

# Curriculum

## Andrea Ratti

### UNIVERSITY EDUCATION

- He graduated in Architecture in March 1991 at the School of Architecture of the Politecnico di Milano with thesis entitled Employment opportunities of recycled plastic material for the construction of building components.
- He obtained the Ph.D. degree in Technical Innovation and project in architecture [VII cycle - October 1996] at the School of Architecture of the Politecnico di Milano with thesis entitled "Control of sources of pollution in internal environments".
- A research project funded by some industrial partners (Mapei / Mondo) on the Evaluation of emissions of volatile organic compounds from building products, which becomes the object of post-doctoral activity, comes to life from the research activity developed within the PhD program (1998-99).

### He is now

- Associate Professor at the Design Department of the Politecnico di Milano
- Director of the Master in Yacht Design of the Politecnico di Milano
- Chair of the Master of Science in Yachts and Cruising Vessel Design, an inter-university course managed with the University of Genoa at the La Spezia Campus
- Scientific manager of the research laboratory Sustainable Marine Research & Technologies (SMaRT.Lab) at the Politecnico di Milano, Lecco Campus
- Member of the Board of Athena Lombardia (Italian Naval Technical Association)
- Member of the Board of Assocompositi (Italian Association of Composite Materials)
- Member of the UNI U8105 GL5 - Yacht Recycling Commission
- Member of the jury of the "MYDA - Millenium Yacht Design Award" International Design Competition.
- Member of the "Boat of the Year Award" organized by the magazine Vela & Motore.
- Member of the jury of the "Yacht Design Talent Award", promoted by Heesen Yacht and Monaco Boat Show.

### SCIENTIFIC ACTIVITY

Since 1991 he has been carrying out research relating to construction techniques and industrial production in relation to the Indoor Air Sciences. These researches have been developed within projects financed by Miur, Enea, CNR, Ministero del Lavoro and other private or public institutions.

The results of these researches have been discussed in the main international and national conferences on the subject (IAI, Indoor Air, Healthy Buildings, CIB, Air, API).

From 2001 he moved to the Faculty of Design and started to undertake a series of teaching and research activities aimed at building a center of expertise on yacht design within the School of Design.

The previous research experiences are then redirected towards the study of technologies for environmental sustainability in the production of boats.

Studies are developed:

- on the assessment of exposure risks in the shipbuilding industry;

- on yacht production techniques with reduced environmental impact;
- on the LCA of the marine products with reference to the possibility of decommissioning and / or recycling of boats at the end of their life cycle,
- on the testing of new materials and technologies and on the study of applicability of bio-composites for structural purposes;
- on the rationalization of production processes.

#### TEACHING ACTIVITY

He held at the Politecnico di Milano, the University of Ferrara and the University Campus of La Spezia teachings of:

- Materials and components for Industrial Design 1
- Materials and components for Industrial Design 2
- Industrial design
- Architectural technology
- Technologies and prototype testing
- Final Synthesis Laboratory on Interior Design
- Tools and methods for interior design
- Technologies and structures

#### POST LAUREAM TEACHING ACTIVITY (MASTER IN YACHT DESIGN)

In addition to the activity of management of the Master in Yacht Design, he teaches in the field of Naval Construction and Design of components and accessories.

#### OTHER EDUCATIONAL ACTIVITIES

He coordinated and carried out teaching activities in various professional courses in the field of:

- innovative techniques with reduced environmental impact for yacht production;
- control of exposure risks to chemical for operators involved in the production of boats;
- process rationalization in yacht production

#### RESEARCH ACTIVITY

The research activity carried out mainly concerned two thematic areas:

1. The study of risk factors related to exposure to pollutants in indoor living spaces.
2. The study of yacht production techniques with reduced environmental impact and decommissioning processes at the end of the life cycle.

1. In the first area:

"Technologies and equipment for monitoring and safety of internal environments" - Italian Mobiliar Institute and MURST

2. With regard to the second area, research has been developed in the field of:

- "Methods for modeling and designing sailboats".
- "Decommissioning of boats at the end of their life cycle", Science and Technology Park, Area Science Park, Trieste
- "Study of the possibilities of transition to innovative products with reduced environmental impact based on the vacuum infusion technique" Regione Lombardia-Sistema Camerale Lombardo

- "Antifouling Wrapping. Research and experimental verification actions aimed at supporting the development of a self-adhesive film system for the protection of hulls from biofouling ", Regione Lombardia / Tack System
- "Tambali fii (Let's start from here). Creation of a pole of technological and social innovation for the growth of the Senegalese nautical and fishing chain as a strategy for the inversion of migratory phenomena from the African continent, Polisocial / Ministry of the Interior.

#### INDUSTRIAL PATENTS

He is the owner of an industrial patent related to a system with reduced environmental impact for hauling boats.

#### SCIENTIFIC COORDINATION OF SEMINARS

- "Innovative materials and techniques in the yacht sector", Politecnico di Milano, Milan 13-14 April 2000;
- "Yacht Design", Politecnico di Milano, Milan 19-20 June 2003
- "Design and enhancement of cultural heritage in recreational boating", Genoa Exhibition, Genoa October 7, 2003
- Innovation and technology transfer in the nautical sector, Politecnico di Milano, Milan 19 November 2004
- "Infusion Technique", Area Science Park, Monfalcone 24-24 November 2006
- "Recreational boat construction technologies", Assocompositi, Carrara 2-3-4 February 2006
- "Fluid dynamics and design of nautical interiors", Polidesign, Milan, July-November 2006
- "Strategies for the transition to new materials and technologies in nautical production", Assocompositi, Carrara 1-3 February 2007
- "Techniques for the rationalization of production in the nautical industry", Assocompositi, Carrara 7-9 February 2008
- "Closed mold processing techniques", MADE, Milan, 2010
- "Vacuum assisted production techniques for the use of composites in the wind energy sector", Eolica, Rome, 2011
- "Composites in the production of wind turbines", Eolica, Rome, 2012
- "1<sup>st</sup> Italian Yacht Design Conference", Politecnico di Milano, 16 June 2016
- "2<sup>nd</sup> Italian Yacht Design Conference", Politecnico di Milano, 29 November 2017
- "3<sup>rd</sup> Italian Yacht Design Conference", Politecnico di Milano, 28 November 2018

#### REFERENCES

He has published essays and volumes for publishing houses: Hoepli, Maggioli, Simone Editore, Pythagoras, Clup, Edisport and has carried out publishing activities for publishing houses; Electa, Mondadori, Abitare Segesta, Be.Ma, Rima Editrice and Tecniche Nuove.

He is the author of over 100 scientific publications presented at major international conferences related to innovation in materials, composite technologies and design.

## LIST OF REFERENCES

1. S. Comandini, A. Dal Fiume, A. Ratti, *“Architettura sostenibile”*, Edizioni Pitagora, Bologna, 1998, pp.63-70, 85-120
2. S. Piardi, P. Carena, I. Oberti, A. Ratti, *“Costruire edifici sani - Guida alla scelta dei prodotti”*, Maggioli, Rimini, II Ed., 1999, pp.63-254, 279-358
3. Bionda A., Ratti A. (2017). *Nautica +++*. Additive Manufacturing in campo Navale e Nautico. Milano, Italy: Poli.design press.
4. A. Ratti (a cura di), *“Progettazione e costruzione di imbarcazioni a vela ad alta tecnologia”*, atti del corso di aggiornamento, Edisport, Milano, 1998
5. B. Cuniberti, A. Ratti, (a cura di), *Progettazione ecologica del territorio*, Maggioli, Rimini, 2001, pp. 180
6. A. Ratti (a cura di), *Materiali e tecniche innovative nel settore nautico*, Simone-Poli.design, Napoli, 2001, pp. 192
7. S. Piardi, A. Ratti, (a cura di), *Progettare e costruire imbarcazioni da diporto*, Clup Milano, 2003, pp. 156
8. A. Ratti, (a cura di), *La ricerca nello Yacht Design*, Edisport, Milano, 2004, pp. 185
9. S. Piardi, A. Ratti, (a cura di), *Costruire imbarcazioni da diporto*, Clup, Milano, 2004, pp. 208

## Essays

1. A. Ratti, S. Piardi, A. Baglioni, *“Building Techniques for the Control of Radon Pollution in Italy”*, in E.P. Goldfinch, Radiation Protection Dosimetry, Nuclear Technology Publishing, Ashford, England, 1998
  2. A. Ratti, S. Piardi, A study about remedial measures to reduce 222Rn concentration in an experimental building, Elsevier, Pinawa, Canada, 2004, pp. 257-266
  3. Ergul E., Ratti A., Ercoli S., Bionda A. (2017). *An Evaluation of Furniture Making Methods for Yachts*. *American Journal of Naval Architecture and Marine Engineering*, 2(4), 71-77. DOI: 10.11648/j.ajname.20170204.12
  4. Ergul E., Ratti A., Ercoli S., Bionda A. (2017). *The evaluation of two master programs contributing to the development of industry: Izmir University of Economics and Politecnico di Milano*. *Journal of International Scientific Publications - Educational Alternatives*, 15, 192-207. ISSN 1314-7277
  5. Bionda A. Parisi S. (2017). *Material and technology activism: a broad survey on democratic production models and scaling-up*. In *Multidisciplinary Research Agenda in Design for Social Innovation*. Manuscript submitted for publication.
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1. A.Ratti, *“I geotessili”*, in AA.VV. (a cura di C. Macchia), *Manuale di progettazione edilizia - Materiali e prodotti*, Vol. 5, Hoepli, Milano, 1995, pp. 448-453
  2. A.Ratti, *“Strumenti e metodi per la valutazione della qualità dell’aria interna”*, in D. Faconti e S. Piardi (a cura di), *La qualità ambientale degli edifici*, Maggioli, Rimini, 1997, pp.189-225
  3. S. Piardi, A. Ratti, *“Presentazione del corso”*, in S. Piardi, A. Ratti, (a cura di), *Materiali e tecniche innovative nel settore nautico*, Simone, Napoli, 2001, pp. 7-10
  4. A. Ratti, S. Piardi, *“La formazione superiore in Yacht Design: il Master in Progettazione per la nautica”*, in Massimo Musio Sale, (a cura di), *DDD - Disegno e design digitale*, POLI.design, Milano, anno 01, n. 3, lug/set 2002, pp. 117-130
  5. A. Ratti, *“Il Master in Yacht Design”*, in S. Piardi, A. Ratti (a cura di), *Progettare e costruire imbarcazioni da diporto*, Clup, Milano, 2003, pp. 17-30
  6. A. Ratti, *“Trasferire innovazione”*, in A. Ratti (a cura di), *La ricerca nello Yacht Design*, Edisport, Milano, 2004, pp. 6-9

7. A. Ratti, S. Piardi, "Esperienze in cantiere", in S. Piardi, A. Ratti, (a cura di), *Costruire imbarcazioni da diporto*, Clup, Milano, 2004, pp. 9-10
8. A. Ratti, "Prevenzione e controllo dell'inquinamento da radon", in M. Grosso, G. Peretti, S. Piardi, G. Scudo (a cura di), *Progettazione ecocompatibile dell'architettura*, Esselibri, Napoli, 2005, pp.

### Conference proceedings

1. "Building products and users' health", (con S. Piardi) relazione alla IAI International Conference *Quality standard for the indoor environment*, Prague, 1992
2. "Choice of building products and indoor air pollution", (con S. Piardi e P. Carena) relazione alla 6th International Conference on Indoor Air Quality and Climate, *Indoor Air '93*, Session F17, Helsinki, 1993, Vol.2, pp.657-662
3. "Environmental comfort requirements in a rehabilitation project" (con S. Piardi), relazione alla International Conference *Healthy Buildings'94*, Technical University of Budapest, Budapest, 1994
4. "Regenerated plastic materials: some suggestions for its utilisation." (con altri autori), relazione alla First International Conference on *Sustainable Construction*, Tampa (Florida), CIB TG16, 1994, pp.507-514
5. "Healthy Building Materials Selection Guide" (con altri autori), relazione alla International Conference *Healthy Buildings'95*, Milan, 1995, Vol.1, pp.293-298
6. "Emission rates from laying flooring products", relazione alla International Conference *Healthy Buildings'95*, Milan, 1995, Vol.2, pp.971-976
7. "Re-design for residential healthy buildings", (con S. Piardi e I. Oberti) relazione alla International Conference *Healthy Buildings/IAQ '97*, Washington DC, 1997, Vol.3, pp.377-382
8. "Laboratory of Environmental Quality Control" (con altri autori), relazione alla 2° Florence International Conference for Teachers of Architecture, Firenze, 1997
9. "Environmental evaluation of exterior clay brick masonry", (con S. Piardi e I. Oberti) relazione al *CIB World Building Congress*, Gävle, Sweden, 1998
10. "IAQ investigation in existing buildings restoration (con S. Piardi e I. Oberti) relazione alla International Conference on Indoor Air Quality and Climate, *Indoor Air '99*, Edinburg, 1999 Vol. IV- pp. 572-577
11. "Guide tools for environmentally compatible restoration works" (con S. Piardi e I. Oberti) relazione alla International Conference on Indoor Air Quality and Climate, *Indoor Air '99*, Edinburg, 1999 Vol. I pp. 588-589
12. "Green guide-lines for buildings renovation and construction", (con S. Piardi e I. Oberti) relazione alla International Conference *Shaping the Sustainable Millennium*, CIB, Brisbane, Australia, 2000
13. "Evaluating Hotel Environment Quality", (con S. Piardi e I. Oberti) relazione alla International Conference *Healthy Building 2000*, FiSIAQ, ISIAQ, Espoo, Finland 2000
14. A. Ratti (et al.), "Set-up of a Test-House for the evaluation of VOC emissions from building products", *CIB World Building Congress*, Wellington, New Zealand, 2001
15. A. Ratti (et al.), "IAQ Evaluation of Educational Buildings", *Healthy Buildings*, ISIAQ, Singapore, 2003, pp. 626-630
16. S. Piardi, A. Ratti, "An evaluation method for ecological building design, *CIB International Conference*, Toronto, Canada, 2004
17. A. Ratti, S. Piardi, "Misure di mitigazione del radon indoor: confronto attraverso indagine sperimentale dell'efficacia di alcune tecniche di rimedio", International Symposium *The Design, The Safety, The Structure*, Politecnico di Milano, Mantova, 2004

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#### **National Conference proceedings**

1. "Controllo delle scelte di prodotti nel processo edilizio e ricadute sulla salubrità degli ambienti confinati", relazione al Congresso Nazionale *ARIA 92 - La qualità dell'aria negli ambienti interni*, Pisa, 1992, pp.67-72
2. "L'impatto dei prodotti da costruzione sull'ambiente", Atti del Convegno *Costruire per l'uomo - Nuove strategie di qualità per il territorio*, API, Treviso, 1993, pp.23-28
3. "Interventi di riqualificazione e qualità dell'aria interna, descrizione di due casi esemplificativi", (con S.Piardi), Atti del terzo Convegno nazionale *ARIA'94 - Un approccio multidisciplinare alla qualità dell'aria negli ambienti interni*, Roma, 1994, pp.47-52
4. "Realizzazione di una Test-House per la verifica delle emissioni da prodotti edilizi", (con S.Piardi, D.Cavallo, M.Maroni), Atti del Convegno nazionale *ARIA'96*, Roma, 1996, pp.341-344
5. "La seconda generazione dei metodi di valutazione della qualità ambientale degli edifici" (con S. Piardi e I. Oberti), Atti del quinto Convegno nazionale *ARIA'98*, Napoli, 1998
6. "I prodotti verdi: criteri di scelta" (con S. Piardi e I. Oberti), Atti del quinto Convegno nazionale *ARIA'98*, Napoli, 1998
7. "Proposta di un metodo per la valutazione del rischio di inquinamento attribuibile ai sistemi di pavimentazione" (con S. Piardi e I. Oberti), Atti del quinto Convegno nazionale *ARIA'98*, Napoli, 1998
8. A. Ratti, "Metodi e strumenti di indagine per il rilevamento degli inquinanti indoor", *Inquinamento indoor e protezione sanitaria*, Gruppo Scientifico Italiano Studi e Ricerche, GSISR, Milano, 2003, pp. 58-74