santarcangelo di Romagna (RN)

B. Daniotti, F. Re Cecconi (2010). Test methods for service life prediction. CIB International Council for Building Research and Information, Rotterdam

F. Re Cecconi, E. De Angelis (2010). Guasti in edilizia. Maggioli Editore, Santarcangelo di Romagna (RN)

M. Fiori, F. Re Cecconi (2010). Impianri idrico sanitari. Maggioli Editore, Santarcangelo di Romagna (RN)

F. Re Cecconi, M. Antonini, L. Mussinelli (2010). Guida al progetto di strutture in acciaio. Maggioli Editore, Santarcangelo di Romagna (RN)

M. Fiori, F. Re Cecconi (2010). Impianti di raccolta e scarico acque. Maggioli Editore, Santarcangelo di Romagna (RN)

F. Re Cecconi, M. Antonini (2010). Acciaio: calcolo pratico agli stati limite. Maggioli Editore, Santarcangelo di Romagna (RN)

F. Re Cecconi, A. G. Mainini, M. Antonini (2009). Dettagli esecutivi. Banca dati dei nodi costruttivi di strutture, facciate, coperture, serramenti. Maggioli Editore, Santarcangelo di Romagna (RN)

F. Re Cecconi, M. Abbatemarco (2009). Il project financing nelle opere pubbliche. Maggioli Editore, Santarcangelo di Romagna (RN)

M. Fiori, F. Re Cecconi (2008). Impianti idrico-sanitari, di scarico e di raccolta delle acque nell'edilizia residenziale. Maggioli Editore, Santarcangelo di Romagna (RN)

F. Re Cecconi; E. De Angelis (2008). Guasti in edilizia. Maggioli Editore, Santarcangelo di Romagna (RN)

F. Re Cecconi; M. Antonini; L. Mussinelli (2009). Guida al progetto di strutture in acciaio. Maggioli Editore, Santarcangelo di Romagna (RN)

F. Re Cecconi, M. Antonini, L. Mussinelli (2008). Edifici in acciaio: progettazione esecutiva dell'involucro. Maggioli Editore, Santarcangelo di Romagna (RN)

F. Re Cecconi, (2006) La progettazione Esecutiva di Edifici in Muratura, Maggioli Editore, Santarcangelo di Romagna (RN)

F. Re Cecconi, M. Brischetto, A. Pavan, G. Rigamonti, (2005) La valutazione degli investimenti immmobiliari", Maggioli Editore, Santarcangelo di Romagna (RN)

F. Re Cecconi, M. Brischetto, A. Pavan, (2003) Stime, Perizie, Pareri giudiziali e stragiudiziali, Maggioli Editore, Santarcangelo di Romagna (RN)

F. Re Cecconi, M. Frassinelli, (2003) La prevenzione incendi negli uffici pubblici e privati", Maggioli Editore, Santarcangelo di Romagna (RN)

F. Re Cecconi, (2002) Come fare i piani di sicurezza e coordinamento, Maggioli editore, Santarcangelo di Romagna (RN)

F. Re Cecconi, D. Ronzoni, (2001) Soluzioni tecniche conformi: la scelta in fase di progetto e di esecuzione", Maggioli editore, Santarcangelo di Romagna (RN)

F. Re Cecconi, F. Ravetta, (2000) Il coordinatore per l'esecuzione dei lavori, Maggioli Editore, Santarcangelo di Romagna (RN)

F. Re Cecconi, F. Ravetta, (2000) Il capocantiere. Compiti, funzioni e responsabilità, Maggioli Editore, seconda edizione, Santarcangelo di Romagna (RN)

F. Re Cecconi, M. Fiori, (1999) Impianti di scarico per edifici residenziali, Maggioli Editore, Santarcangelo di Romagna (RN)

CHAPTERS IN BOOK Re Cecconi F., Tagliabue L.C., Moretti N., De Angelis E., Mainini A.G., Maltese S. (2020) Energy Retrofit Potential Evaluation: The Regione Lombardia School Building Asset. In: Della Torre S., Bocciarelli M., Daglio L., Neri R. (eds) Buildings for Education. Research for Development. Springer, Cham

Dejaco M.C., Re Cecconi F., Moretti N., Mannino A., Maltese S. (2020) Building and District Data Organization to Improve Facility and Property Management. In: Daniotti B., Gianinetto M., Della Torre S. (eds) Digital Transformation of the Design, Construction and Management Processes of the Built Environment. Research for Development. Springer, Cham

Re Cecconi F., Dejaco M.C., Moretti N., Mannino A., Blanco Cadena J.D. (2020) Digital Asset Management. In: Daniotti B., Gianinetto M., Della Torre S. (eds) Digital Transformation of the Design, Construction and Management Processes of the Built Environment. Research for Development. Springer, Cham

Re Cecconi, F.; Tagliabue, L. C.; Ciribini, A.; De Angelis, E. (2016). Predicting Energy Performance of an Educational Building through Artificial Neural Network. pp.398-407. In BACK TO 4.0: RETHINKING THE DIGITAL CONSTRUCTION INDUSTRY - ISBN:978-88-916-1807-8

Di Giuda, G. M., Re Cecconi, F., Dejaco, M. C., Maltese, S., Villa, V., (2016). Information management guideline for asset operational phase. pp.39-49. In BACK TO 4.0: RETHINKING THE DIGITAL CONSTRUCTION INDUSTRY - ISBN:978-88-916-1807-8

F. Re Cecconi, M.C. Dejaco, S. Maltese, Decision Support System for strategic choices in real estate

management. pp.572-591. In ENVIRONMENTAL SUSTAINABILITY, CIRCULAR ECONOMY AND BUILDING PRODUCTION. The scientific research in the construction industry in the age of new environmental and digital challenges –Maggioli Editore (2015) ISBN:9788891612229

E. De Angelis; F. Re Cecconi; L. C. Tagliabue; S. Maltese; G. Pansa; A. Torricelli; S. Valagussa, S., 2015. Reliability of energy performance evaluations through different BIM and BEM models. pp.296-314. In ENVIRONMENTAL SUSTAINABILITY, CIRCULAR ECONOMY AND BUILDING PRODUCTION. The scientific research in the construction industry in the age of new environmental and digital challenges - ISBN:9788891612229

F. Re Cecconi, G. Pergola, A. Redaelli, Estimation of the Probability of Biological Colonization on Etics, in Llinares-Millán, C. et all Editors (2014), Construction and Building Research, Springer Netherlands

B. Daniotti, R. Paolini, F. Re Cecconi, Effects of Ageing and Moisture on Thermal Performance of ETICS Cladding, in de Freitas, V. P., Delgado, J.M.P.Q. Editors (2013), Durability of Building Materials and Components, Springer Berlin Heidelberg

B. Daniotti, F. Re Cecconi, R. Paolini, R. Galliano (2012), Valutazione durabilistica di sistemi di isolamento a cappotto: Modi di Guasto e Analisi Prestazionale per il clima del Sud Europa (Durability evaluation of External Thermal Insulation Composite Systems: Failure Modes and Performance Analysis for the Southern Europe Climate). In: G. Alaimo; A. Carbonari; A. Ciribini; B. Daniotti; G. Dell'Osso; M. A. Esposito. Il Mattone Mancante: verso l'Industria dell'Ambiente Costruito del 21° secolo- The Missing Brick: Towards a 21st-century Built Environment Industry. p. 504-524, Maggioli Editore, Santarcangelo di Romagna (RN)

F. Re Cecconi, B. Daniotti (2010), Accelerated laboratory test procedures and correlation between laboratory tests and service life data - state of the art report. In: F. Re Cecconi, B. Daniotti. CIB W080 WG3 Test methods for service life prediction. p. 101-107, Rotterdam - Olanda:CIB - International Council for Research and Innovation in Building and Construction

F. Re Cecconi (2006), Il Metodo fattoriale tra passato presente e futuro. In: B. Daniotti. La valutazione della durabilità di pareti perimetrali verticali non portanti. vol. 1, p. 75-102, Editecnica, Palermo

F. Re Cecconi (2001), La determinazione della vita utile di un componente. In: P. N. Maggi. La valutazione della durabilità, risultati della prima fase sperimentale. p. 115-129, Epitesto, Milano

V. Caffi, F. Re Cecconi (2000), L'analisi prestazionale della soluzione tecnica di parete perimetrale non portante: i limiti prestazionali. In: P.N. Maggi. La qualità tecnologica dei componenti edilizi: la durabilità. p. 41-61, Epitesto, Milano

JOURNAL AND CONFERENCE ARTICLE

Rampini, L. and Re Cecconi, F. (2024), "Synthetic images generation for semantic understanding in facility management", Construction Innovation, Vol. 24 No. 1, pp. 33-48. https://doi.org/10.1108/CI-09-2022-0232

Khodabakhshian, A., Re Cecconi, F. (2024). Data-Driven Decision-Making Framework for Cost-Efficient Energy Retrofit of Italian Residential Building Stock. In: Arai, K. (eds) Intelligent Systems and Applications. IntelliSys 2023. Lecture Notes in Networks and Systems, vol 822. Springer, Cham. https://doi.org/10.1007/978-3-031-47721-8_35

Maltese, S., Papa, L., Re Cecconi, F., (2023), Construction sites' sustainability enhancement through earthworks optimization using Building Information Modelling, J. Phys.: Conf. Ser. 2600 202001, https://doi.org/10.1088/1742-6596/2600/20/202001

Re Cecconi, F., Rampini, L., (2023), Data driven economic scenarios for retrofitting residential buildings in a northern Italian region, IOP Conf. Ser.: Earth Environ. Sci. 1196 012113, https://doi.org/10.1088/1755-1315/1196/1/012113

Khodabakhshian, A., Rampini, L., Vasapollo, C., Panarelli, G., Cecconi, F.R. (2023). Application of Machine Learning to Estimate Retrofitting Cost of School Buildings. In: Krüger, E.L., Karunathilake, H.P., Alam, T. (eds) Resilient and Responsible Smart Cities. Advances in Science, Technology & Innovation. Springer, Cham. https://doi.org/10.1007/978-3-031-20182-0_16

Re Cecconi, F., Khodabakhshian, A., & Rampini, L. (2022). Data-driven decision support system for building stocks energy retrofit policy. Journal of Building Engineering, 54 doi:10.1016/j.jobe.2022.104633

Rampini, L.; Khodabakhshian, A.; Re Cecconi, F. (2022). Artificial intelligence feasibility in construction industry, proceedings of the European Conference on Computing in Construction EC3. www.doi.org/10.35490/EC3.2022.189

Khodabakhshian, A.; Rampini, L.; Re Cecconi, F. (2022). Data driven framework to select best retrofitting strategies. proceedings of the European Conference on Computing in Construction EC3.

/www.doi.org/10.35490/EC3.2022.190

Khodabakhshian A., Re Cecconi F. Data-Driven Process Mining Framework for Risk Management in Construction Projects. (2022) IOP Conference Series: Earth and Environmental Science, 1101 (3), art. no. 032023, DOI: 10.1088/1755-1315/1101/3/032023

Khodabakhshian, A.; Rampini, L.; Re Cecconi, F. (2022). Data driven framework decision support system for selecting building retrofit strategies. Proceedings of the EXCO'22 Conference, ISSN 978-84-125444-7-3. https://exco.webs.upv.es/exco22/BookResearchEXCO22.pdf

Rampini L., Re Cecconi F. Artificial intelligence in construction asset management: a review of present status, challenges and future opportunities (2022) Journal of Information Technology in Construction, 27, pp. 884 - 913, DOI: 10.36680/j.itcon.2022.043

Manfren, M.; Tagliabue, L.C.; Re Cecconi, F.; Ricci, M. Long-Term Techno-Economic Performance Monitoring to Promote Built Environment Decarbonisation and Digital Transformation—A Case Study. Sustainability 2022, 14, 644. https://doi.org/10.3390/su14020644

Rampini L., Khodabakhshian A., Re Cecconi F. (2022) Exploiting Deep Learning Algorithm to Understand Buildings' Façade Characteristics. In: Arai K. (eds) Intelligent Systems and Applications. IntelliSys 2021. Lecture Notes in Networks and Systems, vol 296. Springer, Cham. https://doi.org/10.1007/978-3-030-82199-9_25

Moretti N., Ellul C., Re Cecconi F., Papapesios N., Dejaco M.C., GeoBIM for built environment condition assessment supporting asset management decision making, Automation in Construction, Volume 130, 2021, 103859, https://doi.org/10.1016/j.autcon.2021.103859.

Mannino, A.; Dejaco, M.C.; Re Cecconi, F. Building Information Modelling and Internet of Things Integration for Facility Management—Literature Review and Future Needs. Appl. Sci. 2021, 11, 3062. https://doi.org/10.3390/app11073062

Tagliabue L.C., Re Cecconi F., Rinaldi S., Ciribini A.L.C., Data driven indoor air quality prediction in educational facilities based on IoT network, Energy and Buildings, Volume 236, 2021, 110782, https://doi.org/10.1016/j.enbuild.2021.110782.

Blanco Cadena, J.D.; Moretti, N.; Salvalai, G.; Quagliarini, E.; Re Cecconi, F.; Poli, T. A New Approach to Assess the Built Environment Risk under the Conjunct Effect of Critical Slow Onset Disasters: A Case Study in Milan, Italy. Appl. Sci. 2021, 11, 1186. https://doi.org/10.3390/app11031186

Tagliabue, L.C.; Cecconi, F.R.; Maltese, S.; Rinaldi, S.; Ciribini, A.L.C.; Flammini, A. Leveraging Digital Twin for Sustainability Assessment of an Educational Building. Sustainability 2021, 13, 480. https://doi.org/10.3390/su13020480

Rampini, L. and Re Cecconi, F. (2021), "Artificial intelligence algorithms to predict Italian real estate market prices", Journal of Property Investment & Finance, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JPIF-08-2021-0073

Rampini L., Re Cecconi F.; artificial intelligence enabling digital twins in existing buildings (2021) International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM, 21 (6.2), pp. 57 - 64, DOI: 10.5593/sgem2021V/6.2/s26.11

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Garramone, M.; Tonelli, E.; Mannino, A.; Rampini, L.; Re Cecconi, F.; Scaioni, M., The GIS-section of the building permit: the use of a BIM-based model to store geographic information (2021) in proceedings of the AsitaAcademy2021

N. Moretti, J.D. Blanco Cadena, A. Mannino, T. Poli, F. Re Cecconi, (2020) Maintenance service optimization in smart buildings through ultrasonic sensors network, Intelligent Buildings International, DOI: 10.1080/17508975.2020.1765723

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L.C. Tagliabue, F. Re Cecconi, S. Rinaldi, A. Flammini, A.L.C. Ciribini, Energy and comfort

management of the educational spaces through IoT network for IAQ assessment in the eLUX lab, SBE19 International Sustainable Built Environment Conference on Resilient Built Environment for Sustainable Mediterranean Countries, (2019) IOP conference series. Earth and environmental science. http://dx.doi.org/10.1088/1755-1315/296/1/012056

N. Moretti, F. Re Cecconi, A cross-domain decision support system to optimize building maintenance, Buildings 2019, 9(7), 161; https://doi.org/10.3390/buildings9070161

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F. Re Cecconi, N. Moretti, M.C. Dejaco, Measuring the performance of assets: a review of the Facility Condition Index, International Journal of Strategic Property Management, 2019, 23(3), 187-196. https://doi.org/10.3846/ijspm.2019.7955

F. Re Cecconi, N. Moretti, L.C. Tagliabue, Application of artificial neutral network and geographic information system to evaluate retrofit potential in public school buildings, Renewable and Sustainable Energy Reviews, Volume 110, 2019, Pages 266-277, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2019.04.073.

J.D. Blanco Cadena, N. Moretti, T. Poli, F. Re Cecconi. Low-cost sensor network in cognitive buildings for maintenance optimisation. Tema: Technology, Engineering, Materials and Architecture, [S.l.], v. 5, n. 1, p. 93-102, june 2019. ISSN 2421-4574, https://doi.org/10.17410/tema.v5i1.218.

E. Seghezzi, G. Masera and F. Re Cecconi, Decision Support for existing buildings: an LCC-based proposal for facade retrofitting technological choices, IOP Conf. Ser.: Earth Environ. Sci. 296 012032, https://doi.org/10.1088/1755-1315/296/1/012032

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Milano, 15th March 2024

Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali".