europass Curriculum vitae

PERSONAL INFORMATION

Matteo Panizza

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Date of birth **/**/1979 | Nationality Italian

WORK EXPERIENCES

2016 to present — Research Engineer at CNR (Italian Research Council) – ICMATE Inst.

Support for the development of ETICS, radiant panels and components for ventilated façades made of geopolymers embedding CDW (Construction and Demolition Waste), within the framework of the H2020 project InnoWEE – Innovative pre-fabricated components including different waste construction materials reducing building energy and minimising environmental impacts

Sectors Applied Research in the field of Civil Engineering, sustainable energy-efficient architectural components, Life Cycle Thinking

2014 – 2016 — External collaborator for ReLUIS – DPC joint activities

Support to Italian regional institutions for classifying the seismic assessment of strategic/relevant buildings and infrastructures. Connection among regional officers and officers of the Italian National Dept. of Civil Protection

Sectors Earthquake Engineering, Public Administration

2010 – 2016 — Postdoc Research Engineer at the University of Padova, Italy – Dept. ICEA

Support to design and execution of laboratory and on-site experimentations, and development of analytical activities, related to strengthening techniques for masonry and RC structures, with special care to Historical Heritage and normative developments. Technical support to applied researches carried out for private companies, and to the technical management of Italian and European research projects. Attendance to technical committees, presentations in International conferences, occasional lectures in Italian and International master and post-graduate courses. Member of the research team led by C. Modena, M.R. Valluzzi, F. da Porto and C. Pellegrino

Sectors Applied Research in the field of Civil Engineering and Architectural Restoration, Structural Design, Guidelines and Standards

2006 – 2009 — Research fellow at the University of Padova, Dept. ICEA, Italy

Experimental and analytical investigations related to strengthening techniques for masonry structures, especially those involving composite materials, supervised by C. Modena and M.R. Valluzzi

Sector Applied Research in the field of Civil Engineering and Architectural Restoration

TEACHING ACTIVITIES

2007 to 2016 **Included in the Paduan academic database of experts**

Sectors Structures (ICAR/09) since A.Y. 2007/2008 and Restoration (ICAR/19) since A.Y. 2008/2009

2014, 2016 **Teacher at the *National Advanced School of Public Works* in Yaoundé (Cameroon)**

Lectures of advanced Structural Engineering for students of Civil Engineering (6 credits, 48 hours), lectures about Design of Timber Structures (18 hours) for P. Engineers enrolled in the Master *"Géotechnique - Conception, Exécution et Contrôle des structures et des fondations"* and lectures about Statics and Basics of Design of Reinforced Concrete Members (18 hours) for students enrolled in the Master *"Eco-construction et Management des Projets immobiliers en Afrique"*

Sectors Structural Engineering, Education

2008 to 2017 **Co-tutor of Master of Science Theses**

Support to the development of Theses in Civil and Architectural Engineering

Sectors Research, Structural Engineering

2015 – 2016 **High-school supply teacher**

Teaching of Physics. Support in various matters for students with special needs

Sector Education

OTHER EXPERIENCES

2009, 2012, 2016 **Voluntary activity (occasional)**

Cooperation as a structural expert with the local Bureaus for Architectural and Landscape Heritage, during the activities of damage survey of Historical Buildings after Abruzzo, Emilia and Central Italy earthquakes

Sector Post-seismic operations

2000 – 2014 **Part-time Pizza Chef**

Every phase of pizza preparation: dough, spreading out, topping and cooking in wood-fire oven. Management of orders. Preparation of ingredients

Sector Restaurants and catering

EDUCATION

2007 – 2009 ### Research Doctorate — Ph.D.

School of Study and Preservation of Archaeological and Architectural Heritage, main course on Science and Technologies for Archaeological and Architectural Heritage (XXII cycle)

Thesis title FRP strengthening of masonry arches: analysis of local mechanisms and global behaviour

Date of defence: 9th April 2010. Supervisor: Prof. Maria Rosa Valluzzi

Released by University of Padova, Italy

2006 ### Official License as Professional Engineer in Italy — P.Eng.

Examination taken in I session 2006, diploma released on 3rd of May 2012

Released by Italian Ministry of Education, Universities and Research

1998 – 2005 ### Master degree in Architectural Engineering — M.Sc.

Curriculum in *Recovery and Refurbishment of Buildings*, five-year course (*Vecchio Ordinamento)*, equivalent to a master degree in Civil Engineering (classes 28/S and LM-23) in case of competitions for the Italian Public Administration, according to the Italian decree *D.M. 9 July 2009*

Final grade 108/110. Date of defence: 21st March 2006

Released by University of Padova, Italy

1994-1998 ### High school focused on science (*Scientific Lyceum*)

PNI main course (Italian National Information Program). Final grade 54/60

Released by Liceo Scientifico Statale Galileo Galilei, Dolo (Venice), Italy

PERSONAL SKILLS

Mother tongue Italian

Other languages	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B1	B2	B1	B1	B2

Levels: A1/A2: Basic user – B1/B2: Independent user – C1/C2: Proficient user
Common European Framework of Reference (CEF) level

Digital competences

SELF-ASSESSMENT				
Information Processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Proficient user	Independent user	Independent user

Digital competences - Self-assessment grid

Computer tools

Basics All MS Windows operative systems and main Office applications (word processor, spreadsheet, presentation, desktop publishing), *Open-Source* alternatives included (Open/Libre Office, Gnumeric, Scribus, LaTeX). Basics of Debian-based Linux distributions

Numerical computations and FEM Mathcad, Scilab, Matlab, R, gnuplot. Basic knowledge of Mathematica and Octave. Strand7, Abaqus and Diana for Finite Element Modelling

Programming Structured programming: good knowledge of Fortran-based languages, basic knowledge of C++. Use of Visual Basic for Applications to improve spreadsheet features

Graphics Computer Aided Drafting/Modelling: AutoCAD, SketchUp. Image manipulation: The Gimp, Photoshop, Hugin (raster), Inkscape (vectorial)

Databases and Information Systems MS Access, QGIS

ADDITIONAL INFORMATION

- Licensed Engineer registered at the Venetian Association (*Ordine*) of Professional Engineers, and member of the cultural Engineers Association (*Collegio*) of Venice, since January 2007
- Member of IA-FraMCoS – International Association of Fracture Mechanics for Concrete and Concrete Structures – since 2013
- Former member of RILEM (Réunion Internationale des Laboratoires et Experts des Matériaux, systèmes de construction et ouvrages / International Union of Laboratories and Experts in Construction Materials, Systems and Structures) 2008-2016, as active member of the Technical Committee 223-MSC "Masonry Strengthening with Composite materials" and the Technical Committee 250-CSM "Composites for sustainable Strengthening of Masonry"
- Former member of IIFC – International Institute for FRP in Construction – 2013-2016
- Reviewer for ASCE Journal of Materials in Civil Engineering and RILEM Materials and Structures since 2013, and for Engineering Structures and MDPI Polymers since 2015
- Collaborator and occasional lecturer at the Erasmus Mundus Master Course in Structural Analysis of Monuments and Historical Constructions – MSc SAHC, within the units SA4 "Inspection and Diagnosis", SA5 "Repairing and Strengthening Techniques" and SA7 "Integrated Project"

ANNEXES

1 List of publications
2 List of supported theses
3 List of contracts and projects
4 Summary of the Ph.D. thesis
5 List of exams taken during the Master degree

According to the Italian Law, where applicable, I hereby authorize the use of my personal data in compliance with the Italian Decree n. 196/2003

Padova, 23nd September 2017

Matteo Panizza

Annex 1: list of publications

42 Stievanin E., Garbin E., Panizza M., da Porto F. (2017). Bond Strength of SRG Composite Systems Applied to Concrete. Int. Conf. on Advances in Construction Materials and Systems – ICACMS-2017, Chennai (India), September 3-8.

41 Carozzi F.G., Bellini A., D'Antino T., de Felice G.M., Focacci F., Hojdys L., Laghi L., Lanoye E., Micelli F., Panizza M., Poggi C. (*2017*). *Experimental investigation of tensile and bond properties of Carbon-FRCM composites for strengthening masonry elements*. Composites Part B 128:100-119. doi:10.1016/j.compositesb.2017.06.018.

40 Tamburini S., Natali M., Garbin E., Panizza M., Favaro M., Valluzzi M.R. (2017). *Geopolymer matrix for fibre reinforced composites aimed at strengthening of masonry structures*. Construction and Building Materials 141:542-552. doi:10.1016/j.conbuildmat.2017.03.017.

39 Garbin E., Panizza M., Kwiecien A., Zajac B., Nardon F., Valluzzi M.R. (2016). *Testing of bond solutions for UHTS steel strand composites applied to extruded bricks*. 16th Int. Brick and Block Masonry Conference – IB2MAC2016, Padova (Italy), June 26-30, 395-402. doi:10.1201/b21889-51; Print ISBN: 978-1-138-02999-6; eBook ISBN: 978-1-4987-9592-0

38 Cardani G., Binda L., Valluzzi M.R., Girardello P., Panizza M., Garbin E., Casadei P. (2016). *On site composites-to-masonry bond evaluation in presence of rising damp and salt crystallization*. 16th Int. Brick and Block Masonry Conference – IB2MAC2016, Padova (Italy, June 26-30, 365-372. Print ISBN: 978-1-138-02999-6; eBook ISBN: 978-1-4987-9592-0

37 Ceroni F., Kwiecień A., Mazzotti C., Bellini A., Garbin E., Panizza M., Valluzzi M.R. (2016). *Load bearing capacity and ductility properties of composites-to-brick dependent on the adhesive type*. X Int. Conf. on Structural Analysis of Historical Constructions – SAHC 2016, Leuven (Belgium), September 13-15, 1061-1068. ISBN: 9781138029514.

36 Valluzzi M.R., Nardon F., Garbin E., Panizza M. (2016). *Multi-scale characterization of moisture and thermal cycles effects on composite-to-timber strengthening*. Construction and Building Materials 102(2): 1070-1083. ISSN: 0950-0618, doi:10.1016/j.conbuildmat.2015.07.008.

35 de Felice G., Aiello M.A., Bellini A., Ceroni F., De Santis S., Garbin E., Leone M., Lignola G.P., Malena M., Mazzotti C., Panizza M., Valluzzi M.R. (2016). *Experimental characterization of composite-to-brick masonry shear bond*. Materials and Structures 49:2581-2596. ISSN 1359-5997, doi:10.1617/s11527-015-0669-4.

34 Valluzzi M.R., Salemi G., Deiana R., Faresin E., Giacomello G., Giaretton M., Panizza M., Pasetto M., Calò S., Battistella M., Frestazzi A. (2015). *Integrated ND Methodologies for the Evaluation of the Adhesion of Frescoes on Stone Masonry Walls*. 6th Int. Conf. on Emerging Technologies in Non-Destructive Testing – ET-NDT6, Brussels (Belgium), May 27-29 2015, 505–510. Print ISBN: 978-1-138-02884-5, eBook ISBN: 978-1-315-64754-8, doi: 10.1201/b19381-83.

33 Cardani G., Valluzzi M.R., Panizza M., Binda L. (2015). *In-situ evaluation of composites-to-masonry bond in a natural aggressive environment*. 12th North American Masonry Conference – 12NAMC, Denver (Colorado, USA), May 17-20 2015.

32 Panizza M., Girardello P., Garbin E., Valluzzi M.R., Cardani G., Dalla Benetta M., Casadei P. (2015). *On-site pull-out tests of steel anchor spikes applied to brickwork masonry*. IV Int. Conf. on Mechanics of masonry structures strengthened with composite materials – MuRiCo4, Ravenna (Italy), September 9-11 2014. Key Engineering Materials 624, 266-274. doi:10.4028/www.scientific.net/KEM.624.266.

31 Panizza M., Garbin E., Valluzzi M.R., Modena C. (2015). *Experimental study of the bond of FRP applied to natural stones and masonry prisms*. IV Int. Conf. on Mechanics of masonry structures strengthened with composite materials – MuRiCo4, Ravenna (Italy), September 9-11 2014. Key Engineering Materials 624, 453-460. doi:10.4028/www.scientific.net/KEM.624.453.

30 Cardani G., Valluzzi M.R., Panizza M., Girardello P., Binda L. (2015). *Influence of salt crystallization on composites-to-masonry bond evaluated on site by pull-off tests*. IV Int. Conf. on Mechanics of masonry structures strengthened with composite materials – MuRiCo4, Ravenna (Italy), September 9-11 2014. Key Engineering Materials 624, 338-345. doi:10.4028/www.scientific.net/KEM.624.338.

29 Valluzzi M.R., da Porto F., Garbin E., Panizza M. (2014). *Out-of-plane behaviour of infill masonry panels strengthened with composite materials*. Materials and Structures 47(12):2131-2145. Print ISSN: 1359-5997, Online ISSN: 1871-6873, doi:10.1617/s11527-014-0384-6.

28 Garbin E., Panizza M., Valluzzi M.R., Nardon F., Tamburini S., Favaro M., Magro A. (2014). *Characterization of Fibre Reinforced Geopolymers as structural strengthening material for brick masonry*. 9th Int. Masonry Conference – IMS-9, Guimarães (Portugal), July 7-9. ISBN: 978-972-8692-87-2.

27 Panizza M., Garbin E., Valluzzi M.R., Modena C. (2014). *Caratterizzazione dell'aderenza di materiali compositi per il rinforzo di strutture in muratura*. Congreso Latinoamericano sobre Patología de la Construcción, Tecnología de la Rehabilitación y Gestión del Patrimonio – REHABEND 2014, Santander (Spain), April 1-4. 1725-1732. In Italian. ISBN: 978-84-616-8863-0, ISSN: 2386-8198.

26 Tamburini S., Favaro M., Magro A., Garbin E., Panizza M., Nardon F., Valluzzi M.R. (2013). *Geopolymers as strengthening materials for Built Heritage*. BUILT HERITAGE 2013 – Monitoring Conservation Management, Milan (Italy), November 18-20, 1304-1311. ISBN 978-88-908961-0-1.

25 Valluzzi M.R., Nardon F., Garbin E., Panizza M. (2013). *Moisture and temperature influence on biocomposites-to-timber bonding*. Advanced Materials Research, vol. 778, 561-568. doi:10.4028/www.scientific.net/AMR.778.561.

24 Stievanin E., da Porto F., Panizza M., Garbin E., Modena C. (2013). *Bond characterization between historical concrete substrate and SRG/SRP strengthening systems*. 5th Int. Conf. on Structural Engineering, Mechanics and Computation – SEMC2013, Cape Town (South Africa), September 2-4. 2433-2438. ISBN 978-1-138-00061-2.

23 Valluzzi M.R., da Porto F., Garbin E., Panizza M. (2013). *Out-of-plane strengthening of infill masonry walls with composites materials*. 12th Canadian Masonry Symposium – CMS2013, Vancouver (Canada), June 2-5. On CD-ROM

22 Panizza M., Garbin E., Valluzzi M.R., Modena C. (2013). *Peel Strength Testing of FRP Applied to Clay Bricks*. 8th Int. Conf. on Fracture Mechanics of Concrete and Concrete Structures - FraMCoS-8, Toledo (Spain), March 10-14. 562-570. ISBN: 978-84-941004-1-3.

21 Valluzzi M.R., Oliveira D.V., Caratelli A., Castori G., Corradi M., de Felice G., Garbin E., Garcia D., Garmendia L., Grande E., Ianniruberto U., Kwiecień A., Leone M., Lignola G. P., Lourenço P.B., Malena M., Micelli F., Panizza M., Papanicolaou C.G., Prota A., Sacco E., Triantafillou T.C., Viskovic A., Zajac B., Zuccarino G. (2012). *Round Robin Test for composite-to-brick shear bond characterization*. Materials and Structures 45(12):1761-1791. doi:10.1617/s11527-012-9883-5

20 Garbin E., Panizza M., Valluzzi M.R., Modena C. (2012). *A simplified model to estimate the contribution of EB-FRP to the shear strength of masonry panels*. 8th Int. Conf. on Structural Analysis of Historical Constructions – SAHC 2012, Cracow (Poland), October 15-17. 1819-1826. ISBN 978-83-7125-216-7, ISSN 8060-2395.

19 Panizza M., Garbin E., Valluzzi M.R., Modena C. (2012). *Experimental investigation on bond of FRP/SRP applied to masonry prisms*. 6th Int. Conf. on FRP Composites in Civil Engineering – CICE 2012, Rome (Italy), June 13-15. On CD-ROM

18 Panizza M., Garbin E., Valluzzi M.R., Modena C. (2012). *Experimental comparison of various types of specimens subjected to SL and DL shear bond tests on EB composites applied to bricks*. 6th Int. Conf. on FRP Composites in Civil Engineering – CICE 2012, Rome (Italy), June 13-15. On CD-ROM

17 Giacometti G., Panizza M., Valluzzi M.R. (2012). *A Data Warehouse on the strengthening of masonry structures with composite materials*. 6th Int. Conf. on FRP Composites in Civil Engineering – CICE 2012, Rome (Italy), June 13-15. On CD-ROM

16 Panizza M., Garbin E., Valluzzi M.R., Modena C. (2011). *Experimental calibration of the bond strength of FRP, externally glued on masonry elements, based on design provisions*. Int. RILEM Conference on Advances in Construction Materials Through Science and Engineering, Hong Kong (China), September 5-7, 615-622. ISBN: 978-2-35158-116-2.

15 Valluzzi M.R., Garbin E., Panizza M., Binda L., Saisi A., Tedeschi C. (2011). *Moisture and temperature influence on FRP masonry bonding*. 12th Int. Conf. on Durability of Building Materials and Components – XII DBCM, Porto (Portugal), April 12-15.

14 Binda L., Saisi A., Tedeschi C., Valluzzi M.R., Garbin E., Panizza M. (2011). *Salt crystallization tests on brick masonry reinforced by CFRP textiles*. 12th Int. Conf. on Durability of Building Materials and Components – XII DBCM, Porto (Portugal), April 12-15.

13 Modena C., da Porto F., Valluzzi M.R., Bettiol G., Casarin F., Dalla Benetta M., Garbin E., Girardello P., Guidi G., Lorenzoni F., Mazzon N., Mosele F., Munari M., Nicolini L., Panizza M., Silva B., Simonato E., Stievanin E. (2011). *Cultural heritage buildings and the Abruzzo Earthquake: performance and post-earthquake actions*. Int. Workshop assorestauro presso Salone del Restauro di Ferrara, (Italy), March 27 - April 2.

12 Garbin E., Panizza M., Valluzzi M.R. (2010). *Experimental assessment of bond behaviour of FRP on brick masonry*. IABSE Structural Engineering International, 20(4): 392-399. ISSN 1016-8664.

11 Panizza M., Garbin E., Valluzzi M.R., Modena C. (2010). *Experimental investigation on local aspects of the FRP strengthening of masonry arches*. 8th Int. Symp. on the Conservation of Monuments in the Mediterranean Basin - Monubasin8, Patras (Greece), May 31 - June 2, 218-234. ISBN: 978-960-8369-665.

10 Modena C., Valluzzi M.R., da Porto F., Casarin F., Garbin E., Munari M., Mazzon N., Panizza M., Dalla Benetta M., Bettiol G. (2009). *Intervention criteria for historic masonry constructions subjected to seismic actions*. 13th Conf. on Repair, Conservation and Strengthening of traditionally erected buildings and historic buildings – REMO2009, Wroclaw (Poland), December 2-4. 186-196. ISSN 0860-2395.

9 Garbin E., Lam C.C., Panizza M., Valluzzi M.R. (2009). *Experimental assessment and modelling of bond of EB-FRP applied on clay brick*. 9th Sem. on Experimental Techniques and Design in Composite Materials – ETDCM9, Vicenza (Italy), September 30 - October 2.

8 Modena C., Valluzzi M.R., da Porto F., Casarin F., Garbin E., Munari M., Mazzon N., Panizza M., Dalla Benetta M. (2009). *Recent advances in the structural analysis and intervention criteria for historic stone masonry constructions subjected to seismic actions*. ISCARSAH Symp. "Assessment and strengthening of historical stone masonry constructions subjected to seismic action", Mostar (Bosnia Erzegovina), July 12, 7-20. ISBN: 978-9958-9999-0-1.

7 Panizza M., Garbin E., Valluzzi M.R., Modena C. (2009). *Experimental study of the FRP-clay interface subject to normal stresses*. III Ital. Nat. Conf. on Mechanics of masonry structures strengthened with composite materials – MuRiCo 3, Venice (Italy), Aprile 22-24, 391-398. ISBN: 88-371-1771-X.

6 Modena C., Valluzzi M.R., da Porto F., Casarin F., Garbin E., Munari M., Mazzon N., Panizza M. (2009). *Structural interventions on historical masonry buildings: review of Eurocode 8 provisions in the light of the Italian experience*. Workshop ReLUIS-UNI "Eurocode 8 Perspectives from the Italian Standpoint", Final Conf. ReLUIS-DPC, Aprile 3, 225-236. ISBN 978-88-89972-16-8.

5 Modena C., Valluzzi M.R., da Porto F., Casarin F., Garbin E., Panizza M., Mazzon N., Munari M., Dalla Benetta M., Bettiol G. (2009). *Criteri e tecniche per l'intervento di miglioramento sismico di edifici storici*. Atti delle Giornata di Studi "Il dopo-terremoto della Val Sabbia e del Garda: fra esigenze di tutela e requisiti di sicurezza", Salò, Brescia (Italy), November 24, 123-142. ISBN: 978-88-548-2867-4, doi:10.4399/97888548286749.

4 Modena C., Valluzzi M.R., da Porto F., Casarin F., Munari M., Mazzon N., Panizza M. (2008). *Assessment and improvement of the seismic safety of historic constructions: research and applications in Italy*. I Congreso Iberoamericano sobre Construcciones Historicas y Estructuras de Mamposteria, Bucaramanga (Colombia), July 30 - August 1, 92-116. ISBN 978-958-44-3809-6.

3 Panizza M., Garbin E., Valluzzi M.R., Modena C. (2008). *Bond Behaviour of CFRP and GFRP Laminates on Brick Masonry*. VI Int. Conf. on Structural Analysis of Historical Constructions – SAHC 2008, Bath (UK), July 2-4, 763-770. ISBN: 9780415468725.

2 Panizza M., Valluzzi M.R., Garbin E., Modena C. (2008). *Bond Mechanism of Brick Masonry Vaults*. Structural Faults + Repair – 2008, Edinburgh (UK), June 10-12. On CD-ROM

1 Valluzzi M.R., Garbin E., Panizza M., Modena C. (2007). *Modelli analitici per l'interpretazione dei meccanismi di rottura locali di archi e volte in muratura rinforzati con tessuti FRP*. I Ital. Nat. Workshop ReLUIS "Materiali ed Approcci Innovativi per il Progetto in Zona Sismica e la Mitigazione della Vulnerabilità delle Strutture", Salerno (Italy), February 12-13. In Italian., 263-270. ISBN 978-88-7699-065-6.

Annex 2: list of supported theses

As co-tutor

29 **Kameni Wontcheu, Armel Florent** (A.Y. 2015/2016). Design and assessment of a simple masonry building. Tut. Francesca da Porto, co-tut. Matteo Panizza, École Nationale Supérieure des Travaux Publics de Yaoundé (Cameroon), University of Padova (Italy), April 2017. M.Sc. Thesis in Civil Engineering.

28 **Maniezzo, Francesca** (A.Y. 2015/2016). Qualificazione sperimentale di materiali compositi a matrice inorganica (FRCM), caratterizzazione dell'adesione alla muratura e valutazioni preliminari per l'intervento. Tut. Maria Rosa Valluzzi, co-tut. Enrico Garbin, Matteo Panizza, Fabiola Nardon, University of Padova (Italy), July 2016. M.Sc. Thesis in Building engineering and Architecture. *Winner of the Assocompositi Award 2017.*

27 **Hoseinpour, Hamed** (A.Y. 2015/2016). Analytical modelling of timber beams strengthened with composite materials, M.Sc. SAHC Thesis, Sup. Maria Rosa Valluzzi, Enrico Garbin, Matteo Panizza. Univ. of Padova (IT), Univ. of Minho (PT), Czech Tech. Univ. in Prague (CZ), Tech. Univ. of Catalonia in Barcelona (ES), July 2016.

26 **Kung, Carol** (A.Y. 2015/2016). Experimental Analysis of Bond of SRPs Applied to Masonry Bricks with Flexible Polymers, M.Sc. SAHC Thesis, Sup. Petr Kabele, Maria Rosa Valluzzi, Enrico Garbin, Matteo Panizza. Univ. of Padova (IT), Univ. of Minho (PT), Czech Tech. Univ. in Prague (CZ), Tech. Univ. of Catalonia in Barcelona (ES), July 2016.

25 **Aita, Andrea** (A.Y. 2015/2016). Valutazione sperimentale dell'adesione di compositi a matrice inorganica (FRCM) e polimerica (FRP) impiegati per il rinforzo di murature in mattoni. Tut. Maria Rosa Valluzzi, co-tut. Enrico Garbin, Matteo Panizza, Fabiola Nardon, University of Padova (Italy), July 2016. M.Sc. Thesis in Building engineering and Architecture.

24 **Fontana, Daniele** (A.Y. 2015/2016). Analisi sperimentale dell'aderenza di compositi FRP applicati a murature in laterizio. Tut. Maria Rosa Valluzzi, co-tut. Matteo Panizza, Enrico Garbin, University of Padova (Italy), March 2016. M.Sc. Thesis in Building Engineering.

23 **Makondo Ngassaki, Charryl Harold** (A.Y. 2015/2016). Frame and wall structures for middle high rise buildings, Tut. Claudio Modena, co-tut. Matteo Panizza, École Nationale Supérieure des Travaux Publics de Yaoundé (Cameroon), University of Padova (Italy), March 2016. M.Sc. Thesis in Civil Engineering.

22 **Badjeck Nyobe, Christian** (A.Y. 2015/2016). Structural design and retrofit of an hospital, Tut. Claudio Modena, co-tut. Matteo Panizza, École Nationale Supérieure des Travaux Publics de Yaoundé (Cameroon), University of Padova (Italy), March 2016. M.Sc. Thesis in Civil Engineering.

21 **Fendoung, Robert** (A.Y. 2015/2016). Structural solutions for multi-storey residential buildings, Tut. Claudio Modena, co-tut. Matteo Panizza, École Nationale Supérieure des Travaux Publics de Yaoundé (Cameroon), University of Padova (Italy), March 2016. M.Sc. Thesis in Civil Engineering.

20 **Zorzi, Tommaso** (A.Y. 2013/2014). Valutazione sperimentale in situ dell'efficacia di connettori trasversali per il rinforzo delle murature con materiali compositi. Tut. Maria Rosa Valluzzi, co-tut. Claudio Modena, Paolo Girardello, Matteo Panizza, University of Padova (Italy), July 2014. M.Sc. Thesis in Building engineering and Architecture. *Winner of the Klaus Fischer Award 2014.*

19 **Shartava, Lasha** (A.Y. 2013/2014). Calibration and assessment of an empirical model for the shear strength of FRP-reinforced masonry panels, M.Sc. SAHC Thesis, Sup. Maria Rosa Valluzzi, Enrico Garbin, Matteo Panizza. Univ. of Padova (IT), Univ. of Minho (PT), Czech Tech. Univ. in Prague (CZ), Tech. Univ. of Catalonia in Barcelona (ES), July 2014.

18 **Cerato, Chiara** (A.Y. 2013/2014). Analisi sperimentale del comportamento di adesione di intonaci tradizionali applicati a elementi murari per la caratterizzazione del danno ai beni artistici. Tut. Maria Rosa Valluzzi, co-tut. Matteo Panizza, Marta Giaretton, University of Padova (Italy), April 2014. M.Sc. Thesis in Civil Engineering, Architectural curriculum.

17 **Gallo, Nicol** (A.Y. 2013/2014). Durabilità di materiali compositi applicati su murature in ambiente aggressivo: influenza della cristallizzazione salina sul fenomeno di aderenza. Tut. Maria Rosa Valluzzi, co-tut. Giuliana Cardani (Politecnico di Milano), Matteo Panizza, Enrico Garbin, Paolo Girardello, University of Padova (Italy), December 2013. M.Sc. Thesis in Civil Engineering, Architectural curriculum.

16 **Del Longo, Gabriele** (A.Y. 2012/2013). Caratterizzazione sperimentale di compositi a matrice geopolimerica per il rinforzo di strutture in muratura. Tut. Maria Rosa Valluzzi, co-tut. Sergio Tamburini (CNR), Matteo Panizza, Enrico Garbin, University of Padova (Italy), October 2013. M.Sc. Thesis in Civil Engineering, Architectural curriculum.

15 **Garijo Alonso, Lucía** (A.Y. 2012/2013). Identification of the fracture energy properties of soft mud brick and lime mortar, M.Sc. SAHC Thesis, Sup. Maria Rosa Valluzzi, Enrico Garbin, Matteo Panizza. Univ. of Padova (IT), Univ. of Minho (PT), Czech Tech. Univ. in Prague (CZ), Tech. Univ. of Catalonia in Barcelona (ES), July 2013.

14 **Margotti, Massimo** (A.Y. 2012/2013). Analisi sperimentale del fenomeno di aderenza di compositi applicati alla muratura in pietra naturale. Tut. Maria Rosa Valluzzi, co-tut. Matteo Panizza, University of Padova (Italy), May 2013. M.Sc. Thesis in Civil Engineering, Architectural curriculum.

13 **Galvani, Lisa** (A.Y. 2010/2011). Rinforzo di strutture murarie con materiali compositi: raccolta e implementazione di casi studio nell'ambito del Data-WareHouse "RILEM". Tut. Maria Rosa Valluzzi, co-tut. Matteo Panizza, Gianluca Giacometti, University of Padova (Italy), December 2011. M.Sc. Thesis in Building Engineering.

12 **Carli, Laura** (A.Y. 2010/2011). Studio sperimentale dell'influenza della tessitura sul comportamento a compressione di murature di mattoni rinforzate con barre piatte di CFRP. Tut. Maria Rosa Valluzzi, co-tut. Enrico Garbin, Matteo Panizza, University of Padova (Italy), October 2011. M.Sc. Thesis in Building Engineering.

11 **Pilonato, Andrea** (A.Y. 2010/2011). Caratterizzazione sperimentale del comportamento a compressione di murature in mattoni rinforzate con fibre di acciaio UHTSS e barre piatte di CFRP. Tut. Maria Rosa Valluzzi, co-tut. Enrico Garbin, Matteo Panizza, University of Padova (Italy), October 2011. M.Sc. Thesis in Building Engineering.

10 **Albieri, Lucia** (A.Y. 2010/2011). Sperimentazione su pannelli in laterizio forato rinforzati a flessione con fibre di lino, canapa e basalto. Tut. Maria Rosa Valluzzi, co-tut. Matteo Panizza, Enrico Garbin, Francesca da Porto, University of Padova (Italy), October 2011. M.Sc. Thesis in Building Engineering.

9 **Marcolongo, Alice** (A.Y. 2010/2011). Sperimentazione su pannelli in laterizio forato con materiali compositi CFRP, SRP/SRG, GRG. Tut. Maria Rosa Valluzzi, co-tut. Matteo Panizza, Enrico Garbin, Francesca da Porto, University of Padova (Italy), October 2011. M.Sc. Thesis in Building Engineering.

8 **Piccin, Simona** (A.Y. 2010/2011). Studio del comportamento fuori piano di pannelli murari rinforzati con materiali compositi. Tut. Maria Rosa Valluzzi, co-tut. Matteo Panizza, Enrico Garbin, Francesca da Porto, University of Padova (Italy), October 2011. M.Sc. Thesis in Building Engineering.

7 **Abate, Marco** (A.Y. 2010/2011). Studio del comportamento sismico e progetto di prove dinamiche di sistemi di ancoraggio per elementi non strutturali. Tut. Claudio Modena, co-tut. Francesca da Porto, Nicola Mazzon, Matteo Panizza, University of Padova (Italy), October 2011. M.Sc. Thesis in Building Engineering.

6 **Bonetta, Rossella** (A.Y. 2010/2011). Caratterizzazione sperimentale di materiali compositi a matrice inorganica per il rinforzo di volte in muratura. Tut. Francesca da Porto, co-tut. Maria Rosa Valluzzi, Paolo Girardello, Matteo Panizza, University of Padova (Italy), October 2011. M.Sc. Thesis in Building Engineering.

5 **Tiozzo, Sofia** (A.Y. 2010/2011). Una tecnica di rinforzo innovativa per il miglioramento sismico di solai in legno con biocompositi. Tut. Maria Rosa Valluzzi, co-tut. Enrico Garbin, Matteo Panizza, University of Padova (Italy), March 2011. M.Sc. Thesis in Building Engineering. *Winner of the Galileo Award "InTesi 2011".*

4 **Basso, Emanuela** (A.Y. 2009/2010). Applicazione di materiali compositi per il miglioramento strutturale dei manufatti in muratura. Tut. Maria Rosa Valluzzi, co-tut. Matteo Panizza, University of Padova (Italy), December 2010. M.Sc. Thesis in Building Engineering.

3 **Bordignon, Silvia** (A.Y. 2009/2010). Archi in muratura rinforzati con compositi FRP: analisi e applicazioni di modelli predittivi. Tut. Maria Rosa Valluzzi, co-tut. Matteo Panizza, University of Padova (Italy), March 2010. M.Sc. Thesis in Building Engineering.

2 **Giomo, Filippo** (A.Y. 2008/2009). Rinforzo di strutture murarie con materiali compositi FRP: analisi sperimentale e modellazione del comportamento dell'interfaccia soggetta ad azioni composte nel caso di applicazione ad archi e volte. Tut. Maria Rosa Valluzzi, co-tut. Enrico Garbin, Matteo Panizza, University of Padova (Italy), March 2009. M.Sc. Thesis in Building Engineering.

1 **Balduzzo, Francesco** (A.Y. 2008/2009). Rinforzo di strutture murarie con materiali compositi FRP: analisi del comportamento dell'interfaccia soggetta ad azioni normali. Tut. Maria Rosa Valluzzi, co-tut. Enrico Garbin, Matteo Panizza, University of Padova (Italy), December 2008. M.Sc. Thesis in Building Engineering.

Others

7 **Khazanbeig, Arezoo** (A.Y. 2015/2016). Analytical correlation of mechanical properties of masonry bricks with pull-off tests, M.Sc. SAHC Thesis, Sup. Maria Rosa Valluzzi, Enrico Garbin, Matteo Panizza. Univ. of Padova (IT), Univ. of Minho (PT), Czech Tech. Univ. in Prague (CZ), Tech. Univ. of Catalonia in Barcelona (ES), July 2016.

6 **Isalberti, Francesco** (A.Y. 2014/2015). Modelling of timber floors in strengthened conditions for seismic improvement, M.Sc. SAHC Thesis, Sup. Maria Rosa Valluzzi, Enrico Garbin. Univ. of Padova (IT), Univ. of Minho (PT), Czech Tech. Univ. in Prague (CZ), Tech. Univ. of Catalonia in Barcelona (ES).

5 **Mazzaro, Matteo** (A.Y. 2013/2014). Valutazione sperimentale dell'efficacia di interventi di rinforzo su murature con materiali compositi mediante prove in situ. Tut. Maria Rosa Valluzzi, co-tut. Giuliana Cardani (Politecnico of Milan-Italy), Paolo Girardello, Claudio Modena, University of Padova (Italy), April 2014. M.Sc. Thesis in Building engineering and Architecture.

4 **Nardon, Fabiola** (2014). Materiali compositi per il rinforzo di strutture in legno: problemi di durabilità e compatibilità – Composite materials for strengthening timber structures: durability and compatibility issues, Tut. Maria Rosa Valluzzi, University of Padova (Italy). Ph.D. Thesis.

3 **Bernardi, Stefano** (A.Y. 2012/2013). Analytical modelling on bond of composite strengthening systems to masonry – Modellazione analitica del legame tra sistemi di rinforzo composite e la muratura, Tut. Maria Rosa Valluzzi, co-tut. Maurizio Guadagnini (University of Sheffield-UK), University of Padova (Italy). M.Sc. Thesis.

2 **Lam, Chi Chiu** (A.Y. 2008/2009). Finite element study of bond-slip behaviour of CFRP and GFRP Laminates on Brick Masonry, M.Sc. SAHC Thesis, Sup. Maria Rosa Valluzzi, Enrico Garbin. Univ. of Padova (IT), Univ. of Minho (PT), Czech Tech. Univ. in Prague (CZ), Tech. Univ. of Catalonia in Barcelona (ES).

1 **Franklin, Robert** (A.Y. 2008/2009). FRP Strengthening of Masonry Arches and the Investigation of Mode I Failure of FRP Laminates under Normal Loading, M.Sc. Thesis, University of Sheffield (UK).

Annex 3: contracts and projects

13 Research grant at CNR (Italian Research Council) – ICMATE Institute, within the framework of the European Project H2020-EEB-2016-723916 InnoWEE “Innovative pre-fabricated components including different waste construction materials reducing building energy and minimising environmental impacts”, concerning the development of components for ETICS and radiant panels, and components for ventilated façades, embedding construction and demolition waste (CDW).
Period: 16/11/2016 – present

12 Work-on-project with Interuniversity Consortium ReLUIS (Italian network of laboratories of seismic engineering), in the framework of the agreement CUP G52I14000170005 with the Italian Dept. of Civil Protection, concerning the cooperation aimed at realizing the activities stated by the Ordinance 4007/2012, related to interventions for seismic risk prevention.
Period: 4/2/2015 – 31/7/2015, extended to 31/12/2015, extended again to 30/06/2016

11 Work-on-project with Interuniversity Consortium ReLUIS (Italian network of laboratories of seismic engineering), in the framework of the agreement CUP J59G13000180001 with the Italian Dept. of Civil Protection, concerning the cooperation aimed at realizing the activities stated by the Ordinance 4007/2012, related to interventions for seismic risk prevention.
Period: 3/2/2014 – 31/7/2014, extended to 31/12/2014

10 Fellowship for research activities in the framework of the agreement CUP C92I14000620005 between University of Padova and Municipality of Belluno (Italy), concerning a research aimed at the "Evaluation of mechanical behaviour of structural components of buildings in seismic areas, pre- and post-interventions, including the application of innovative materials”, carried out at the Dept. of Cultural Heritage of the University of Padova, Italy.
Period: 1/8/2015 – 31/10/2015

9 Fellowship for activities in the framework of the Italian research project ReLUIS-DPC 2014-2018, conserning a research focused on the “Optimization of experimental procedures, in laboratory and on site, for the mechanical parametrization of existing masonry”, carried out at the Dept. ICEA of the University of Padova, Italy.
Period: 1/8/2014 – 31/12/2014

8 Research grant at the University of Padova, Italy, in the framework of the Italian research project PON Ricerca e Competitività 2007-2013 PROVACI – Technologies for the seismic protection and the promotion of complex assets of cultural interests, concerning a research focused on “Experimentation and modelling on masonry elements and structures, carried out at the Dept. ICEA.
Period: 2/5/2012 – 30/4/2014

7 Research grant at the University of Padova, Italy, in the framework of the project FSE 2105/1/7/1102/2010 entitles “Development and implementation of bond models for designing strengthening interventions on buildings and infrastructures with innovative materials”, Intervention 1 entitled “Development and implementation of bond models for designing strengthening interventions on masonry buildings with innovative materials”, carried out at the Dept. ICEA.
Period: 2/5/2011 – 30/4/2012

6 Fellowship at the University of Padova, Italy, for activities in the framework of the European project FP7-ENV-2009-1-244123 NIKER “New integrated knowledge-based approaches to the protection of cultural heritage from eartquake-induced risk”, concerning a research focused on the “Design, execution, processing and analysis of experimental tests for the application of traditional and innovative materials aimed at improving the structural behaviour of masonry elements", carried out at the former Dept. of Constructions and Transportation.
Period: 1/7/2010 – 31/12/2010

5 Fellowship at the University of Padova, Italy, for activities in the framework of the European project FP7-ENV-2009-1-244123 NIKER “New integrated knowledge-based approaches to the protection of cultural heritage from eartquake-induced risk”, concerning a research focused on the Experimental investigation of the mechanical behaviour of historical floors and vaults and the influence of traditional and innovative strengthening tecniques”, carried out at the former Dept. of Constructions and Transportation.
Period: 1/4/2010 – 30/6/2010

4 Contract for activities of “Collaboration and supervision of experimentations on structures and sub-assemblages related to the application of innovative strengthening techniques”, carried out at the former Dept. of Constructions and Transportation.
Period: 2/1/2009 – 7/2/2009

3 Work-on-project for activities in the framework of the Italian research project ReLUIS-DPC 2006-2008, concerning activities of “Collaboration and supervision of the experimentation of structures and sub-assemblages simulating components and materials of historical buildings, with specific attention to innovative strengthening techniques, focused on individuating analytical models”, carried out at the former Dept. of Constructions and Transportation.
Period: 15/4/2008 – 30/6/2008

2 Work-on-project for activities in the framework of the Italian research project ReLUIS-DPC 2006-2008, concerning activities focused on the “Analytical modelling of experimental tests on structures or sub-assemblages simulating components and materials of historical buildings”, carried out at the former Dept. of Constructions and Transportation.
Period: 1/5/2007 – 30/11/2007

1 Work-on-project for activities in the framework of the Italian research project ReLUIS-DPC 2006-2008, Line 1 – Evaluation and reduction of vulnerability of masonry buildings, and Line 8 – Innovative materials for the reduction of vulnerability of existing buildings, carried out at the former Dept. of Constructions and Transportation.
Period: 1/6/2006 – 30/11/2006

Annex 4: summary of the Ph.D. thesis

Title: FRP strengthening of masonry arches: analysis of local mechanisms and global behaviour
Author: Matteo Panizza
Tutor: Prof. Maria Rosa Valluzzi
PhD School: Study and Preservation of Archeological and Architectural Heritage, Technological main course (XXII cycle)
Institution: University of Padova, Italy
Date of the dissertation: 9 April 2010
Electronic version: available at this link (personal website) or this one (repository of UniPD)

In the last two decades, FRP (Fibre-Reinforced Polymers) composite materials have been adopted for strengthening and repair of both modern and historic masonry constructions (buildings, bridges, towers) and structural components (walls, arches and vaults, pillars and columns). Strengthening of brick masonry arches and vaults with FRP laminates can contribute significantly in the improvement of their structural capacity at a limit state, by activating local mechanisms both at material and interface levels, but also modifies the collapse mechanisms of the original structures, as the reinforcement prevents the typical brittle failure due to the formation of hinge-mechanisms.
Experimental evidences highlighted as the reinforced arch sections behave similarly to reinforced concrete or masonry, while structural failure is generally due to the ripping of FRP, in the case of intrados reinforcement, or the sliding on a mortar joint, in the case of extrados reinforcement. Despite the increasing number of specific studies on the FRP strengthening of masonry structures, investigations are still limited if compared to reinforced concrete applications. Moreover, few codes and recommendations are currently available.
Starting from these points, five main topics were evaluated as worthy to be investigated: the problem of collecting and sharing data concerning available activities based on strengthening of masonry structures; the analysis of possible correlations among pull-off strength and other more common mechanical properties of solid clay bricks; the investigation of bond behaviour in the case of tangential forces, targeted to the calibration of guidelines' provisions (available only for this mechanism); the investigation of a possible contribution of the reinforcement when subdued to mixed actions, as in the case of sliding of masonry on a mortar joint; finally, the validation of existing models, aimed at describing the collapse behaviour of reinforced masonry arches, through their application to several experimental case studies.
The first part of the research produced the structure of a Database aimed at collecting data concerning available experimental, analytical, numerical works, as well as interventions on real structures or other topics as durability or Non-Destructive Techniques, related to the application of FRP materials to masonry, within the framework of the RILEM Technical Committee 223-MSC (Masonry Strengthening with Composite materials). The latest releases of this system, currently available on-line, present significant upgrades that modified the original Database into a Data-Warehouse, which allows to implement additional functions and provide access and contributions coming from external researchers.
The central section of the work investigated the three above mentioned local mechanisms involved by the collapse of FRP-reinforced masonry arches, namely the interface behaviour in the case of stresses normal to the surface (FRP detachment observed in structures with intrados reinforcement), of tangential stresses (plate-end or intermediate debonding) and of mixed actions (related to the shear sliding on a mortar joint observed in structures with extrados reinforcement).
Finally the available models, which interpret the global behaviour of arched structures, were integrated, when needed, with the results obtained at a local level during the present work, in order to apply them to several experimental case studies, concerning real-scale or scaled reinforced brick masonry arches and vaults, collected from literature, and to compare analytical results to experimental evidences.

Annex 5: exams taken to pursue the Master degree

	Denomination	Annual course modules *overall 29*	Equivalent ECTS
30	Problemi Strutturali dei Monumenti e dell'Edilizia Storica *Structural Problems of Monuments and Historical Buildings*	1.0	12
29	Fisica Tecnica *Engineering Physics*	1.0	12
28	Architettura e Composizione Architettonica *Architectural Composition*	1.0	12
27	Recupero e Conservazione degli Edifici *Restoration and Preservation of Buildings*	1.0	12
26	Tecnica delle Costruzioni I *Structures I*	1.0	12
25	Industrializzazione dell'Edilizia *Industrialization in Building Constructions*	1.0	12
24	Architettura Tecnica e Tipologie Edilizie *Constructions and Building Typologies*	1.0	12
23	Diritto Amministrativo *Administrative Law*	1.0	12
22	Progettazione Architettonica *Architectural Design*	1.0	12
21	Architettura Tecnica *Constructions*	1.0	12
20	Economia and Estimo Civile *Economics and Cost Estimation*	1.0	12
19	Geotecnica *Geotechnics*	1.0	12
18	Scienza delle Costruzioni *Statics and Solid Mechanics*	1.0	12
17	Tecnica Urbanistica *Urban Planning Technics*	1.0	12
16	Storia dell'Architettura Contemporanea *History of Contemporary Architecture*	1.0	12
15	Fotogrammetria *Photogrammetry*	1.0	12
14	Analisi della Morfologia Urbana e delle Tipologie Edilizie *Analysis of Urban Morphology and Building Typologies*	1.0	12
13	Disegno dell'Architettura *Architectural Drafting*	1.0	12
12	Infrastrutture Idrauliche *Hydraulic infrastructures*	1.0	12
11	Fisica Generale II *General Physics II*	1.0	12
10	Meccanica Razionale *Mathematical physics*	1.0	12
9	Disegno Edile *Drafting for Construction*	1.0	12
8	Storia dell'Architettura *History of Architecture*	1.0	12
7	Metodi Numerici per l'Ingegneria *Numerical Methods for Engineering*	0.5	6
6	Analisi Matematica II *Mathematical Analysis II*	0.5	6
5	Chimica *Chemistry*	1.0	12
4	Fisica Generale I *General Physics I*	1.0	12
3	Geometria *Geometry (i.e. Algebraic Geometry)*	1.0	12
2	Analisi Matematica I *Mathematical Analysis I*	1.0	12
1	Fondamenti di Informatica *Fundamentals of Information Science*	1.0	12
	Prova di accertamento della lingua inglese *English proficiency test*	*n.a.*	*n.a.*