

Filippo Busato

GENERAL INFO	<i>Name:</i> Filippo Busato <i>Born in:</i> Vicenza <i>DOB:</i> 20 November 1976	<i>Address:</i> Via Panizza, 37 36100 Vicenza (VI), ITALY <i>mobile:</i> (+39) 347 1207174 <i>e-mail:</i> filippo.busato@gmail.com <i>web:</i> www.3f-engineering.it
EDUCATION	University of Padova (IT) <i>Department of Management and Engineering</i>	Jan 2003 - Dec 2005
	PhD in Fisica Tecnica , March 2006. Dissertation: Analisi del funzionamento stagionale di generatori di calore a condensazione (Analysis of the seasonal performance of condensing boilers), passed with “ottimo” Supervisor: prof. Renato Lazzarin	
	University of Padova (IT) <i>Department of Management and Engineering</i>	Sep 1995 - Jul 2000
	Master Degree in Management and Engineering , marks 93/110, March 2001. Master Thesis title: Combined District Heating and Cooling systems (in English) Supervisor: prof. Renato Lazzarin	
	Danmarks Tekniske Universitet (DK) , Lyngby <i>Department of Energy Engineering, Lyngby</i>	Sep 2000 - Feb 2001
	Exchange student programme Erasmus Master Thesis Development Supervisor: prof. Niels Houbak	
	High School “Liceo Scientifico” , Statale G.B.Quadri Vicenza (IT)	Sep 1990 - Jun 1995
	Maturita’ Scientifica Degree, marks 50/60, Jul 1995. Areas of concentration: Literature, Maths, Physics Minor: Philosophy	
ACADEMIC EXPERIENCE	Post-doc researcher at the University of Padova, Department of Management and Engineering University of Padova , Vicenza (IT)	Jan 2006 - Jun 2014
	Lead the Acoustics Laboratory activities and joined the Thermal Science research group led by prof. Renato Lazzarin. Main working areas were those of energy saving and energy efficiency in buildings and the industrial sector, with special focus on the heat pumps and renewables’ integration in the refurbishment of existing buildings. Design of test facilities for “in situ” monitoring of HVAC equipment and active building surfaces (green roof). Dynamic simulation of buildings’ energy systems. Design of architectural acoustics solutions for sound-proofing and perceived sound quality in buildings.	
	– Teaching assistant & Research Fellow Cultore della materia nei settori ING-IND/10 e ING-IND/11, University of Padova - Department of Management and Engineering, Course of “Technical Physics”, “Energy Ma-	Apr 2003 - Jun 2014

agement” and “Applied Acoustics”

- Post-doc research grant (Assegno di ricerca - L. 240/2010) **Apr 2012- Mar 2013**
, University of Padova - Department of Management and Engineering, with the research title “Strategies for Industrial Energy Savings”
- Temporary research fellow **Nov 2011- May 2012**
CO.RI.LA Consorzio Ricerche Laguna (VE), within the research project “Mitigation strategies for the UHI (Urban Heat Island) effect”
- Post-doc research grant (Assegno di ricerca - L. 449/1997) **Jun 2010- May 2011**
University of Padova, with the research title “Photovoltaic Cogeneration”
- Post-doc research grant (Assegno di ricerca - L. 449/1997), **Jan 2008- Dec 2009**
University of Padova, with the research title “Multisource Heat Pump systems for climatization”
- Post-doc research fellow **Feb 2006 - Sep 2006**
Department of Management and Engineering, University of Padova, within the **Photovoltaic Cogeneration** programme

Selected Projects:

- **Multisource Heat Pump systems** - Private funded **Areatecnica Studio Vigne e associati**. Design of the system, energy simulation and lead the monitoring phase on a real application
- **Urban Heat Island** - Central Europe Project. Design of the test facility and monitoring campaign.
- **Electronics cooling** - Private funded **GTEC Europe srl**. Design and simulation of innovative heat pump based cooling systems for Rack systems.
- **Acoustic refurbishment**. Design and test of the acoustic refurbishment of a music hall and of a music school.
- **Frostless Heat Pump** - Private funded **Clivet SpA**.
- **Energy Savings in hospitals** . Design and conduction of the test for innovation towards the energy savings in climatization for hospitals (low temperature radiant system, innovation in Air Handling units, absorption dehumidification, open cycle heat pumps, active building envelope components, green roof).
- **Photovoltaic Cogeneration** - European FP. Design of prototypes and lead the test campaign for combined photovoltaic and solar thermal panels

PROFESSIONAL
EXPERIENCE

3f-Engineering, Verona (IT)
Partner-founder

Oct 2007 - present

Found the associate engineering study. Led the Simulation of Energy system branch.

Selected Projects:

- **Venice new Cinema Palace** - led the Acoustic pre-design phase.
- **Belluno new Hospital** - led the Building Physics Simulation and the report phase.
- **Feltre new Hospital** - led the Acoustic pre-design phase.
- **Mezzolombardo new Hospital** - led the Building Physics Simulation phase.
- **Milan Fashion District** - led the Building’s Solar Shading Simulation phase.
- **Padova New Botanical Garden** - conducted the modelling activity of the glazing system and led the Buildings’ Simulation for heat and mass transfer.

Bettiol srl, Bozen (IT)

Nov 2014 - Dec 2014

Coordination of public tender office - consultant

Innovation manager and technical supervisor of a team of 8 engineers/architects to improve innovation proposals on public tender competitions. The main task is to develop a strategic view for the company, to investigate new fields to operate: green & energy efficiency certificates, O&M etc.

EL.TE.CO. Engineering srl, Vicenza (IT)

Mar 2001 - Dec 2005

Professional engineer

Worked with the Italian partnership in the **Euganea Energia** Project, in joint development with **Marubeni Europower Ltd**, for a 760 MW CCGT power plant in the Veneto Region. Lead the Environmental Impact Assessment Study coordination from the local partner (EL.TE.CO.) with the global Partner.

Selected Achievements:

- **JDA Joint Development Agreement** - Represented the local (Italian) partner in the negotiation phase during the meetings in London, Milan and Rome.
- **Environmental Impact Assessment Study** - Led the negotiation with Marubeni Europower Ltd representing the local (Italian) partner in the pre-design of the plant and in the Environmental Impact Assessment Study phase, attending and contributing to meetings in Rome and Milan at CESI.

ETC Engineering srl, Vicenza (IT)

2010

Professional engineer

Energy design of the T-systems Datacentre in Vicenza, Palazzo Platino Via Vecchia Ferriera (VI)

ACADEMIC
QUALIFICATIONS

Associate Professorship

The candidate is qualified as Associate Professor according to Italian Law 240/2010, SC 09/C2 Fisica Tecnica (Applied Thermodynamics and Heat Transfer), number 2539, until 22/12/2020.

PROFESSIONAL
QUALIFICATIONS

Energy Manager - EGE according to UNI 11339 Standard.

Engineering

The candidate is qualified as a Chartered Engineer, Vicenza Province Bulletin Board (Ordine degli Ingegneri della Provincia di Vicenza), number 2222.

Tecnico Competente in Acustica Ambientale

The candidate is qualified as Professional Engineer in Environmental Acoustics (Tecnico Competente in Acustica Ambientale), Veneto Region Bulletin Board number (iscritto nell'elenco ufficiale della Regione Veneto) 745.

AWARDS &
HONOURS

Chairman IIR & ISHPC

The candidate has been appointed Chairman for the IIR International Conferences “*Sources/sinks alternative to outdoor air for heat pump and air conditioning*” and “*International Sorption Heat Pump Conference*” (ISHPC), held in Padua, April 2011.

Premio Sanguineti 2010

The candidate won the prize “premio Sanguineti 2010” AiCARR (Italian Association for Air Conditioning, Heating, Refrigeration) with the paper *Energia eolica ed idroelettrica in*

Italia: possibilita' di sviluppo degli impianti di piccola taglia (Wind and Hydro power in Italy: development chances for small size plants).

Co-authors Marco Noro and Davide del Col.

Concorso Impianti premiati 2007

The candidate won the prize "Impianti premiati" (Award for the innovative design of HVAC systems) in 2007, with the *progetto dell'impianto di climatizzazione a pompa di calore multisorgente per il nuovo Polo Scolastico di Agordo (BL)* (Design of the multisource heat pump based HVAC plant for the new School Campus of Agordo (BL)).

Co-authors Renato Lazzarin, Fabio Minchio, Marco Noro, Gianluca Vigne.

The candidate has given several **keynotes and oral presentations to national and international conferences**. For sake of brevity it could be reminded of (please find the complete list below):

- AiCARR National Conference 2007 in Padova, Bari, Catania, on the subject *Wind and Hydro power in Italy: development chances for small size plants*, the keynote later won the **premio Sanguineti** in 2010.
- International Workshop AiCARR-ASHRAE-IIR-REHVA in 2009 in Tivoli and to the International Workshop AiCARR-REHVA in 2008 a Milano, on the subject *HVAC refurbishment of a commercial building - a case history*.

INVITED
SPEAKER

1. **Convegno AiCARR di Padova**, 5 June 2014, Padova (PD)
Relazione ad invito sul tema *Costi e benefici delle nuove tecnologie*.
2. **La Termo Gas refrigeranti: soluzioni di prodotto, normativa e buone pratiche**, 25 October, Vicenza (VI)
Relazione ad invito sul tema *La scelta del refrigerante per gli impianti di climatizzazione*
3. **La Termo Impianti termici integrati: caldaie a condensazione, solare, biomasse, pompe di calore**, 4 October 2012, Verona (VR)
Relazione ad invito sul tema *Rinnovabili e pompe di calore per la Direttiva RES*
4. **GeothermExpo**, September 2012, Ferrara (FE)
Relazione ad invito sul tema *Progetto e monitoraggio di impianti a pompa di calore multisorgente: un caso studio* (Design and monitoring of multisource heat pump system)
5. **La Termo Pompe di calore e geotermia** (Geothermal Heat Pumps), 29 May 2012, Bologna (BO)
Relazione ad invito sul tema *I sistemi a pompa di calore multisorgente*
6. **AiGA** Associazione italiana Giovani Avvocati - sezione di Vicenza *Il contenzioso in materia di Acustica: aspetti legali e tecnici*, 4 May 2012, Vicenza (VI)
Relazione ad invito sul tema *Valutazioni previsionali e accertamenti strumentali nell'acustica architettonica e ambientale*
7. **Caterpillar Radio2 M'illumino di meno**, 26 January 2012, Bologna (BO)
Relazione ad invito sul tema *Energia ed edifici: il risparmio energetico attraverso il recupero del patrimonio edilizio esistente*
8. **VP Solar IV conto energia, fotovoltaico, risparmio energetico e fonti rinnovabili**, 26 May 2011, Montebelluna (TV)
Relazione ad invito sul tema *Nuovo decreto sulla promozione dell'uso dell'energia da fonti rinnovabili (D.Lgs. 03.03.11, n.28)*
Relazione ad invito sul tema *Sviluppi del fotovoltaico: i sistemi PV/T*
9. **SolarExpo 2011, convegno Assital Le nuove frontiere del fotovoltaico**, 5 May 2011, Verona
Relazione ad invito sul tema *L'integrazione edificio impianto: aspetti architettonici e progettuali*

10. **Fiera Termoidraulica Clima Ecoenergia 2011** *Formazione e Certificazione degli installatori di impianti a pompa di calore: requisiti e opportunita'*, 31 May 2011 (afternoon), Padova
Relazione ad invito sul tema *La proposta formativa di AiCARR: organizzazione, requisiti di ingresso, contenuti teorici-applicativi e modalita' di valutazione finale dei corsi qualificati*
11. **Enel: Incontri con...gli scienziati** *L'ambiente di domani*, 31 March 2011 (morning), Rovigo
Relazione ad invito sul tema *Efficienza energetica nel settore civile ed industriale*
12. **Centro Produttivita' Veneto CPV** *Le buone pratiche in edilizia: la Certificazione energetica e la classificazione acustica*, 25 March 2011, Vicenza
Relazione ad invito sul tema *correlazione tra certificazione energetica e classificazione acustica: esempio di buona pratica*
13. **Fondazione Veronesi** *I giorni della scienza*, 1 December 2010, Catania
Relazione ad invito sul tema *Cosa sono le fonti rinnovabili? Quali sono le opportunita' del risparmio energetico nel settore civile e industriale?*
14. **Centro Produttivita' Veneto CPV** *I sistemi di gestione dell'energia nel settore industriale* del 15 October 2010, Schio (VI)
Relazione ad invito sul tema *Audit energetico di un'azienda di confetture: analisi e proposte di intervento*
15. **Convegno della Societa' Geologica Italiana** (sezione giovani) *La geologia come contributo alla societA' : quale futuro?* del 19 March 2010, Napoli
Relazione ad invito sul tema *Il terreno come sorgente di calore: potenzialita' e applicazioni*
16. **Confartigianato Vicenza** *Le energie rinnovabili: un'opportunita' per le aziende e per il paese* del 17 March 2010, Vicenza
Relazione ad invito sul tema *Tecnologie per lo sfruttamento delle energie rinnovabili: casi studio*
17. **AiCARR - ASHRAE - IIR/IIF - REHVA International Seminar** *Improvement of Building Energy Efficiency* del 7 October 2009, Tivoli
Relazione ad invito sul tema *Energy audit to identify energy saving potential from the redevelopment of the HVAC plant of a commercial building: a case history.*
18. **AiCARR - IIR/IIF - REHVA International Workshop** on the refurbishment of existing buildings, 31 October 2008, Milano
Relazione ad invito sul tema *The refurbishment of the air conditioning of a commercial building a case history.*
19. **Convegni AiCARR di Padova, Bari, Catania, 2007**
Relazione ad invito sul tema *Energia eolica e idroelettrica: possibilita' di sviluppo per gli impianti di piccola taglia.*
20. **Incontro API Industria** Vicenza 25 October 2006
Relazione ad invito sul tema *Energia e PMI: quale futuro?*, a confronto con l'ing. Alessandro Ortis presidente dell'Autorita' per l'Energia Elettrica ed il Gas AEEG.

ORAL
PRESENTATIONS

1. **Convegno Nazionale AiCARR di Padova - 2014**
2. **Convegno Nazionale AiCARR di Padova - 2013**
3. **Convegno Nazionale AiCARR di Bologna - Bologna 2012**
4. **67' Congresso Nazionale ATI - Trieste 2012**
5. **SET 2012 Conference, Vancouver (CA) 2012**

6. **Convegno internazionale AiCARR** - Baveno 2011
7. **IIR Conferences - ISHPC Conference** - Padova 2011
8. **Convegno Nazionale AiCARR di Bologna Torino Napoli** - Bologna 2010
9. **65' Congresso Nazionale ATI** - Cagliari 2010
10. **Convegno Nazionale AiCARR di Padova Bari Catania** - Padova 2010
11. **Convegno internazionale AiCARR** - Tivoli 2009
12. **Convegno Nazionale AiCARR di Padova Bari Catania 2009** - replica di Torino 2010
13. **Convegno Nazionale AiCARR di Padova Bari Catania** - Padova 2009
14. **63' Congresso Nazionale ATI** - Palermo 2008
15. **Convegno Nazionale AiCARR di Padova Bari Catania** - Padova 2008
16. **Convegno internazionale AiCARR in MCE Mostra Convegno Expocomfort** - Milano 2008
17. **Convegno Nazionale AiCARR di Padova Bari Catania** - Bari 2007
18. **Convegno Nazionale AiCARR di Padova Bari Catania** - Padova 2007
19. **SET 2006 Conference** - Vicenza 2006
20. **Convegno AiCARR di Padova Bari Catania** - Padova 2006
21. **Convegno internazionale AiCARR in MCE Mostra Convegno Expocomfort** - Milano 2006
22. **60' Congresso Nazionale ATI** - Roma 2005
23. **IIR Conferences (B1 B2 D1)** - Padova 2005
24. **Conferenza Nazionale sulla politica energetica in Italia** - Bologna 2005
25. **Convegno Nazionale AiCARR di Padova Bari Catania** - Padova 2005
26. **59' Congresso Nazionale ATI** - Genova 2004
27. **SET 2004 Conference** - Nottingham (UK) 2004
28. **Convegno Nazionale AiCARR di Padova Bari Catania** - Padova 2004
29. **58' Congresso Nazionale ATI** - Padova 2003

STANDARDISATION ACTIVITY The candidate is member of the Comitato Termotecnico Italiano CTI, in the working groups GL 601 (Heating Systems), GL 608 (Geothermal Heat Pumps), GL 901 (Solar Systems) and GL EPDB. He's been participating to the development of the Technical Specifications UNI/TS 11300-3 and 11300-4 and to the revision of the 11300-1 and 11300-2. **Jan 2010 - present**

EDITORIAL ACTIVITY The candidate is reviewer for several refereed publications, such as **Energy and Buildings, Applied Thermal Engineering, International Journal of Refrigeration, Sustainable Cities and Society, Energy Efficiency**.

The candidate has been member of the Miniguida AiCARR **editorial board** (2009-10).

The candidate has been member of the **Organizing Committee** of the AS-ISHPC International conference in Padova, 2011.

The candidate has been member of the **Scientific Committee** of the 48th AiCARR International Conference in Stresa, 2011.

The candidate has been member of the **Scientific Committee** of 47th AiCARR International Conference in Tivoli, 2009.

The candidate has been member of the **Organizing Committee** of 5th SET International Conference in Vicenza, 2006.

SCIENTIFIC ACTIVITY

Architectural Acoustics

The candidate has been working in the research for the improvement of sound proofing features of windows, by means of predictive techniques and experimental tests.

The candidate has been researching for the acoustic retrofit of buildings for musical performances as for instance the Conservatory of Music in Vicenza (historical building), Feltre and Belluno (historical building). The research focused on the reduction of both airborne and impact sound transmission, and then to reverberation control. After the first measurement campaign and the predictive evaluation, several solutions were assessed in order to select the best one according to the sound-proofing performance and the chance to implement a variable reverberation control (sound quality indices as STI, RaSTI, RT, Clarity etc) which could be adapted to different musical execution and audience.

Noise reduction of biomass stoves

The candidate has been investigating on the reduction of noise emission in biomass stoves, by means of predictive techniques and experimental tests. The research started from the sound intensity measurements used for a detailed mapping of the sound source, to seek the key elements in noise emission and transmission: those were identified in the main/burner fan installation and in the back steel panel vibration, investigated by means of accelerometers. Improvement suggestions were indicated in the design phase and construction, and the modified stove are tested.

Multisource Heat Pumps

The candidate has been working in the field of Multisource Heat pumps. The study aims to select high efficiency and cost effective solutions to optimise the use of the different heat sources available for heat pumps. By means of numerical analysis (TRNSYS, EED) the different solutions are assessed. After the first assessment (base case) with the air source, other sources are evaluated, such as: solar energy, geothermal (open and closed loop), heat recovered with ventilation. The research shows that very interesting results can be obtained for instance considering the solar thermal energy, since at low temperature level the efficiency of even flat plate collectors in wintertime can be remarkable. Besides the numerical evaluation, the monitoring of real working applications has been made since 2009, thus helping to underline potential savings given by and limits of this technique, as well as to identify the reliability of such innovative solutions.

Electronics' cooling

The candidate has been working on a private funded research for the electronics' cooling, specifically the refrigeration of "rack" systems, hosting UPS, servers, batteries for small-medium enterprises. The analysed solutions were those of: conventional air-to-air refrigerator, air-to-spray cooled condenser refrigerator, air-to-air refrigerator with an innovative "free-cooling-on-the-refrigerant" system.

UHI Urban Heat Island

The candidate participates in the experimental and predictive research of the Urban Heat Island effect, in cooperation with CO.R.I.LA (Venice) within the European Project "UHI - Development and application of mitigation and adaptation strategies and measures for counteracting the global Urban Heat Islands phenomenon" (3CE292P3). The measurement campaign in the Padova City Area are carried by means of a mobile LSI data acquisition

system: the main parameters logged to describe the phenomenon are: air temperature, mean radiant temperature, relative humidity, windspeed, global radiation and net radiation. The predictive analysis is developed with the software Rayman Pro. The predictive model results are in good match with the experimental campaign, and show a remarkable heat island effect between rural areas and the city, as well as a non-uniform UHI effect within the city. The experimental and modelling campaign then focused on the historical city, where the effect of green area and the building tile, pavement etc is being evaluated.

Low temperature heating systems

The candidate has worked on the modelling of low temperature heating devices (radiant ceilings) to identify the performances, coordinating the following monitoring “in situ” campaign on existing applications. The monitoring has been developed with the Labview interface.

Green roof

The candidate has worked on the modelling and experimental testing of a **Green roof** building element located on the San Bortolo Hospital in Vicenza. The green roof was modelled with a 1-D physical model which, from the environmental conditions and indoor temperatures, calculated the evapotranspiration component of the energy balance (usually the most difficult to predict).

The experimental campaign was conducted by logging all the environmental and indoor variables (including direct and diffuse solar radiation and rainfall), and the temperatures and saturation conditions of the ground at three different depths (surface and two buried knots) level. The experimental campaign lasted for 20 months, including one winter and two summers. One of the interesting outcomes from the research was that in the climatic conditions of Vicenza, the green roof can be a passive cooler for the building.

Buildings’ Energy labelling

The candidate has developed research in the comparison among different modelling techniques and calculation for the energy consumption of a building (climatisation). The comparison was performed considering commercial software (certified), CasaClima Standard, Docet public software, and the benchmark was the dynamic simulation performed in TRNSYS, according to the standard specifications. The outcomes of the research identified some critic aspects of each methods.

Condensing boiler

The candidate researched on the modelling and experimental validation for the performance evaluation of condensing boilers for space heating and domestic hot water (DHW). The analysis was conducted in the TRNSYS environment and accounted for different climates (TRY Tes Reference Year, EU Directorate for Energy), different heating devices, different hydronics, different techniques for the DHW production. The simulations were conducted in the TRNSYS environment and an experimental campaign involved an existing building where condensing boiler was coupled to radiators’ heating devices. The research led to to the study of centralised heating systems, towards boiler selection, control strategies and sizing of the plant.

Chemical dehumidification of Air

The candidate coordinated and joined the measurement sessions for innovative air handling unit based on chemical dehumidification in a hospital facility by the San Bortolo Hospital in Vicenza (VI). An innovative Air Handling Unit (AHU) was studied, the unit being capable for dehumidify, heating, cooling the air by mean of a compression heat pump working on a hygroscopic solution as secondary fluid. The candidate conducted the measurement campaign and by the evaluation of the monitored data, underlined some remarkable inefficiencies in the control strategies and in the developed technology itself.

Solar cogeneration

The candidate has worked on a project for solar cogeneration (PV/T) with Photovoltaic panels with heat recovery capabilities within the project iDOCUP 2005-2006 *Cogenerazione fotovoltaica: sviluppo di componenti e di un sistema per la produzione di energia elettrica e termica dal sole*. He designed the test rig and conducted the experimental campaign of several prototypes, from industrial companies and from University of Padova DTG's own design and assembly. Many different kind of PV/T systems were assessed under summer outdoor conditions: glazed, unglazed, air cooled and liquid cooled, with crystalline silicon and amorphous. The results of the evaluation and analysis were published on many conference proceedings and international journals.

RELATED ACTIVITY

AiCARR

- The candidate is member of the board of Auditors (Collegio dei revisori dei conti) of AiCARR **Apr 2014 - Mar 2017**
- The candidate is Veneto Regional Delegate (Delegato territoriale per il Veneto) of AiCARR **Apr 2014 - Mar 2017**
- The candidate was member of the board of Directors (Giunta esecutiva) of AiCARR, head of Technical Standards Committee **Jan 2008 - Mar 2014**
- The candidate is member of the permanent Scientific Committee of the AiCARR national conference of Padova

IIR-IIF International Institute of Refrigeration

- The candidate is member of the IIR-IIF, secretary of the Commission E1 Air Conditioning **Jan 2012 - present**

CNIFR Comitato Italiano IIR-IIF

- The candidate is member of CNIFR, italian delegate in Commission E1 of IIR-IIF **Jan 2012 - present**

AITI Italian Association for Infrared Thermography

- The candidate is honour member of the AITI **Jan 2012 - present**

TEACHING

- Lecturer-teaching assistant
 - AA 2013-2014 University of Padova, Course of Technical Physics
 - AA 2010-2011 University of Padova, Course of Applied Acoustics for the first cycle Degree in Management and Engineering
 - AA 2010-2011 University of Padova, Course of Energy Management for the second cycle Degree in Management and Engineering
 - AA 2009-2010 University of Padova, Course of Applied Acoustics for the first cycle Degree in Management and Engineering
 - AA 2009-2010 University of Padova, Course of Energy Management for the second cycle Degree in Management and Engineering
 - AA 2008-2009 University of Padova, Course of Applied Acoustics for the first cycle Degree in Management and Engineering
 - AA 2007-2008 University of Padova, Course of Applied Acoustics for the first cycle Degree in Management and Engineering
 - AA 2004-2005 University of Padova, Course of Applied Acoustics for single cycle Degree in Management and Engineering
 - AA 2004-2005 University of Padova, Course of Energy Management for the single cycle Degree in Management and Engineering
 - AA 2004-2005 University of Padova, Course of Energy Management for the second cycle Degree in Management and Engineering

- Teacher in the courses funded by the FSE Fondo Sociale Europeo (European Social Fund) and Regione Veneto at the Fondazione Giacomo Rumor (Giacomo Rumor Foundation) CPV of Vicenza for:
 - 2012 - Energy Manager
 - 2010 - Design of equipment and solutions for sound absorption
 - 2010 - Energy Manager
 - 2009 - Engineering for renewables
 - 2006 - Energy Manager
 - 2006 - Indoor climate engineering
 - 2005 - Environmental Acoustics engineering
 - 2005 - Engineering for renewables
- Teacher in the IFTS Istituto per la Formazione Tecnica Superiore courses for:
 - 2010 - Expert for Energy, Safety, Environment and Quality
 - 2009 - Expert in the design of process with high Energy Efficiency
- Scientific Tutor in the programme **Enel Master Energia in gioco** (Enel - Scuola Normale Superiore di Pisa)
 - 2007-08 ITIS Segato, Belluno (BL)
 - 2009-10 LSS Alberti, Abano Terme (PD)
- Teacher at the **AiCARR Academy** (MI)
- The candidate has been **supervising** several Master and first cycle **Degree Thesis** in the fields of industrial energy savings, HVAC energy savings, risparmio energetico industriale e di processo, utility (O&G) market, buildings' energy labelling, architectural acoustics.

COMPUTER SKILLS

- Operating Systems: Mac OSX, Windows, Linux.
- General purpose software: deep knowledge of the Office Suite, including VBA coding, \LaTeX , HTML, Autocad 2011;
- Simulation: Matlab, Simulink, TRNSYS, DesignBuilder;
- Coding: Visual Fortran 6.6, Visual Basic;
- Data logging and monitoring: Labview 7, Babuc;
- HVAC & Thermodynamics: Ediclina, TFM, Psycro, Coolpack;
- Acoustics equipment: 01dB, B&K 2260 Investigator (including architectural acoustics and sound intensity), EdilIso.

LANGUAGE SKILLS

- Italian: native fluency;
- English: fluent in speaking, proficient in writing;
- French: basic.

MISCELLANEOUS

Languages: Mother Tongue **Italian**; Proficient in **English**; Elementary in **French**.
 Handsome presence, excellent human relationship skills.
 Enjoy: Skiing, Sailing, Acoustic guitar, Sommelier, official Wine Taster.

RELEASE

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 I hereby authorise the processing of my personal data according to the Italian Law DLgs. 196/03.

1 novembre 2015

Filippo Busato

International Journals (peer reviewed)

1. F. Busato, M. Noro, R. Lazzarin, *Ground or solar source heat pump systems for space heating: which is better? Energetic assessment based on a case history*, Energy and Buildings, 2015, vol. 102, pp. 347-356, doi:10.1016/j.enbuild.2015.05.053
2. M. Noro, R. Lazzarin, F. Busato, *Uhi effect in an Italian town: simulations and forecast in different periods of the year*, Geographia Polonica, 2014, vol. 87, iss. 4, pp. 517-530, <http://dx.doi.org/10.7163/GPol.2014.35>
3. M. Noro, R. Lazzarin, F. Busato, *Urban Heat Island in a medium city of Italy: experimental and theoretical analysis*, Indoor and Built Environment, 2014, vol. 24(4), pp. 514-533, doi: 10.1177/1420326X13517404
4. M. Noro, R. Lazzarin, F. Busato, *Solar cooling and heating plants: An energy and economic analysis of liquid sensible vs phase change material (PCM) heat storage*, International Journal of Refrigeration, 2014, doi: 10.1016/j.ijrefrig.2013.07.022.
5. F. Busato, R. Lazzarin, M. Noro, *Three years of study of the Urban Heat Island in Padua: Experimental results*, Sustainable Cities and Society, 2013, doi:10.1016/j.scs.2013.05.001.
6. F. Busato, R. Lazzarin, M. Noro, *Two years of recorded data for a multisource heat pump system: A performance analysis*, Applied Thermal Engineering, Volume 57, Issues 1-2, August 2013, Pages 39-47, doi: 10.1016/j.applthermaleng.2013.03.053.
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