WELCOME!

to

15th INTERNATIONAL RADIANCE WORKSHOP!
Workshop Team

15th INTERNATIONAL RADIANCE WORKSHOP!
Padova, September 29th, 2016

Starting

2016 15th International RADIANCE Workshop

Roberto Zecchin
WHY RADIANCE WORKSHOP HERE?
Sustainability – Energy – MEP Engineering

Sustainable, Performance-based, Integrative, Design and Consulting Services”
Consulting engineers specialised in the field of sustainability, energy and engineering

40 years of history

Largest specialist MEP company in Italy (170 staff in Italy, 200 staff in Saudi Arabia)
Mission

To interpret and meet our Client's specific needs with technical solutions that integrate **Functionality** and **Comfort** within **Sustainability** and **Energy**.

Provide a **performance-based integrated building** design services for a cost-effective approach using state-of-the-art software simulation tools enabling the early assessment and optimization of complex systems.

Recognised leaders in the fields of **Sustainability** and **Energy** applied to the **building sector**.
Services:
Design, Site Supervision, Commissioning and Consulting

- HVAC systems (heating, ventilation and air conditioning)
- PFG systems (plumbing, firefighting, and technical and medical gases)
- Electrical systems (lighting, power supply and distribution, lightning protection)
- Safety & Security (fire prevention, alarms, access control, TVCC)
- Electronics (IT & Communication systems, BEMS systems)
- Energy (renewables and energy savings)
- Lighting Design
- Acoustics
- Building Physics
- Environment and Sustainability
Sustainability

Manens-Tifs is the Italian leader in sustainable design being involved in various projects and providing the following services:

• LEED Accredited Professionals (LEED APs) is now involved numerous LEED projects (LEED certified and/or currently pursuing certification).
• BREEAM International Assessors (Building Research Establishment Environmental Assessment Method).
• Protocollo ITACA Experts (Italian version of International GBTool).
• European Energy Certification Experts
Building Physics

MANENS-TIFS use the state-of-the-art software tools enabling the study of building physics and environmental studies:

- Solar Radiation
- Façade performance
- Daylighting and Visual Comfort
- Thermal Comfort (Computational Fluid Dynamics)
- Natural Ventilation
- Acoustics
Main Offices

**Padova office** is a full-scale experimental zero-emission building with innovative technology for the time and represents an application of our working practice based on performance-based integration and multidisciplinary approach.

**Verona office** is a refurbished 17th-century building and represents our appreciation for historic conservation and humanistic values.

**KSA Office** is established to manage the construction of two new medical citadel in KSA.
Manens-Tifs has been involved in urban development for years. We have reached levels of excellence in preliminary environmental-energy studies, in the use of renewable resources and in district heating and cooling systems. Appropriate solutions on a district-wide scale allow local CO2 emissions to be reduced and, in certain cases, eliminated altogether.
“Citylife”: urban redevelopment of the former Milan Fair
Urban redevelopment of the former “Michelin area”
Sectors: Healthcare

Healthcare is the sector in which Manens-Tifs began its business more than forty years ago. Our wealth of MEP design experience and long record of completed works have enabled us to gain specific expertise in dealing with the problems of individual wards and/or healthcare facilities, up to aspects associated with the management and maintenance of large hospitals.
New “dell’Angelo” hospital / Mestre
Hospital Central de l'Armée
Offices buildings pose the greatest challenge to the integrated design of building envelope and services.

Manens-Tifs developed specific working methods and software tools for studying this type of building, and indoor quality requirements, assessing the thermal properties, analysing acoustics and lighting.
"Intesa Sanpaolo Bank" new headquarters
“EVA Tower” / Mestre
“Treviso 2” complex / Treviso
“Romea” Shopping Centre / Marghera
“Ponte Parodi” Shopping Centre / Genova
Sectors: Transportation

This category comprises large-scale air travel and railway hubs, which present security issues. Experience in various projects allowed Manens-Tifs to develop the specific skills to integrate comfort and functionality with security requirements, by introducing advanced technologies and innovative solutions.
New Venice “Marco Polo” Airport / Tessera
Sectors: Cultural Centres and Museums

A growing interest in art and culture, resulting in the increased number of visitors to museums, galleries, and libraries, associated with the need to preserve our valuable heritage, calls for specific building engineering solutions that combine a strict control of environmental parameters for art piece conservation, with the requirements of visitors' comfort and complying and possible restrictions of historical buildings.
cultural centres & museums
Parco della Musica / Auditorium Rome
Modern Art Museum / MART
Rovereto
Growing awareness of environmental sustainability issues and the need to reduce energy consumption has resulted in building services engineering claiming an important role in the residential building sector.

Its role has increased in major urban redevelopment projects, in which defining an integrated strategy for the production and distribution of electricity and heating and cooling, plays a key role in the design of the processes.
“Citylife”, Libeskind residential buildings / Milan
“Torre 18” residential building / Brescia, Italy
It is increasingly common for buildings of this kind to constitute large envelopes with sophisticated building services whose objective is to assure high comfort level for guests.

There are numerous aspects that contribute to creating optimum comfort for guests: microclimate, lighting, provision of communication and IT systems, soundproofing.
hotels

"Verona Forum" hotel / Verona
Sectors: University and Research Labs

Innovation and research are the two traits that define our times. University and research laboratories constitute buildings that must meet growing and constantly changing demands in terms of functionality, energy and the quality of the systems that power them. Consequently, design must combine flexibility, scalability and superior energy efficiency.
university and research location
Faculty of Natural Sciences
university and research laboratories

Faculty of Medicine / University of Perugia
university and research laboratories
Paediatric Research Institute / Padova
and more, new sports facilities and stadiums are being designed as multi-purpose facilities required to accommodate a host of different activities, such as sports, music events, exhibitions, business meetings, to name a few.

Manens-Tifs gained a strong experience in developing building services engineering solutions providing optimal flexibility and energy performance, while ensuring the comfort and safety of spectators.
New football Stadium “San Nicola”
New Football Stadium of Siena / Siena - Italy
Sectors: Historical Building Restoration

Manens-Tifs has been involved for many years in large renovation and redevelopment projects of historical buildings and has developed know-how and methodology for renovating buildings and aligning them, whenever possible, to the most recent energy, comfort and sustainability standards. Acquired know-how includes energy auditing and identification of cost-effective energy efficiency measures.
Sectors: Industrial Establishments

Buildings of this kind are characterised by different needs, depending on the type of products and manufacturing processes. In any case, the design must combine system reliability and functionality with a healthy workplace or safety.
Sectors / Alternative Energy

Manens-Tifs has been working in this field for many years, focusing on the design of photovoltaic systems, and systems that exploit vegetable oils and solid biomass.

Specifically, for biofuels systems Manens-Tifs has supplemented specific building services expertise with agronomy and environmental expertise.
Manens-Tifs in Saudi Arabia

Manens-Tifs has been appointed the design development activities and site supervision of two new medical cities presently under construction in Riyadh and Jeddah each consisting of a 1700 bed hospital and a 12000 people residential area, plus related utility areas.
historical buildings

Riyadh Medical city
historical building
Jeddah Medical city
WHAT IS RADIANCE FOR US?
1st Workshop (2002)

15th Workshop (2016)

Padua - August 29-31, 2016

Manens-Tifs, in collaboration with EURAC Research, is pleased to host the 15th Annual International Radiance Workshop from Monday, August 29th to Wednesday, August 31st, 2016 at Manens-Tifs headquarters, located in Padua (Italy). With a long tradition of gathering academics, consultants and anyone interested in lighting related subjects using Radiance software, this event is a great opportunity to learn and exchanging ideas.

Attendees are invited to share examples of work they have performed using Radiance, or that is in progress, in a prepared 30-minutes presentation. Come to share your knowledge and/or learn about the latest Radiance features, developments, and opportunities to apply Radiance in your professional practice. Connect with enthusiasts from around the world who apply Radiance in research, lighting design, daylighting, animation, simulation, and rendering activities.

August 23rd news: A webconference system will be active for the workshop. If you want to participate, please contact us. Fees for webconference please look at registration page.
Ottimizzazione e Validazione Sperimentale di un Modello di Calcolo dell'Illuminamento Naturale

Fig. 5.3 - Sezione laterale dell'edificio alla studio.

Fig. 5.6 - Modello tridimensionale nel formato *VRML, come appare attraverso le lunette inferiori.

Fig. 5.7 - Studio solare dell'ambiente interno dell'edificio, le immagini mostrano la situazione alle 6 alle 17 del 21 novembre.
A lecture theatre at the University:
Calculated vs. Measured
2003 – Daylight, Glare
New Tifs Building
2010 – Daylighting, sun
Venice Gateway Project
2005 – RADIANCE Validation + Daylight Study
Master Thesis (A. Fornasiero)
2008 – Envelope and daylight studies
iGuzzini new headquarter / Recanati
Edificio senza schermature: rendering
Verifica della luminanza (campo scala: 0 ÷ 2.000 cd/m²)

Efficient eco building - Podgorica / Montenegro
2012 - New Train Coaches Lighting Design

Full Light Mode

Half Light Mode

Emergency Light Mode

Far System / Rovereto
2012 – Bream HEA 1 compliance (more than 37,000 pts grid calculation)
Nave de Vero Shopping Center
2013 - Solar Radiation and Daylight Factor
Prysmian Group New Headquarter
2013/2014 – Daylight Factor + LEED V3 IEQc8.1 compliance verification
Lavazza new headquarters / Turin
2015 – Daylight, Glare, Venice Airport / Venezia
Modulo di preiscrizione
da inviare entro il 7 maggio 2012

Corso monografico
Radiance: simulare la luce
Dipartimento di Ingegneria Industriale
Università degli Studi di Padova
7, 8, 9 – 21, 22, 23 giugno 2012

Nome
Cognome
Indirizzo
Città
Titolo di studio
Ambito di attività
Tel.
Fax
E-mail

Si richiede l’iscrizione a
□ Moduli I e II □ Modulo II

Autorizzo il Dipartimento di Ingegneria Industriale dell’Università di Padova ad inserire i miei dati nei loro archivi informatici, nel rispetto di quanto previsto dal Decreto Legislativo n. 196/2003.

Data
Firma
AND NOW, TO START........
The workshop Program - Day 1 - Mon, August 29th

09:00 # Introductions/Overview - Roberto Zecchin (Manens-Tifs SpA)
09:30 # What’s new in RADIANCE for 2016 - Greg Ward (Anyhere Software)
09:55 # Coffe break
10:00 # Validation of F-matrix and 6-phase Method - Greg Ward (Anyhere Software), Eleanor Lee (LBNL)
10:30 # Out-of-Core Photon Mapping: When More Isn't Enough - Carsten Bauer [on behalf of Roland Schregle]
10:55 # The Sunlight Beam Index A Simple Method to Rate Windows and Shading Systems - John Mardaljevic (Loughborough University)
11:30 # Validation of the Radiance 5-Phase-Method against field measurements - David Geisler-Moroder (Bartenbach GmbH)
12:05 # Lunch
13:40 # EvalDRC a new, versatile frontend for climate-based daylight assessment - Carsten Bauer (Radzilla)
14:15 # Evalglare 2.0: New features, faster and more robust HDR-image evaluation - Jan Weinold (Ecole Polytechnique Fédérale de Lausanne)
14:50 # An expression of three-dimensional distribution of light in architecture with photon flows - Nozomu Yoshizawa (Tokyo University of Science)
15:25 # Coffe break
15:45 # Terrestrial Light’s Skyometer: Leveraging real-time, temporal and spatial HDR sky-maps for building automation - Andy McNeil (Terrestrial Light) [on behalf of Chris Humann]
16:20 # Using radiance to design a low cost prismatic stationary concentrator for photovoltaic modules - Khaled Nassar (American University in Cairo)
16:55 # Research of the modeling and measuring of solar shadings with very peculiar behavior - Lars Grobe (Ismir Institute of Technology), Giuseppe De Michele (EURAC), Luca Papaiz (Pellini Industrie)
The Workshop Program - Day 2 - Tue, August 30th

- 09:00 # Dynamic Visualization of Annual Building Simulation Data - Alen Mahic (University of Oregon)
- 10:10 # Daylight in Heritage Spaces - A Combined CBDM and HDR Project - John Mardaljevic (Loughborough University)
- 10:45 # Inter-model comparison of CBDM techniques - Eleonora Brembilla (Loughborough University)
- 11:00 # Coffee break
- 11:05 # Online survey on CBDM workflows - Eleonora Brembilla (Loughborough University)
- 12:15 # Rendering omni-directional stereo images with Radiance - Andy McNeil (Independent daylight consultant)
- 12:50 # Immersive scenes with Radiance in a Virtual Reality Headset: comparison of virtual and real environments - Kynthia Chamilothori (Ecole Polytechnique Fédérale de Lausanne)
- 13:50 # Lunch
- 14:25 # Blender for Radiance images processing and results visualization - Lucio Boscolo Mezzopan (Far System)
- 15:00 # Radzilla 2.0 - Carsten Bauer (Radzilla)
- 15:35 # iPhone app (Aftab Luminance) - Miri Majid (SWECO AB)
- 16:10 # Artlight 2.0 – an optimized TRNSYS-model for coupled thermal and daylight simulation based on the three-phase-method - David Geisler-Moroder - Hauer Martin (University of Innsbruck)
- 16:30 # Coffee break
- 17:05 # Analysis of a light shaft with variable reflectance - Santiago Torres (Arup)
- 17:40 # A web-based simulation platform for the energy, daylight and glare evaluation of fenestration systems - Bruno Bueno (Fraunhofer ISE)
- 18:15 # Automating radiance workflows using Python [webconference] - Mostapha Sadeghipour Roudsari, Sarith Subramani (Penn State University)
- 19:00 # Shuttle to Padova downtown & Aperitivo
- 19:30 # Workshop Dinner
09:00 - 09:35 # Comparison of BSDF data generated by a virtual and a real goniophotometer (PG2) - Andreas Noback (TU Darmstadt)

09:35 - 10:10 # Application of a spectral sky in Radiance for daylighting calculations including non-image-forming light effects - Parisa Khademagha (Eindhoven University)

10:10 - 10:45 # Ensure the Visual comfort and Thermal comfort of the occupants in an office space by maximizing the Utilization of Daylight using Electrochromic glass - Raghuram Kalyanam (Technische Universitaet Kaiserslautern)

10:45 - 11:05 # Coffee break

11:05 - 12:35 # Q&A - Open discussion

12:35 - 13:35 # Lunch
And, to finish, some food for thought, on the blackboard:

- Should the use of software tools (just to say: Radiance) be increased in the design of buildings?
- So, how can this be achieved? Better links with certification systems?
- Are the user interfaces easy enough to promote the use of RADIANCE (by reducing the man-time required), but fool-proof to avoid misuse (and consequent mistakes)?
- Are criteria and expedients for validation measurements enough developed?
SOME ANNOUNCEMENTS
Shuttle service is provided to participants housed in Padova city. Those who have changed accommodation or not yet communicated are kindly requested to report to the organizing team.

Workshop room WiFi: A WiFi connection is available to participants.

SSID: 2016RadianceWS_WIFI
PWD: radiance2016

Files of the presentations must be handled to the organizers before the start of any session for uploading. You are kindly requested to submit any requirements to the organizers. Presentation format is 16:9.

Workshop Dinner - in the evening of Tuesday 30th, we shall reach Padova city centre, by shuttle bus leaving directly at the end of the session from the workshop site.

A ‘smoking corner’ is outside the building, at the top of the entrance stairs, near the ashtray (!)

There is a toilet at this floor, just outside this room, on the right, and one at ground floor, in the main lobby, accessible during lunch time.
Some Announcements

Livestream is available for those who need to repeat the screen on their laptop: please contact Andrea or Giorgio.

Departure. At the end of the workshop you can go back via our shuttle service to your accommodation or the city centre or the railway station or the bus station, both suitable also for reaching the airport, or you can book an “Air Service” shuttle (about 35 €) to reach directly the airport.

Help and Assistance. Should you need any help, info or assistance, do not hesitate to contact us at cellular phone number:

• Silvia Discoto: +39.347.158.05.93
• Andrea Fornasiero: +39.349.1767.245
• Giorgio Butturini: +39.338.192.73.96
AND NOW... IT'S UP TO YOU!