Curriculum Vitae et Studiorum and Scientific and Teaching Activity of Walter Ambrosini

(Updated at June 2021)

Personal data

Dipartimento di Ingegneria Civile e Industriale

Largo Lucio Lazzarino n. 2

I-56126 PISA

E-mail:walter.ambrosini@unipi.it

Web page: http://www.dimnp.unipi.it/walter-ambrosini/index1.htm

Curriculum Studiorum

- Secondary School "Classical Lyceum" (Liceo Classico "E. Repetti" in Carrara) achieved **full marks (60/60)** at the leaving exam in 1977.
- Degree in Nuclear Engineering with a thesis on the development and application of analytical methods for the calculation of the conductive heat transfer, from the University of Pisa April 12, 1985 with **110/110 cum laude**.
- PhD in "Nuclear Engineering Research Doctorate (Safety of nuclear plants)" achieved in 1989 at the National Commission with a work related to RELAP5 and CATHARE system codes, carried out as part of cooperation agreements between the department and the European Community.

University Career

- Winner of the competition for a place as University Researcher (Assistant Professor) at the Faculty of Engineering of the University of Pisa for the disciplinary grouping I12, DR 1013 17/08/90 (OJ 93bis of 23/11/90).
  The initial classification in the scientific-disciplinary I12 sector has been clarified as a result of rearrangement of these sectors with the Belonging to I12B group - Nuclear Power Plants (with effect from 1/11/95), and later into ING-IND/19 - Nuclear Plants, in which Walter Ambrosini has carried out research and teaching activities. W. Ambrosini then received the confirmation role (tenure), with effect from 23 November 1995.
- Suitable for the selection procedures as Associate Professor at the Politecnico di Milano, for the scientific field I12B, decree No. 199 of 17/03/00 and published in the ordinary supplement of the Official Gazette No 30 - 4A special series - 14.4.2000.
- Associate professor at the Faculty of Engineering, University of Pisa from November 1, 2001, Following the deliberations of the Faculty of Engineering (4 October 2001) and the Senate (23 October 2001). Confirmed role (tenure) after three years.
- Full Professor at the School of Engineering, University of Pisa from November 1, 2016 (tenured).

SCIENTIFIC ACTIVITIES

The scientific production of Walter Ambrosini, developed in the Nuclear Plants sector, involved issues related to thermal-hydraulic behaviour and safety of nuclear light water reactors and innovative fourth generation reactors. In the following a brief summary of the activities performed is provided.

1. APPLICATION AND VALIDATION OF COMPUTER CODES FOR THE ANALYSIS OF NUCLEAR REACTOR SAFETY

This is an interest primarily developed during the years of the PhD (1986-88) and those immediately following that period, maintained to a lesser extent for many years through collaboration in activities carried out at the Department. The contributions in this field include:

- studies relating to the validation of the CATHARE code, which were the subject of the PhD work and were carried out over a long period (1986 -1991) in close collaboration with the team of developers of the code, which required repeated stays at the Center d'Etudes Nucléaires de Grenoble (CENG, F);
- the application of the RELAP5 code in the analysis of accidents in innovative reactors: The work, carried out as part of research contracts with ENEL, the Italian Electrical Utility, enabled the deepening of the safety issues of AP600 and SBWR reactors, highlighting the need for a new simulation philosophy, based on integrated primary system and containment calculations;
- the contribution to the reflection on the accuracy of calculation of thermal-hydraulic codes: It is a modest contribution in this area, consisting in the conception of a technique based on Fast Fourier Transform (FFTBM), in use today at some research centers, for the quantification of code accuracy in the prediction of experimental tests on small-scale equipment;

- collaboration in the design of experimental tests prescribed under the Boiling Instability Program (BIP): This is a proposal for experimental work that would have to be conducted on the facility PIPER-ONE, installed at the University of Pisa; the contribution made in this area has focused on the design of experimental tests with neutron feedback simulation;
- the application of the RELAP5 code to thermal-hydraulic benchmarks proposed in the frame of the STORM project (JRC, Ispra): It is a work performed in support to the experimental activity that has been carried out at the JRC STORM facility for the simulation of the behaviour of aerosols in the primary system of a light-water reactor as a result of a severe accident; W. Ambrosini has also served for a brief period in the "International Scientific Committee" of STORM, which had the task of suggesting the team pf investigators experimental tests of greatest interest to reactor safety;
- supervision and support of the implementation of the RELAP5 code analysis of instabilities occurred in real systems: The accident analysis of LaSalle-2 and tests performed in the Ringhals Swedish BWR were the object of this activity;
- the application of RELAP5 code to experiments carried out on the heavy liquid metal (Lead Bismuth Eutectic) installed at the center of the ENEA Brasimone: it was a contribution given to the first studies on the application of the code of the experimental equipment Brasimone system, subsequently mainly conducted by Prof. Nicola Forgione;
- the application of RELAP5 code to equipment with natural circulation installed at the University of Pisa and at international centers (e.g., Bhabha Atomic Research Center): it was an activity carried out on the fringes of the development of models developed on their own, which allowed to highlight the limits and potential of RELAP5 code in these applications; for the experimental equipment installed at the University of Pisa, this has also led to support the design of experimental activities related to it.

2. THEORETICAL AND EXPERIMENTAL ANALYSIS OF BASIC THERMAL-HYDRAULIC PHENOMENA

The contributions produced in this field include:

- the proposal and the application of mechanistic correlations for the analysis of basic phenomena:
    - collaboration in the development of a correlation for CCFL phenomena to the upper grid of nuclear fuel elements;
    - **proposal and validation of correlations** for the evaluation of the film thickness, the friction interface and the size of the drops of liquid in ducts with two-phase fluid in the annular flow regime, under the supervision of Professors. P. Andreussi (Univ. of Pisa) and B.J. Azzopardi (Univ. of Nottingham, UK);
- Theoretical and experimental studies concerning the removal of the passive residual heat by evaporation:
    - theoretical and experimental studies in relation to the evaporation of the liquid film, of considerable interest for the problem of passive cooling system some innovative reactors (AP600); this research, developed in 1993, was included in the projects of the

European Communities (DABASCO Project, SCACEX Project), aimed at the creation of databases for validation of correlations for the safety analyses of the containment system nuclear reactors;

- **statistical characterization of film waviness** on a flat plate, in support to the studies on heat and mass transfer with the liquid film; it is an ancillary research with respect to that referred to in the preceding paragraph, developed using a measurement technique based on the use of capacitive transducers, developed at the Laboratory "Scalbatraio" of Pisa University;

- Theoretical and experimental studies related to film condensation in innovative reactors:
  - this line of research involved studies related to condensation in the presence of noncondensable gases, another issue of great interest to the nuclear power plants; Developed since 1992, these studies were involved in a European project (INCON Project), aimed at providing data for safety analyses for nuclear reactors of innovative type;
  - further activity has involved the development of an experimental apparatus for the study of condensation on a flat plate (CONAN), which provided results of considerable interest for the validation of the heat transfer correlations related to this phenomenon and for the comparison with computational fluid dynamics calculations;
  - in this context it is worth mentioning the use of CONAN experimental data for the proposal and the development of Benchmark studies, whose data were collected and processed in person by the candidate within the Network of Excellence SARNET and the subsequent SARNET 2; international benchmarking was directed by W.A. in this frame;
- theoretical and experimental studies in relation to the natural circulation and assisted by injection of gas injected in subcritical reactors (ADS):
  - experimental studies carried out by means of an apparatus which allows the study of both the natural circulation and the principle of "air-lifting", with friction variation in the loop; the research provided results of interest to the understanding of phenomena at the basis of the cooling of Accelerator Driven System reactors;
  - collaboration in the interpretation of experimental data obtained by means of equipment installed at the ENEA Brasimone Center, operating with the eutectic Pb-Bi.

3. DEVELOPMENT OF COMPLEX CALCULATION PROGRAMS FOR THE ANALYSIS OF PLANT TRANSIENTS

This activity, which began with the cooperation to the development of FASTRAP code, was performed later under contracts with ENEL in the 1990-1993 period and required considerable commitment in person; it has allowed to gain experience in relation to the technical and scientific aspects linked to the choice of the most appropriate modelling and numerical techniques for the realization of codes for the analysis of the integral behaviour of LWR; programs, developed in FORTRAN, almost entirely on their own by the candidate, were subsequently used in researches relating to innovative reactors (the primary system FUMO Integrated Module and the ICONA program) or for the analysis of severe accidents (Thermal-hydraulic Module of the ECART code).

4. *DEVELOPMENT OF NUMERICAL MODELS FOR ANALYSING PHENOMENA OF INTEREST FOR NUCLEAR INSTALLATIONS*

This area includes:

- the development and application of numerical methods for solving problems of thermal and fluid dynamics:
  - the development of a coarse-mesh method for heat conduction in heating structures, for plane, cylindrical and spherical geometries;
  - the proposal of an algorithm based on the characteristic form of the balance equations for the analysis of thermal-hydraulic transients;
  - the development and application of a semi-implicit numerical method for the analysis by means of direct numerical simulation of the instabilities which lead to turbulence in a cavity with differential heating;
  - the development of a low diffusivity numerical method for the study of instabilities in the single-phase thermosyphon loops and its subsequent adaptation to the case of supercritical fluids;
- the study of the instabilities that occur in single-phase circuits within the natural circulation:

  it is a research started as part of a collaboration with the Nuclear Regulatory Body of Argentina (Autoridad Regulatoria Nuclear, Buenos Aires, Ing. Juan Carlos Ferreri), initially carried out through the use of RELAP5 code for the purpose of evaluating its ability in the prediction of the stability conditions in loops; the activity has continued with a thorough analysis, supported by own analytical and numerical tools, which led to the development of a methodology to evaluate the effect of the discretization in space and time on predictions concerning the stability in finite volume codes and to the proposal of a low numerical diffusivity numerical method for accurate evaluations;
- the extension to the case of the boiling channel of the numerical techniques developed to study the stability of the single-phase thermosyphon loops:
  This development has made it possible to verify the versatility of the developed methodology and to obtain interesting information on both the physics of density waves that relative stability conditions;
- the further extension of the numerical techniques mentioned in the case of instability in heated ducts to fluids at a pressure higher than the critical one:
  it is a development obtained by searching dimensionless formulations useful for the development of stability maps, similar to those of the two-phase case; a particular formulation of the dimensionless parameters (identified by Walter Ambrosini in 2006) proved to be extremely effective in collapsing the density trends in dimensionless form as a function of the specific enthalpy in a universal trend, with very good approximation irrespective of the fluid and of the specific value of supercritical pressure; this has resulted in stability maps with a high degree of universality and then resulted in a dynamic similarity theory for these phenomena;

- the extension of numerical techniques and of dimensionless parameters obtained for the stability with supercritical pressure fluids to the case of natural circulation:
  this development was first obtained by the adaptation of programs developed for the case under the conditions of two-phase supercritical fluid and then led to the development by Walter Ambrosini of an original calculation program for 1D analysis of circuits in circulation natural with supercritical fluid (year 2012), which was subsequently enriched by the introduction of a low diffusivity numerical algorithm and heat transfer correlations by students who operated under his supervision; the calculation program was also used by a researcher from the safety authority of Ghana and the University closely connected with it (Mr. Seth Khofi Debrah), who carried out a research training of a total duration of approximately 18 months at the University of Pisa,

5. *UTILIZATION AND IMPROVEMENT OF TURBULENCE MODELS FOR THE HEAT TRANSFER TO SUPERCRITICAL FLUIDS BY MEANS OF CFD CODES*

   It is an activity of interest for the design of nuclear reactors cooled by supercritical water (SCWR), which began in 2004 with the doctoral thesis of Mr Medhat Sharabi, of which Walter Ambrosini was tutor, and with contacts with Prof. John Derek Jackson (then University of Manchester, UK) and Prof. Shuisheng He (initially Aberdeen University and now University of Sheffield, UK). This activity, which is still very active, involved:

- the application of two-equation turbulence models (e.g., k-ε and k-ω) for heat transfer with fluids at pressure above the critical one:
  from the beginning, it is sought to validate the ability of the models in front of numerous experimental data of deteriorated heat transfer, counteracting a tendency in the literature to show positive results only in comparison with one or two experimental cases; the need for significant improvements of the models (both k-ε and k-ω) was shown, especially in cases where the wall temperature exceeds the pseudocritical threshold;

- the application of four equation turbulence models for heat transfer with fluids at pressure above the critical one:
  The suggestion from literature to use algebraic models for turbulent heat flux (AHFM) was considered, requiring the evaluation of the squared temperature fluctuations and of their dissipation; in this case it is necessary to add two partial differential transport equations derived for these two additional quantities; the use of these models has shown advantages that are dependent on the boundary conditions, whereby one recent effort (as part of the Doctoral thesis of Dr. Andrea Pucciarelli) consisted in defining the value of certain constants as a function of dimensionless parameters;

- adaptation of low Reynolds number turbulence models for the prediction of surface roughness effects:
  it was tried to put a lower limit on the reduction of the production of turbulence that is obtained when the deterioration of the heat transfer with supercritical fluids is due to laminarisation, consequent to the effects of mixed convection; this attempt has led to a methodology, originally developed by Walter Ambrosini and refined by PhD and graduate students, for the evaluation of the friction factor on rough surfaces by means of turbulence injection through sources depending on the height of surface roughness; the methodology also applies to single-phase

subcritical pressure fluids and therefore represents a general result, obtained aside of the main line of research on supercritical fluids;

- the research and development of a theory of "fluid-to-fluid" similarity for the heat transfer with supercritical fluids:
  the theory was proposed originally by Water Ambrosini, as an extension of the similarity theory developed for the stability of supercritical flows, obtaining promising results with some RANS calculations; it has, however, requested further development by the PhD student Ing. Andrea Pucciarelli, which only recently succeeded to make it particularly efficient; after an initial validation with results of RANS calculations, currently the theory is being validated with DNS and LES calculations; there are not, however, currently available experimental data sufficient to allow for an experimental validation, due to the extreme diversity of operating conditions adopted for different fluids: it is believed that the theory proposed, based on theoretical and convincing evidence from numerical considerations, is presently very promising.

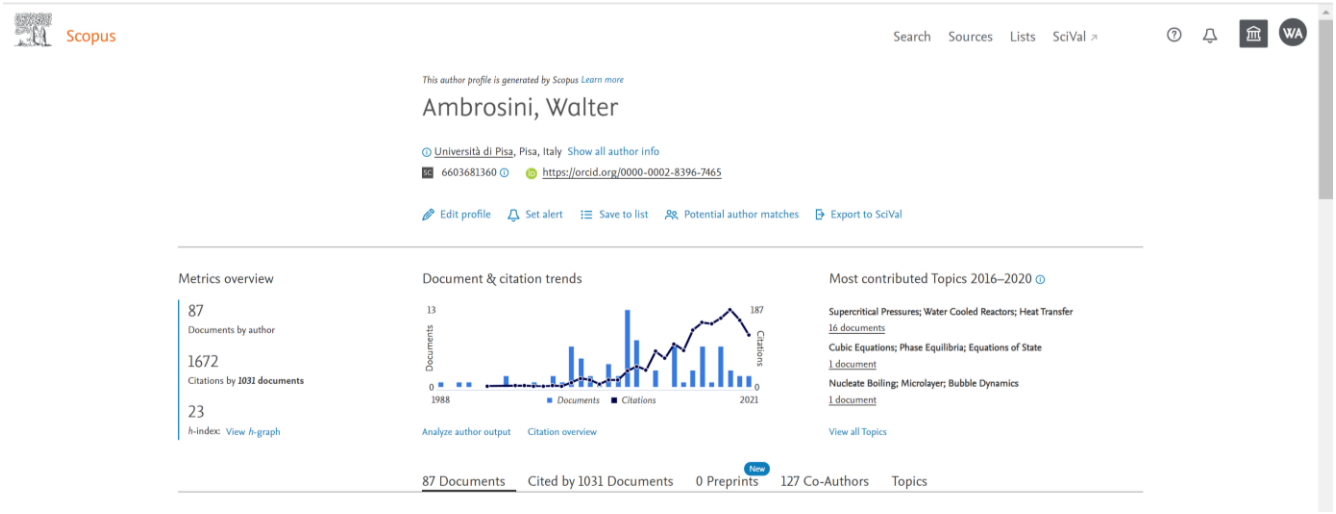
6. *APPLICATION OF CFD CODES FOR THE ANALYSIS OF INSTABILITIES IN SYSTEMS CONTAINING PRESSURIZED FLUIDS ABOVE THE CRITICAL PRESSURE*

   As a by-product of the analysis of heat transfer with fluid pressure above the critical threshold, it has been successfully attempted to apply computational fluid dynamics codes (CFD) in the analysis of instability of the flow in the heated systems containing pressurized fluids higher than that critical. Early attempts (to our knowledge this was the first ever executed in the world), suggested to Dr. Medhat Sharabi as part of his doctorate, have proven so promising that they developed in a specific new line of research, also carried out on his own by Walter Ambrosini and involving the support of graduating students (e.g., Ing. Eugenio Molfese), and, subsequently developed in the training of a researcher from the safety authority of Ghana and the University closely connected with it (Mr. Emmanuel Ampomah-Amoako), who did an internship of 18 months at the University of Pisa, on behalf of the IAEA and by the ICTP in Trieste, under the supervision of Walter Ambrosini. The result is a consolidated branch of research and application retrieved by other scholars (e.g., V. Chatoorgoon University of Manitoba, Canada).

Evaluation of the scientific production of Walter Ambrosini

As a result of the evaluation of the scientific production of teachers, followed by a special activated evaluation commission at the University of Pisa for the sector Industrial and Information Engineering, Walter Ambrosini it is now part of the higher "rating category" (4 over 4), which corresponds to the assignment of the higher proportion of university research funds.

The current bibliometric evaluation of WA from Scopus is depicted below:



TEACHING CARRIED OUT AT THE UNIVERSITY OF PISA

The teaching activity of WA started since November 1992 in support to the teaching in the frame of the Nuclear Engineering programmes (old graduate five-year course, undergraduate, specialistic and master) and in the Master of Science in Energy Engineering.

- Since the academic year 1993-94, Prof. Ambrosini delivered cycles of introductory lectures and exercises in relation to concepts of single-phase and two-phase fluid dynamics within the Thermal-hydraulics courses (Main Lecturer: Prof. F. D'Auria) in the five-year degree in Nuclear Engineering The activity lasted until the reform of studies with the introduction of the new system according to the Bologna Convention.
- In the academic year 1997-98, WA also carried out a series of lectures as part of the course Numerical Methods for Nuclear Reactors (Main Lecturer: Prof. B. Montagnini) in the five-year degree in Nuclear Engineering. Since the academic year 1998-99 the semester course of Numerical Methods for Nuclear Reactors has been delivered entirely by WA until academic year 2004-2005.
- In the new educational system after the Bologna Convention, starting from the academic year 2004-2005, WA has been assigned to the module Numerical Models for Nuclear Reactors (6 CFU) of the integrated course of Physics and Numerical Models for Nuclear Reactors, in the MSc in Nuclear Engineering up to the academic year 2016-2017.
- Starting from 2001-2002 Academic and until the academic year 2008-2009 has been assigned to the module of Thermal-hydraulics (6 credits) as part of the course of Thermodynamics and Thermal-hydraulics in the 2nd year of the degree in Nuclear and Industrial Safety Engineering.
- Since the academic year 2010-2011, WA held the elective course of Thermal fluid dynamics and elements of CFD (6 CFU) for the three-year course of Nuclear Engineering and Safety and Protection, which lasted until the academic year 2013-2014.

- Since the academic year 2004-2005 he is teacher of the course of Numerical Simulation of Energy Systems (6 ECTS) whose name was later changed to Computational Thermal fluid-dynamics in the frame of the MSc in Energy Engineering at University Pisa, which he is still teaching
- From the academic year 2016-2017 WA teaches the 12 credits course of Nuclear Safety.

Tutor of Thesis and Ph.D.

WA was tutor of more than 100 of the old educational system, three-year and specialist / master theses degrees in Nuclear Engineering and Energy Engineering and also for the "Semesterarbeit" Erasmus students from the Technische Universitaet of Monaco of Bavaria (Lehrstuhl a für Thermodynamics) which directed personally.

He has held and tutoring activities for the benefit of PhD in Nuclear and Industrial Safety in Nuclear Engineering and Industrial Safety (denominations that have occurred over time); in particular, he has been tutor of Mr. Matteo Bucci, Barbara Calgaro, Fausto Franceschini, Maria Cristina Galassi, Donato Lioce, Antonella Lombardi-Costa, Daniele Melideo, Fabio Moretti, Donella Pellini, Pesetti Alessio, Andrea Pucciarelli, Medhat Sharabi, Mariano Tarantino.

SPECIFIC ACTIVITIES

Collaboration in research activities in the international field

- Walter Ambrosini has been and is actively involved in first person in research activities developed at the international level including:
  - **European Project DABASCO** (4th EU Framework Program), having as its purpose the development of an experimental database for the containment analysis; in this field he has collaborated to theoretical and experimental activities on the evaporation of the water film, aimed at the study of passive cooling of innovative reactors;
  - **European Project INCON** (4th EU Framework Program), having as its purpose the study of condensation in the presence of noncondensable gases; in this area he has contributed to the discussion and to the simulation of experimental data relating to the condensation of finned tubes for the containment of innovative reactors;
  - **European Project SCACEX** (5th EU Framework Program), having as its purpose the study of the scaling laws for the analysis of phenomena related to the containment of nuclear reactors;
  - **Network of Excellence (NoE) SARNET and SARNET2**, for the study of severe accidents in nuclear reactors; in this context Walter Ambrosini helped with experimental studies conducted largely in person on the condensation in the presence of noncondensable gases (CONAN equipment) proposing and managing Benchmark exercises;
  - **European Projects managed by the European Nuclear Education Network** (http://www.enen.eu/), as **NEPTUNO**, **ENEN-II** and **ENEN-III**, **ANNETTE** and **ENEN+** having as their purpose the mutual recognition and the maintenance of high education standard in Europe in the nuclear field at different levels; this involvement in ENEN, supported by the Inter-university Consortium CIRTEN (http://www.cirten.it/), resulted later in the participation in the **Board of Governors of ENEN** (years 2010-2016) and in serving as **President of ENEN** (years 2013-2016) that will be discussed later.
  - **Consortium for the design of the IRIS reactor**;

- **European Project THINS** (EU FP7, Thermal-Hydraulics of Innovative Nuclear Systems), of which Walter Ambrosini was administrative manager for the University of Pisa;
- **Internship Agreement with the International Center "Abdus Salam for Theoretical Physics" (ICTP)** that allowed the stages of Mr. Seth Kofi Debrah and Mr. Emmanuel Ampomah-Amoako, belonging to Ghanaian safety authority, at the University of Pisa for a period of 18 months each in the years 2011, 2012 and 2013. The internship work was carried out by two researchers in the direct supervision of Walter Ambrosini.
- **Coordinated Research Projects of the International Atomic Energy Agency (IAEA)** entitled "Heat Transfer Behavior and Thermo-hydraulics Code Testing for SCWRs" (2008-2012), of which Walter Ambrosini has been part as a representative of Italian as part of a Research Agreement of which he was responsible and for which she created chapters of TECDOC the final.
- **Coordinated Research Project of the International Atomic Energy Agency (IAEA)** entitled "Understanding and Prediction of Thermal-Hydraulics Phenomena Relevant to SCWRs", started in 2014 and completed in 2019, to which it belongs as a representative of Italian as part of a Research Agreement and which is **co-chairman** with Dr. Laurence Leung (Canada).
- **MIT-Project Grant UNIPI:** "A novel physical representation for boiling in CFD". It is a grant for collaboration between the Massachusetts Institute of Technology (MIT) and the University of Pisa assigned 1 January 2016 for a term of 18 months project.
- **Involved in the EU H2020 projects ANNETTE, ENEN+, MYRTE, SESAME** being closed or running**,** and in the incoming projects **CAMIVVER**, **ECC-SMART**.

- Walter Ambrosini has also collaborated to a State of the Art Report (SOAR) research in the field of instability in BWR reactors promoted by the OECD-CSNI and developed by an international team: in particular, Walter Ambrosini was coauthored with Prof. Francesco D'Auria of Chapter 4 of the document, dedicated to the calculation models for the prediction of the stability of BWR reactors characteristics.
- For about fifteen years Walter Ambrosini has worked informally with Ing. Juan Carlos Ferreri of the Autoridad Regulatoria Nuclear Argentina (now retired), with whom he partnered in fact on the topics of numerical prediction of fluid dynamic instability aimed at validating nuclear codes system.
- WA was in charge of Inter-university Agreement between the University of Pisa and the Shanghai Jiao Tong University (2007-2008).
- WA was responsible on several occasions of collaboration agreements funded by the Ministry of Foreign Affairs with India (in particular, the Bhabha Atomic Research Center in Mumbai) and China (particularly with Tsinghua University):
    - Project of S & T Cooperation Between the People's Republic of China and The Italian Republic for the Years 2006-2009 and 2010-2012 (Tsinghua University, Beijing, Thermal Energy Department);
    - Project MST-10 (Indo-Italian Program of Cooperation in Science & Technology 2005-2007) with the Bhabha Atomic Research Center, Mumbai, India.

  The collaborations have involved the stage at the University of Pisa to researchers from the BARC and the Tsinghua University for periods of a few months.

Participation in projects of national interest (PRIN)

Walter Ambrosini has been involved in the operational units of the national interest projects managed by teachers of the Pisa nuclear group from the earlier years of work at the University of Pisa.

Seminars and educational work at research centers, universities and institutes of foreign education

- In past years, Walter Ambrosini has conducted seminars at the Autoridad Regulatoria Nuclear Argentina (Ezeiza Center, Buenos Aires), the University of Manchester (UK) and the Robert Gordon University of Aberdeen (UK).
- WA was the lecturer of the **Summer School in Heat and Mass Transfer organized by the Lappeenranta University of Technology** (August 18-20, 2010).
- In September of the years 2008, 2009 and 2010 delivered lesson cycles of about 20 hours each during the courses of thermal-hydraulics of nuclear reactors organized by **the Institute des Sciences et Techniques Nucléaires (INSTN) of the Commissariat à l'Energie Atomique (CEA)** (Saclay, Paris) in cooperation with the Université Paris-Sud 11 for the M2 masters in Nuclear Engineering.

Participation in doctoral committees and benchmarking at other universities

Walter Ambrosini has been part of the final exam doctoral committees on numerous occasions, including:

- University of Palermo (2004)
- Politecnico di Torino (2006)
- University of Palermo (2007)
- Institute de Physique Nucleaire, Orsay, Paris (2009)
- Politecnico di Torino (the year 2012)
- Politecnico di Milano (Year 2012)
- Lappeenranta University of Technology (2012, as "opponent")
- Université Pierre et Marie Curie (2014)
- University of Genoa (2015)
- Politecnico di Milano (2015)
- Technische Universitaet Muenchen (2015)
- More, recently…

WA was also the external expert for doctoral theses (Victoria University of Melbourne, Australia, 2012; Homi Bhabha National Institute, India, 2016).

In 2000 and in 2006 Walter Ambrosini has served on committees for comparative evaluations for posts of assistant professor, both at the Politecnico di Torino (19/9/2000 and 9/8/2006). WA was also a committee member for confirmation in the role of researchers.

WA is presently member of the National Commission for granting the first level of approval for Associate and Full Professorship in Italy (Abilitazione Scientifica Nazionale).

Activities as Referee

Walter Ambrosini was, on many occasions, the referee of works submitted for publication at international conferences or in journals, including:

- *Nuclear Engineering and Design*
- *Annals of Nuclear Energy*
- *Nuclear Engineering and Radiation Science*
- *Progress in Nuclear Energy*
- *International Journal of Multiphase Flows*
- *International Journal of Heat and Technology*
- *International Journal of Heat and Fluid Flow*
- *Latin American Applied Research Journal*
- *Journal of Process Mechanical Engineering*
- *Journal of Mechanical Engineering Science*
- *International Journal of Thermal Sciences*
- *Science and Technology of Nuclear Installations*
- *Journal of Supercritical Fluids*
- *Journal of Experimental Thermal and Fluid Sciences*
- *Journal of Applied Thermal Engineering*
- *Acta Mechanica*
- *and more.*

Walter Ambrosini was also referee for projects proposed at the international level and periodic research facilities assessments for organizations such as:

- *Natural Science and Engineering Research Council (NSERC, Canada)*
- *Swiss National Science Foundation (Switzerland)*
- *CEA - Commissariat à l'Energie Atomique (France)*
- *Israel Science Foundation (Israel)*
- *European High-Performance Infrastructures in Turbulence (EuHIT)*
- *Evaluation Agency for Research and Higher education (AERES, France)*
- *European Commission*

Activities as Editor of international journals

From July 2003 until 2016, Walter Ambrosini was Subject Editor for matters related to Heat and Mass Transfer of the **Latin American Applied Research Journal** (v. Sitehttp://www.laar.uns.edu.ar).

Since 2016, WA is Associate Editor of the **ASME Journal of Nuclear Engineering and Radiation Science** (https://journaltool.asme.org/home/JournalDescriptions.cfm?journalId=28&Journal=NERS)

Involvement in technical committees of International Meetings and Conferences

On several occasions, Walter Ambrosini has been involved in the organization of international meetings and conferences. It is reported a subset related to recent years.

- IAEA Technical Meeting on "Heat Transfer, Thermal-Hydraulics and System Design for Supercritical Water Cooled Reactors" University of Pisa, Pisa, Italy, July 5-8, 2010 (**Meeting Coordinator**)
- The 5th International Symposium on Supercritical Water-Cooled Reactors (ISSCWR-5), March 13-16, 2011 Sheraton Wall Center Hotel, Vancouver, British Columbia, Canada, (Session Chairman)
- The 6th International Symposium on Supercritical Water-Cooled Reactors (ISSCWR-6), March 03-07, 2013 Kingkey Palace Hotel, Shenzhen, Guangdong, China, (Technical Committee)
- FISA 2013, 8th European conference on Euratom research and training in reactor systems, 14-17 October 2013, Vilnius, Lithuania, Workshop II, Nuclear Fission Education and Training (ENEN) and the NUSHARE Project (Safety Culture Competences), (Organizer and Moderator)
- The 7th International Symposium on Supercritical Water-Cooled Reactors (ISSCWR-7) March 15-18, 2015 Radisson Blu Royal Hotel, Helsinki, Finland, (Technical Committee)
- ICONE 24, International Conference on Nuclear Engineering, Charlotte Convention Center, Charlotte, NC, Conference, June 26-30, 2016, (Track Co-Chair)
- More…

Various Qualifications

- W. Ambrosini was patented for the profession of Engineer in Italy in the examination session of April 1985.
- He also qualified as a teacher in secondary schools for the matters of "Physics (XLIV)" and "Physics, Nuclear and Related Technologies Equipment (XLV)" (contests organized with DM 03.23.1990). At the first of the two competitions, the Chair of Physics achieved was later rejected by opting for the entry into service as a researcher at the University of Pisa.

Results of participation in competitions at Research Institutions (in his youth)

In 1986 Walter Ambrosini was in first place in the merit list of ENEA competition for the recruitment of 22 graduates in Nuclear Engineering Official Gazette of October 15, 1985 - FI n. 243 and in sixth place in the final ranking of the competition ENEL 4 / DG / 86 for nuclear engineers. In both cases, the resulting proposal recruitment has been rejected in order to complete the PhD Program.

Service Charges

After some minor service positions, from November 2008 Walter Ambrosini has held the following service charges at the University of Pisa:

- **President of the PhD Programme in Nuclear Engineering** at the University of Pisa, in the various forms in which it is conjugated because of regulatory reforms that have taken place over the years (first PhD program, then program in the PhD in Engineering, then Doctoral Branch in the PhD in Engineering), in period **from November 2008 to April 2016;**
- **President of the Library of the Faculty of Engineering** University of Pisa from **January 2009 to September 2012**, the date on which entered into force the university reform ("Gelmini"), resulting in a different organization also of the University Library System;

- **President of the Nuclear Engineering and Safety and Protection Programme (three years) and Master of Science in Nuclear Engineering from the academic year 2011-2012 to 2017-2018**.
- **Member of the Board of Governors of the European Nuclear Education Network (2010-2016)**
- **Member of the evaluating Commission for the Italian Abilitazione Scientifica Nazionale (ASN) for the sector 09/C2, Fisica Tecnica e Ingegneria Nucleare (2018-2021)**

Presidency of the European Nuclear Education Network (ENEN) (March 2013 - March 2016)

In March 2013, after three years of stay in the Board of Governors ENEN Association (since 2010), Walter Ambrosini was elected president of ENEN (http://www.enen.eu/) as the first non-French president. The election marked the beginning of an intense international activity in the field of nuclear Education and Training (E&T), during which Walter Ambrosini has personally contributed to the Association's policies, aiming to achieve the goal of ENEN to qualify as the body of the E&T coordination at European level in the nuclear field. Since the main mission of ENEN is the maintenance and development of education in the various nuclear sectors (engineering technology and plant safety, radiation protection, management and geological disposal of wastes), Walter Ambrosini during his term has tried to bring together the different contributions from active sectors in a single pan-European effort.

In addition to managing the participation of ENEN projects in progress or just started (ENEN-III, TRASNUSAFE, NUSHARE, ENEN-RU-II), Walter Ambrosini has promoted the coordination of the Association and the participation in new projects approved field Euratom / Horizon 2020:

- **CORONA-II**, For the creation of an academy of training in the field of pressurized water reactors of Russian design sector (VVER); The project is coordinated by Kozloduy NPP;
- **ANNETTE** (Advanced Networking for Nuclear Education and Training and Transfer of Expertise), coordinated by ENEN, whose general context is the coordination between the various nuclear sectors and the main purpose is the development of a second level Master (for "continuous professional development") in the areas of fission (plant technology, radiation protection and geological disposal); this project was completely cured in its general structure by Walter Ambrosini as President of ENEN, coordinating the collaboration in its preparation by the work package leader; once approved the proposal (for 2.5 Mln Euro), Walter Ambrosini has personally supervised the preparation of the Grant Agreement.

During his presidency, it was also possible for ENEN to achieve an additional financing by the EACEA for the mobility of students and teachers between Europe and Japan (EUJEP-2) which has had particular relevance after the Fukushima accident.

Having passed a set of internal management difficulties and stabilized the structure of the Association, Walter Ambrosini then proceeded to fill a gap on the statutory term in the office of President (to which there were no upper limits in duration) bringing together a working group that established in four years the maximum term of office of a President and six years in the presence on the Board of Governors. This latter limit has therefore determined its stepping down as president in March 2016 (having been part of the BoG since 2010), thus promoting a healthy alternation. The President currently in office is Prof. Leon Cizelj of the Jozef Stefan Institute (Ljubljana, Slovenia).

The experience of the ENEN Presidency proved to be an opportunity for professional growth, having responsibilities at European level and the resulting tasks of the Association representation in bodies such as the European Community itself, technology platforms (SNE-TP, MELODI, IGD -TP), the three

pillars dell'SNE-TP (NUGENIA, ESNII and NC2I), the European Nuclear Energy Forum (ENEF), FORATOM, the European Nuclear Society (ENS) as well as the 70 members of the Association.

During his presidency, Walter Ambrosini had also the opportunity to celebrate the tenth anniversary from the founding of the Association, which has had particular relevance to the coincidence with the organization of the FISA Meeting in 2013. Walter Ambrosini has also promoted new Memorandum of Understanding (MoU) between ENEN and various organizations, including the ENEN sister network for education in the field of fusion (FuseNet, http://www.fusenet.eu/), thus allowing a further form of coordination, in line with the general line given by his presidency.

Activities as panelist

Mainly as a result of the chairmanship of ENEN, Walter Ambrosini was invited as a panelist on various occasions, including:

- NENE 2013 22nd International Conference Nuclear Energy for New Europe, September 9-12, 2013, Bled Slovenia, Round table discussion: New Generation (s) for Better Future
- ICONE 22, International Conference on Nuclear Engineering, July 7-11, 2014 in Prague, Czech Republic, 18-10 Panelist in session Education for the Next Generation
- ATOMEXPO 2015, Round Table "Methods and mechanisms of international cooperation to support E & T for sustainable nuclear power development", Moscow, Russian Federation, June 1st, 2015
- International Workshop "Five years after Fukushima: Finding the Balance", Rome, May 31, 2016, Panelist
- The 5th International Symposium and Seminar on Global Nuclear Human Resource Development for Safety, Security and Safeguards - Nuclear Security and Safeguards - February 21 - March 3, 2016, Tokyo, Japan, Invited lecturer
- NESTet Conference, Berlin, 22-26 May 2016, Participant in the Round Table on the ANNETTE Open Project Workshop

Memberships and awards

- Member of the American Nuclear Society (ANS)
- Member of the American Society of Mechanical Engineers (ASME)
- Member of the Italian Nuclear (AIN) and of the European Nuclear Society (ENS)
- Member of the AIN's Board of Directors (since 20 July 2016)
- Member of the Board of Governors of ENEN (2010-2016)
- Member of the Italian Union of thermal fluid dynamics (UIT)
- In 2013 he was awarded the Certificate of "Excellency in Reviewing" by the Editors of Nuclear Engineering and Design, following *a review that allowed the authors of an article to reformulate correcting a misunderstanding about the reasons for an observed phenomenon. It is a recognition which, among others, I care very much for the motivation with which it was accompanied.*

LANGUAGE SKILLS

Excellent level of English spoken and written, with capacity to hold fluent lectures and presentations and to participate in meetings and round tables. Good knowledge of French and Spanish written and good speech understanding in both languages.

General List of publications Walter Ambrosini

International Journals

IJ-1. W. Ambrosini, B. Montagnini, F. Oriolo (1988) A one-dimensional coarse-mesh method for heat conduction structures in the International Journal of Heat and Technology, Vol. 6 - No. 1-2 1988

IJ-2. W. Ambrosini, P. Andreussi, BJ Azzopardi (1991) A physically based correlation for the drop size in annular flow, Int. J. Multiphase Flow, Vol. 17, No. 4, pp. 497-507, 1991

IJ-3. F. Oriolo, W. Ambrosini, G. Fruttuoso, F. Parozzi, R. Fontana (1995) Thermal-Hydraulic Modeling in Support to Severe Accident Radionuclide Transport, International Conference on 'New Trends in Nuclear System Thermohydraulics', May 30 to 2 June 1994 Pisa and Nuclear Technology, Vol. 112, No. 2, Nov. 1995, pp. 239-249

IJ-4. W. Ambrosini, A. Manfredini, F. Mariotti, F. Oriolo, P. Vigni (1995) Heat Transfer from a Plate Cooled by a Water Film with Counter-Current Air Flow International Conference on 'New Trends in Nuclear System Thermohydraulics', May 30 to 2 June 1994 Pisa, and even Nuclear Technology, Vol. 112, No. 2, Nov. 1995, pp. 227-237

IJ-5. W. Ambrosini, JC Ferreri (1998) **The Effect of Truncation Error on Numerical Prediction of Stability Boundaries in a Single-Phase Natural Circulation Loop,** *Nuclear Engineering and Design, 183 (1998), pp. 53-76*

IJ-6. W. Ambrosini, P. Di Marco Ferreri and JC (2000) **Linear and Non-Linear Analysis of Density-Wave Instability Phenomena,** *International Journal of Heat and Technology,* Vol. 18, No. 1, 2000, pp. 27-36

IJ-7. W. Ambrosini and JC Ferreri (2000) **Stability Analysis of Single-Phase Thermosyphon Loops by Finite Difference Numerical Methods,** Post-SMIRT 14, 18 International Seminar on 'Passive Safety Features in Nuclear Installations', August 25-27th, 1997, Pisa Italy, Proceedings of the Department of Mechanical and Nuclear Engineering, DCMN 018 (97), Nuclear Engineering and Design, 201 (2000), pp. 11-23.

IJ-8. Juan Carlos Ferrer and Walter Ambrosini (2002) **On the analysis of thermal-fluid-dynamic instabilities via numerical discretization of conservation equations,** *Nuclear Engineering and Design,* 215 (2002), pp. 153-170.

IJ-9. W. Ambrosini, N. Forgione, D. Mazzini, F. Oriolo (2002) Computational Study on evaporative cooling movies in vertical channel, Heat Transfer Engineering, 2002 - Volume 23 - Issue 5, pp. 25-35.

IJ-10. W. Ambrosini, N. Forgione, F. Oriolo (2002) **Statistical Characteristics of a Water Film Falling down in Flat Plate at Different Temperatures and Inclinations**, International Journal of Multiphase Flow, Volume 28, Issue 9, September 2002, pp. 1521-1540.

IJ-11. JC Ferrer, W. Ambrosini (2002) **Calculation of Sensitivity to Parameters in Single-phase Natural Circulation Flows using Adifor**, International Journal of Computational Fluid Dynamics, Volume 16, No. 4/2002, pp. 277-281.

IJ-12. W. Ambrosini, No Forgione, F. Oriolo (2002) Experimental Investigation and Modeling of Film Evaporation in the Presence of countercurrent Air Flow, International Journal of Heat and Technology, Vol. 20, No. 2, 2002, pp. 15-22.

IJ-13. W. Ambrosini and JC Ferreri (2003) **Prediction of Stability of One-dimensional Natural Circulation with a Low Diffusion Numerical Scheme,**Annals of Nuclear Energy, Vol. 30/15 (2003), pp. 1505-1537.

IJ-14. W. Ambrosini (2003) **Eigenvalues and eigenvectors in Computational Modeling of One-Dimensional Flow Dynamics,** *International Journal of Heat and Technology,* Vol. 21, No. 1, 2003, pp. 3-12.

IJ-15. W. Ambrosini, JC Ferrer and N. Forgione (2003) **Sensitivity Analyzes on Natural Circulation in 8: 1 Tall Enclosure using Finite Volume Methods,** *International Journal of Heat and Technology,* Vol. 21, No. 1, 2003, pp. 51-58.

IJ-16. M. Maiani, WJM de Kruijf, W. Ambrosini (2003) **An analytical model for the determination of stability boundaries in in the International Journal of Heat and Fluid Flow**, 24, (2003 natural circulation single-phase thermosyphon loop), pp. 853-863.

IJ-17. W. Ambrosini, No ForgioneJC Ferreri, M. Bucci (2004) **The effect of wall friction in single-phase natural circulation stability at the transition between laminar and turbulent flow**, Annals of Nuclear Energy, Vol. 31 (2004) pp. 1833-1865.

IJ-18. W. Ambrosini, M. Azzati, G. Benamati Bertacci G., L. Cinotti, N. Forgione, F. Oriolo, G. and M. Scaddozzo Tarantino (2004**) Testing and qualification of Circe instrumentation based on bubble tubes** Journal of Nuclear Materials, 335 (2004), Issue 2, pp. 293-298.

IJ-19. W. Ambrosini, G. Forasassi, N. Forgione, F. Oriolo, M. Tarantino (2005) **Experimental study on combined natural gas-injection enhanced circulation** Nuclear Engineering and Design, Vol. 235, Issues 10-12, (2005) pp. 1179-1188.

IJ-20. W. Ambrosini, No Forgione, A. Manfredini, F. Oriolo (2006) **On Various Forms of the Heat and Mass Transfer Analogy: Discussion and Application to Condensation Experiments**, Nuclear Engineering and Design, Vol. 236, pp. 1013-1027, 2006.

IJ-21. W. Ambrosini (2007) **On the analogies in the dynamic behavior of heated channels with boiling and supercritical fluids**, Nuclear Engineering and Design, Vol. 237/11 pp. 1164-1174, 2007.

IJ-22. DS Pilkhwal, W. Ambrosini, N. Forgione, PK Vijayan, D. Saha, JC Ferreri (2007) **Analysis of the unstable behavior of a single-phase natural circulation loop with one-dimensional and computational fluid-dynamic models**, Annals of Nuclear Energy 34 (2007) pp. 339-355, 2007.

IJ-23. W. Ambrosini and M. Sharabi (2007) **Assessment of Stability Maps for Heated Channels with Supercritical Fluids versus the Predictions of a System Code**, Nuclear Engineering and Technology, Vol. 39, No. 5, October 2007.

IJ-24. MB Sharabi, W. Ambrosini, He S. (2008) **Prediction of unstable behavior in a heated channel with water at supercritical pressure by CFD models** Annals of Nuclear Energy, 35 (2008), 767-782.

IJ-25. M. Bucci, M. Sharabi, W. Ambrosini, N. Forgione, F. Oriolo, He S. (2008) **Prediction of transpiration effects on heat and mass transfer by different turbulence models**, Nuclear Engineering and Design, 238 (2008) 958-974.

IJ-26. AL Costa, A. Petruzzi, F. D'Auria and W. Ambrosini (2008) **Analyzes of instability events in the Peach Bottom-2 BWR using thermal-hydraulic and neutron kinetic 3D technique coupled codes**, Science and Technology of Nuclear Installations, Volume 2008 (2008), Article ID 423175, 16 pagesdoi: 10.1155 / 2008/423175.

IJ-27. AL Costa, C. Pereira, W. Ambrosini, F. D'Auria (2008) **Simulation of a hypothetical out-of-phase instability homes in boiling water reactor by RELAP5 / PARCS coupled codes**, Annals of Nuclear Energy, 35 (2008) 947-957.

IJ-28. M. Sharabi, W. Ambrosini, S. He, JD Jackson (2008) **Prediction of turbulent convective heat transfer to a fluid at supercritical pressure in the square and triangular channels**, Annals of Nuclear Energy, Volume 35, Issue 6, June 2008, Pages 993-1005.

IJ-29. A. Ciampichetti, P. Agostini, G. Benamati, G. Bandini, D. Pellini, N. Forgione, F. Oriolo, W. Ambrosini (2008) **LBE-water interaction in the sub-critical reactors: First experimental and modeling results**, Journal of Nuclear Materials, Volume 376, Issue 3, 15 June 2008, Pages 418-423.

IJ-30. Lombardi Antonella Costa, Walter Ambrosini, Alessandro Petruzzi, Francesco D'Auria, Claubia Pereira (2008) **Analyzes of pressure perturbation events in boiling water reactor**, Annals of Nuclear Energy, 35 (2008) 1199-1215.

IJ-31. Walter Ambrosini (2008) **Lesson learned from the adoption of numerical techniques for the analysis of nuclear reactor thermal-hydraulic phenomena**, Progress in Nuclear Energy, Volume 50, Issue 8, November 2008, Pages 866-876.

IJ-32. Walter Ambrosini, Medhat Sharabi (2008) **Dimensionless parameters for stability analysis of channels with heated fluids at supercritical pressures**, Nuclear Engineering and Design, Volume 238, Issue 8, August 2008, Pages 1917-1929.

IJ-33. Medhat Sharabi, Walter Ambrosini (2009) **Discussion of heat transfer phenomena in fluids at supercritical pressure with the aid of CFD models**, Annals of Nuclear Energy, 36 (2009) 60-71.

IJ-34. W. Ambrosini, N. Forgione, F. Oriolo, Semeraro E., and M. Tarantino (2009) **Experimental Study on Natural Circulation and Air-Injection Enhanced Circulation with Different Fluids**, J. Eng. Gas Turbines Power, May 2009, Volume 131, Issue 3, Pages 1179-1188, 032 902, DOI: 10.1115 / 1.3043819.

IJ-35. M. Sharabi, W. Ambrosini, S. He, Jiang and Chen Pei-Xue-Ru Zhao (2009) **Transient Stability Analysis of Three-Dimensional Supercritical Water Reactor Rod Bundle subchannels by a Computational Fluid Dynamics Code**, J. Eng. Gas Turbines Power, March 2009, Volume 131, Issue 2, 022 903, DOI: 10.1115 / 1.3032437.

IJ-36. W. Ambrosini, M. Bucci, N. Forgione, A. Manfredini, and F. Oriolo (2009) **Experiments and Modeling Techniques for Heat and Mass Transfer in Light Water Reactors**, Science and Technology of Nuclear Installations, Volume 2009 (2009), Article ID 738480, 11 pages, doi: 10.1155 / 2009/738480.

IJ-37. Walter Ambrosini (2009) **Discussion on the stability of heated channels with different fluids at supercritical pressures**, Nuclear Engineering and Design, 239 (2009) 2952-2963.

IJ-38. Pei-Xue Jiang, Chen-Ru Zhao, Run-Fu Shi, Yang Chen, Walter Ambrosini (2009) **Experimental and numerical study of convection heat transfer of super-critical CO2 at pressures during cooling in small vertical tube**, International Journal of Heat and Mass Transfer 52 (2009) 4748-4756.

IJ-39. G. Coccoluto, P. Gaggini, Labanti V., M. Tarantino, W. Ambrosini, N. Forgione, A. Napoli, F. Oriolo (2011). **Heavy liquid metal natural circulation in a one-dimensional loop.** *Nuclear Engineering and Design, Vol. 241, (2011), p. 1301-1309,*ISSN: 0029-5493, doi: 10.1016 / j.nucengdes.2010.06.048

IJ-40. Walter Ambrosini (2011), **Assessment of flow stability boundaries in a heated channel with different fluids at supercritical pressure**, Annals of Nuclear Energy 38 (2011) 615-627.

IJ-41. Walter Ambrosini (2011), **Discussion of similarity principles for fluid-to-fluid scaling of heat transfer behavior at supercritical pressures,** *Nuclear Engineering and Design, Volume 241, Issue 12, December 2011, Pages 5149-5173*

IJ-42. E. Ampomah-Amoako, EHK Akaho, BJB Nyarko, W. Ambrosini (2013). **Analysis of flow stability in a nuclear reactor subchannels with water at supercritical pressures.**Annals of Nuclear Energy, 2013, vol. 60, p. 396-405, ISSN: 0306-4549, doi: 10.1016 / j.anucene.2013.05.031

IJ-43. SK Debrah, W. Ambrosini, Y. Chen (2013). **Assessment of a new model for the linear and nonlinear stability analysis of natural circulation loops with supercritical fluids**. Annals of Nuclear Energy, vol. 58, p. 272-285, ISSN: 0306-4549, doi: 10.1016 / j.anucene.2013.03.033.

IJ-44. E. Ampomah-Amoako, EHK Akaho, BJB Nyarko, W. Ambrosini (2013). **CFD**analysis of the dynamic behavior of a fuel rod subchannel in a supercritical water reactor with point kinetics. Annals of Nuclear Energy, vol. 59, p. 211-223, ISSN: 0306-4549, doi: 10.1016 / j.anucene.2013.04.008.

IJ-45. E. Ampomah-Amoako, W. Ambrosini (2013). **Developing a CFD methodology for the analysis of flow stability in heated channels with fluids at supercritical pressures**. Annals of Nuclear Energy, vol. 54, p. 251-262, ISSN: 0306-4549, doi: 10.1016 / j.anucene.2012.11.002

IJ-46. SK Debrah, W. Ambrosini, Y. Chen (2013). **Discussion on the stability of natural circulation loops with supercritical pressure fluids.**Annals of Nuclear Energy, vol. 54, p. 47-57, ISSN: 0306-4549, doi: 10.1016 / j.anucene.2012.10.015

IJ-47. M. Bucci, W. Ambrosini, N. Forgione (2013). **Experimental and computational analysis of steam condensation in the presence of air and helium.**Nuclear Technology, vol. 181, p. 115-132, ISSN: 0029-5450

IJ-48. M. Angelucci, W. Ambrosini, N. Forgione (2013). **Numerical estimation of wall friction ratio near the pseudo-critical point with CFD-models.**Nuclear Engineering and Design, Vol. 264, p. 71-79, ISSN: 0029-5493, doi: 10.1016 / j.nucengdes.2013.02.022

IJ-49. W. Ambrosini, N. Forgione, F. Merli, F. Oriolo, S. Paci, I. Kljenak, P. Kostka, Vyskocil L., JR Travis, J. Lehmkuhl, S. Kelm, Y.-S. Chin, M. Bucci (2014).**Lesson learned from the SARNET wall condensation benchmarks.** *Annals of Nuclear Energy*, Vol. 74, p. 153-164, ISSN: 0306-4549, doi: 10.1016 / j.anucene.2014.07.014

IJ-50. W. Ambrosini, A. Pucciarelli, Borroni I. (2015). **A methodology for including wall roughness effects in k-ε low-Reynolds turbulence models.**Nuclear Engineering and Design, Vol. 286, p. 175-194, ISSN: 0029-5493, doi: 10.1016 / j.nucengdes.2015.01.008

IJ-51. Angel Papukchiev, Ferry Roelofs, Afaque Shams, Gregory Lécrivain, Walter Ambrosini (2015). **Development and application of computational fluid dynamics approaches Within the European project thins for the simulation of next generation nuclear power systems.**Nuclear Engineering and Design, 2015 vol. 290, p. 13-26, ISSN: 0029-5493, doi: DOI: 10.1016 / j.nucengdes.2014.12.003

IJ-52. Andrea Pucciarelli, Irene Borroni, Medhat Sharabi, Walter Ambrosini (2015). **Results of 4-equation turbulence models in the prediction of heat transfer to supercritical pressure fluids.**Nuclear Engineering and Design, Vol. 281, p. 5-14, ISSN: 0029-5493, doi: 10.1016 / j.nucengdes.2014.11.004

IJ-53. Andrea Pucciarelli, Medhat Sharabi, Walter Ambrosini (2016). **Prediction of heat transfer to supercritical fluids by the use of Algebraic Heat Flux Models.**Nuclear Engineering and Design, Vol. 297, p. 257-266, ISSN: 0029-5493, doi: 10.1016 / j.nucengdes.2015.11.029

IJ-54. Andrea Pucciarelli, Walter Ambrosini (2016). **Computational Fluid Dynamics Prediction of Heat Transfer in Rod Bundles with Water at Supercritical Pressure**. Journal of Nuclear Engineering and Radiation Science, vol. 2, (9 pages), ISSN: 2332-8983, doi: 10.1115 / 1.4031201

IJ-55. A. Pucciarelli A., W. Ambrosini (2016). **Fluid-to-fluid scaling of heat transfer phenomena with supercritical pressure fluids: Results from analyzes RANS**. Annals of Nuclear Energy, vol. 92, p. 21-35, ISSN: 0306-4549, doi: 10.1016 / j.anucene.2016.01.028

IJ-56. Walter Ambrosini (2016). **On Some Relevant Effects in the Simulation of Flow Stability at Supercritical Fluids with Pressure**. Journal of Nuclear Engineering and Radiation Science, vol. 2, (13 pages), ISSN: 2332-8983, doi: doi: 10.1115 / 1.4032595

IJ-57. A. Pucciarelli, W. Ambrosini (2017). **Improvements in the prediction of heat transfer to supercritical pressure fluids by the use of algebraic heat flux models**. Annals of Nuclear Energy, vol. 99, p. 58-67, ISSN: 0306-4549, doi: 10.1016/j.anucene.2016.09.022

IJ-58. A. Lamorgese, W. Ambrosini, R. Mauri. (2018). **Widom line prediction by the Soave-Redlich-Kwong and Peng-Robinson equations of state.** The Journal of Supercritical Fluids, vol. 133, p. 367-371, ISSN: 0896-8446, doi: 10.1016/j.supflu.2017.07.031

IJ-59. A. Pucciarelli, W. Ambrosini (2018). **Use of AHFM for simulating heat transfer to supercritical fluids: Application to carbon dioxide data.** International Journal of Heat and Mass Transfer, vol. 127, p. 1138-1146, ISSN: 0017-9310, doi: 10.1016/j.ijheatmasstransfer.2018.07.125

IJ-60. Kiss, Attila, Churkin, Andrey, Pilkhwal, Darwan S., Vaidya, Abhijeet M., Ambrosini, Walter, Pucciarelli, Andrea, Podila, Krishna, Rao, Yanfei, Leung, Laurence, Yuzhou, Chen, Anderson, Mark, Zhao, Meng (2018). **Summary on the Results of Two Computational Fluid Dynamic Benchmarks of Tube and Different Channel Geometries.** Journal of Nuclear Engineering and Radiation Science, vol. 4, p. 1-15, ISSN: 2332-8983, doi: 10.1115/1.4038162

IJ-61. Pucciarelli, Andrea, Ambrosini, Walter (2018). **On the effect of conjugate heat transfer on turbulence in supercritical fluids: Results from a LES application.** Annals of Nuclear Energy, vol. 111, p. 340-346, ISSN: 0306-4549, doi: 10.1016/j.anucene.2017.09.020

IJ-62. Brogna, Chiara, Pucciarelli, Andrea, Ambrosini, Walter, Razumovskiy, Victor, Pis'mennyi, Evgeniy (2018). **Capabilities of high y + wall approaches in predicting heat transfer to supercritical fluids in rod bundle geometries.** Annals of Nuclear Energy, vol. 120, p. 272-278, ISSN: 0306-4549, doi: 10.1016/j.anucene.2018.05.053

IJ-63. Ambrosini, Walter, Cizelj, L., Dieguez Porras, P., Jaspers, R., Noterdaeme, J., Scheffer, M., Schoenfelder, C. (2018). **ANNETTE Project: Contributing to The Nuclearization of Fusion.** EPJ Web of Conferences, vol. 170, p. 1-5, ISSN: 2101-6275, doi: 10.1051/epjconf/201817010001

IJ-64. Mazzocco, Thomas, Ambrosini, Walter, Kommajosyula, R., Baglietto, E. (2018). **A reassessed model for mechanistic prediction of bubble departure and lift off diameters.** INTERNATIONAL Journal of Heat and Mass Transfer, vol. 117, p. 119-124, ISSN: 0017-9310, doi: 10.1016/j.anucene.2017.09.020

IJ-65. Buzzi, F., Pucciarelli, A., Ambrosini, W. (2019). **On the mechanism of final heat transfer restoration at the transition to gas-like fluid at supercritical pressure: A description by CFD analyses.** Nuclear Engineering and Design, vol. 355, ISSN: 0029-5493, doi: 10.1016/j.nucengdes.2019.110345

IJ-66. Dzodzo, Milorad, Oriolo, Francesco, Ambrosini, Walter, Ricotti, Marco E., Grgic, Davor, Ferri, Roberta, Achilli, Andrea, Bianchi, Fosco, Meloni, Paride (2019). **Application of Fractional Scaling Analysis for development and design of Integral Effects Test facility.** Journal of Nuclear Engineering and Radiation Science, ISSN: 2332-8983, doi: 10.1115/1.4042496

IJ-67. Ambrosini, Walter (2019). **A spectral perspective about the accuracy of numerical predictions of flow instabilities.** Progress in Nuclear Energy, vol. 115, p. 1-11, ISSN: 0149-1970, doi: 10.1016/j.pnucene.2019.03.017

IJ-68. F.Buzzi, A.Pucciarelli, W.Ambrosini (2019), **On the mechanism of final heat transfer restoration at the transition to gas-like fluid at supercritical pressure: A description by CFD analyses**, Nuclear Engineering and Design, Volume 355, 15 December 2019, 110345

IJ-69. A. Pucciarelli, S. He, W. Ambrosini (2020), **A successful local fluid-to-fluid similarity theory for heat transfer to supercritical pressure fluids: merits and limitations**, International Journal of Heat and Mass Transfer, Volume 157, August 2020, 119754.

IJ-70. A. Pucciarelli, W. Ambrosini (2020), **A successful general fluid-to-fluid similarity theory for heat transfer at supercritical pressure**, International Journal of Heat and Mass Transfer, Volume 159, October 2020, 120152.

IJ-71. D. Ferretto, G. Mazzini W. Ambrosini, R. Aldorf, M. Hrehor (2021), **Risk monitor implementation for the LVR-15 research reactor**, Reliability Engineering & System Safety, Volume 208, April 2021, 107403

IJ-72. S. Kassem, A. Pucciarelli, W. Ambrosini (2021), **Insight into a fluid-to-fluid similarity theory for heat transfer at supercritical pressure: Results and perspectives**, International Journal of Heat and Mass Transfer, Volume 168, April 2021, 120813

Invited Lectures

THE-1. W. Ambrosini**, On some physical and numerical aspects in computational modeling of one-dimensional flow dynamics,** 7th International Seminar on Recent Advances in Fluid Mechanics, Physics of Complex Fluids and Associated Systems (Fluidos 2001), CD-ROM, NA, Buenos Aires, Argentina, October 17-19, 2001.

THE-2. W. Ambrosini**, Thermal-hydraulics and CFD Code Analyzes in Heavy Liquid Metal Flows,** IP-EUROTRANS Internal Training Course, Pisa, November 26th - 29th, 2007.

THE-3. W. Ambrosini**, Thermal-Hydraulic Stability Limits,** International Students Workshop on High Performance Light Water Reactors, March 31 to April 3, 2008 Organized by the HPLWR Working Group, Hosted by Karlsruhe Institute of Technology.

National Journals

NJ-1. W. Ambrosini, R. Bovalini, F. D'Auria, **Evaluation of the accuracy of code calculations**, Nuclear Energy, Year 7, No. 2, May-September 1990

NJ-2. W. Ambrosini, F. D'Auria, GM Galassi, M. Mazzini**Design of Two-Phase Flow Instability Tests in a downscaled BWR Simulator,** Nuclear Energy, Year 10, No. 3, September-December 1993

NJ-3. W. Ambrosini, F. Oriolo, G. Fructuosus, A. Manfredini, F. Parozzi, M. Valisi, **Heat and Mass Transfer Phenomena in Innovative Light Water Reactors,** Nuclear Energy, Year 13, No. 1, January-April 1996

Congresses and Meetings with International Proceedings

IC1. W. Ambrosini, G. Fruttuoso, M. Mazzini, F. Oriolo (1987) FASTRAP: a very fast-running code for the analysis of Special Transients and SB-Locas in PWRs, and Abnormal Anticipated Transients in Nuclear Power Plants Topical Meeting, Atlanta (Georgia, USA), 12-15 April 1987

IC2. W. Ambrosini, F. D'Auria, W. Grassi, P. Vigni (1988) Accuracy in the prediction of two-phase flow regimes, 3rd EUROTHERM Seminar on Modeling of Nuclear and Advanced Heat Transfer Components - Bologna, 14-15 June 1988

IC3. W. Ambrosini, D. Bestion, F. D'Auria, F. De Pasquale, JC Micaelli, M. Tempini (1989) Application of the code to CATHARE advanced numerical benchmark exercises, 7th EUROTHERM Seminar on Thermal Non-Equilibrium in Two-Phase Flow - Rome, 23 to 24 March 1989 Proceedings of the Department of Mechanical and Nuclear Engineering, DCMN 065 (89)

IC4. W. Ambrosini, F. D'Auria, GM Galassi (1990) Experience in the assessment of the CATHARE advanced code, Annual Winter Meeting of the American Society of Mechanical Engineers (ASME), Session on Advanced Thermal Hydraulics of Nuclear Reactors - Dallas (TX), 25-30 November 1990

IC5. W. Ambrosini, P. Barbucci, G. Fructuosus, A. Manfredini, G. Mariotti, F. Oriolo (1992) An integrated model for evaluating the thermal-hydraulic behavior of primary containment system and in innovative LWRs, International Conference on Design and Safety of Advanced Nuclear Power Plants, 25-29 October 1992, Tokyo, Japan

IC6. W. Ambrosini, P. Barbucci, G. Fructuosus, G. Mariotti, F. Oriolo, S. Paci (1994) **Primary Containment System and Interactions during SBWR Accident Sequences,** International Topical Meeting on Advanced Reactor Safety, ARS '94, Pittsburgh, PA, Proceedings of the Department of Mechanical and Nuclear Engineering, DCMN 11 (94)

IC7. JC Ferrer, W. Ambrosini, F. D'Auria (1995) **On the Convergence of RELAP5 Calculations for Single-Phase, Natural Circulation Problem,** X Encontro de Fisica de Reatores and Thermo-hidraulica (ENFIR), Aguas de Lindoia, Brazil, 7-11 August 1995

IC8. W. Ambrosini, A. Manfredini, F. Oriolo, G. Fruttuoso, S. Paci, P. Barbucci, G. Mariotti, Cavicchia V. (1995) **Primary Containment System and Phenomena during SBWR Accident Sequences,** ASME Technical Symposium on '' Validation of Transient Analysis System Codes', Hilton Head Island, South Carolina, USA, 14-15 August 1995

IC9. W. Ambrosini, N. Forgione, F. Oriolo, Vigni P., (1996) **Characterization of a Falling Film for Heat and Mass Transfer Experiments,** 2nd European Thermal-Sciences and 14th UIT National Heat Transfer Conference 1996 Rome, May 29 to 31, 1996

IC10. W. Ambrosini, N. Forgione, F. Oriolo, Vigni P. (1996) **Experimental Research on Containment Cooling by Evaporation of a falling film,** International Conference on Nuclear Containment: 23-25 September 1996, Robinson College, University of Cambridge, UK, Proceedings of the Department of Mechanical and Nuclear Engineering, DCMN 024 (96)

IC11. W. Ambrosini and JC Ferreri (1997) **Numerical Analysis of Single-Phase Natural Circulation in a Simple Closed Loop,** XI ENFIR / IV ENAN, Joint Nuclear Conferences, August 18-22, 1997, Palace Hotel, Poços of Caldas, MG, Brazil, Also published by the Nuclear Regulatoria Autoridad de Argentina as ARN-PI 5/98

IC12. W. Ambrosini, N. Forgione, F. Oriolo, P. Vigni, Valisi S. (1997) **Prediction of Condensation in a Prototypical Passive Containment Condenser,** Post-SMIRT 14, 18 International Seminar on 'Passive Safety Features in Nuclear Installations', August 25-27th, 1997, Pisa Italy, Proceedings of the Department of Mechanical and Nuclear Engineering, DCMN 017 (97)

IC13. W. Ambrosini, G. Fruttuoso, F. Oriolo, S. Paci (1997) **The Coupled Accident Phenomenology of Evolution for Primary Containment System and Innovative in LWRs,** Post-SMIRT 14, 18 International Seminar on 'Passive Safety Features in Nuclear Installations', August 25-27th, 1997 Post-SMIRT 14, 18 International Seminar on' Passive Safety Features in Nuclear Installations, Proceedings of the Department of Mechanical and Nuclear Engineering , DCMN 016 (97)

IC14. W. Ambrosini, N. Forgione, F. Oriolo, P. Vigni, Anhorn I. (1998) **Surface Characteristics of a Water Film Falling down in Flat Plate in the Laminar-Wavy Regime,** Third International Conference on Multiphase Flow 98 (ICMF 98), Lyon, France, June 8-12, 1998, Proceedings of the Department of Mechanical and Nuclear Engineering, DCMN 024 (98)

IC15. W. Ambrosini, N. Forgione, F. Oriolo, P. Vigni, Baessler S. (1999) **Experimental Investigation on Wave Velocity in a Falling Film,** 2nd International Symposium on Two-Phase Flow Modeling and Experimentation, Pisa, Italy, May 23-26, 1999, Proceedings of the Department of Mechanical, Nuclear and Production, DIMNP 002 (99)

IC16 L. Brusa, A. Bianchi, L. Mazzocchi, P. Vacchiani, L. Cinotti, F. Oriolo, N. Forgione, W. Ambrosini, F. de Cachard, G.-R. Monauni(1999) Modeling Condensation on Finned Tube Heat Exchangers in the Presence of Noncondensable Gases, 2nd International Symposium on Two-Phase Flow Modeling and Experimentation, Pisa, Italy, May 23-26, 1999, Proceedings of the Department of Mechanical, Nuclear and production, DIMNP 001 (99)

IC17 W. Ambrosini, P. Di Marco, A. Susanek (1999) Prediction of Boiling Channel Stability by a Finite-Difference Numerical Method, 2nd International Symposium on Two-Phase Flow Modeling and Experimentation, Pisa, Italy, May 23-26, 1999, Proceedings of the Department of Mechanical, Nuclear and Production , DIMNP 003 (99)

IC18 JC Ferrer and W. Ambrosini (1999) **Sensitivity to parameters in single-phase natural circulation via automatic differentiation of Fortran codes,** Proceedings of the EURO-THERM SEMINAR # 63, September 6-8, 1999, Genoa, Italy

IC19 Ferreri, JC and Ambrosini, W. (2000) **Calculation of Sensitivity to Parameters in Single-Phase Natural Circulation Using Adifor,** Mecánica computacional, Vol. XIX, pp.25-30, F. Quintana and Felicelli S. (Eds.), Procs. XI of ENIEF,San Carlos de Bariloche, Argentine, 24 to 29 November, 2000.

IC20 W. Ambrosini, N. Forgione, A. Manfredini, F. Oriolo (2000) **Prediction of Heat and Mass Transfer in Innovative Nuclear Reactors**, 3rd International Conference on Nuclear Option in Countries with Small and Medium Electricity Grids, June 19-22, 2000, Dubrovnik, Croatia.

IC21 W. Ambrosini, N. Forgione, D. Mazzini, F. Oriolo, He S. (2001) Evaporation Cooling CFD Analysis of Experimental Tests, 9th International Conference on Nuclear Engineering (ICONS-9) - April 8-12, 2001, vol. CD ROM, NA, Nice Acropolis -france.

IC22 W. Ambrosini, JC Ferrer, No. Forgione(2001) Finite-volume analysis of natural convection in a 8: 1 tall enclosure, First MIT Conference on Computational Fluid and Solid Mechanics, vol. 2, 1446, Cambridge, MA, June 12-15, 2001.

IC23 W. Ambrosini, N. Forgione, F. Oriolo, A. Kammerer(2001) Measurement of Falling Film Thickness by Capacitive Sensors, 5th World Conference on Experimental Heat Transfer, Fluid Mechanics, and Thermodynamics, vol. 3, p. 1965-1971, Thessaloniki (Greece), September 2001.

IC24 W. Ambrosini, JC Ferrer, No. Forgione (2001) Sensitivity Analyzes on Natural Convection in an 8: 1 Tall Enclosure using Finite Volume Methods, 7th International Seminar on Recent Advances in Fluid Mechanics, Physics of Fluids and Associated Complex Systems (Fluidos-2001), Buenos Aires, Argentina, October 17-19, 2001.

IC25 No Forgione, W. Ambrosini, F. Oriolo, P. Wackers (2002) Falling Film Evaporation In A Rectangular Channel With Different Depth, Tenth International Conference on Nuclear Energy, ICONS-10, Nuclear Energy - the Power Engineering Today for Tomorrow Hyatt Regency Crystal City, Arlington, Virginia, USA, April 14-18, 2002.

IC26 W. Ambrosini, N. Forgione, F. Oriolo, P. Agostini, Bertacci G., G. Gherardi, F. Bianchi, P. Meloni, D. Nicolini, G. Fruttuoso (2002) **Natural Circulation Of Lead-bismuth In A One-dimensional Loop: Experiments And Code Predictions**, Tenth International Conference on Nuclear Energy, ICONS-10, Nuclear Energy - the Power Engineering Today for Tomorrow Hyatt Regency Crystal City, Arlington, Virginia, USA, April 14-18, 2002.

IC27 D. Grgic, D. Pevec, B. Petrovic, MD Carelli, F. Ganda, E. Padovani, C. Lombardi, F. Franceschini, W. Ambrosini, F. Oriolo, M. Milosevic, E. Greenspan, J. Vijic (2002) **Design of a Four Year Straight-Burn Core for the Generation IV Reactor IRIS**, 4th International Conference on Nulcear Option in Countries with Small and Medium Eelectricity Grids, Dubrovnik, Croatia, June 16-20, 2002.

IC28 W. Ambrosini, G. Forasassi, N. Forgione, F. Oriolo, C. Müller (2003) Experimental Investigation on Natural and Gas-Injection Enhanced Circulation, 2003 International Congress on Advances in Nuclear Power Plants, ICAPP '03, May 4-7, 2003, Congress Palais, Córdoba, Spain.

IC29 W. Ambrosini, G. Forasassi, N. Forgione, F. Oriolo, M. Tarantino (2003) **Natural Gas-injection and Enhanced Circulation in Loop with Variable Friction,** International Conference on Global Environment and Advanced Nuclear Power Plants, GENES4 / ANP2003, September 15-19, 2003, Kyoto Research Park, Kyoto, Japan.

IC30 B. Bands, F. Fineschi, W. Ambrosini (2003) **Modeling of hydrogen catalytic recombiners**, CO5 / 171, 1st European Hydrogen Energy Conference, 2-5 Septembre 2003, Grenoble, France.

IC31 W. Ambrosini (2003) **A Methodology for the Numerical Analysis of Fluid-Dynamic Instabilities: Application to Boiling Channels,** 8th UK National Heat Transfer Conference, 9-10th September 2003, Oxford, UK.

IC32 K. Fischer, W. Ambrosini, N. Forgione, F. Oriolo, B. Bartonicek, G. Caruso, X. Cheng, R. Krieg, L. Coudert, JP Touret, R. Danisch, D. Jackson, W. Klein -Hessling, G. Weber, J. Malet, A. Orden, A. Tkac, L. Wolf, G. Yadigaroglu (2003) **Scaling of Containment Experiments,**10th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (Nureth-10), Seoul, Korea, October 5-9, 2003.

IC33 K. Fischer, W. Ambrosini, No Forgione, F. Oriolo, B. Bartonicek, G. Caruso, X. Cheng, R. Krieg, L. Coudert, J.-P. Touret, R. Danisch, D. Jackson, W. Klein-Hessling, G. Weber, J. Malet, A. Orden, A. Tkac, L. Wolf, G. Yadigaroglu, (2003) Scaling of Containment Experiments (SCACEX), FISA-2003 EU Research in Reactor Safety, 10-13 November 2003, EC Luxembourg.

IC34 W. Ambrosini, G. Forasassi, N. Forgione, F. Oriolo and M. Tarantino (2004) **Experimental study on combined natural and gas-injection enhanced circulation**, 3rd International Symposium on Two-Phase Flow Modeling and Experimentation, Pisa, Italy - September 22-25, 2004.

IC35 P. Agostini, A. Alemberti, W. Ambrosini, G. Benamati, G. Bertacci, L. Cinotti, N. Helmets, N. Forgione, F. Oriolo, G. Scaddozzo, M. Tarantino (2005) **Testing and Qualification of Circe Venturi-Nozzle Flow Meter for Large Scale Experiments**, 13th International Conference on Nuclear Engineering (13 ICONS), Beijing, China, May 16-20, 2005.

IC36 W. AmbrosiniN. Forgione, Mogliani S., F. Oriolo (2005) Discussion of Heat and Mass Transfer Models on the Basis of Experiments and CFD Calculations, United Kingdom National Heat Transfer Conference (UKHTC2005), Manchester, September 5-6, 2005.

IC37 W. Ambrosini, N. Forgione, F. Oriolo, Parozzi F. (2005) **Mixing of Dense Gases Light or with Turbulent Air: a Fast-Running Model for Lumped Parameter Codes**, An International Conference on Hydrogen Safety, September 8-10, 2005, Pisa, Italy.

IC38 Walter Ambrosini, Nicholas Forgione, Francesco Oriolo, Caroline Dannöhl, Holger J. Konle, (2005) **Experiments and CFD Analyzes on Condensation Heat Transfer on a Flat Plate in a Square Channel Cross Section,**11th International Topical Meeting on Nuclear Reactor Thermal-Hydraulics (Nureth-11), vol. CD-ROM, pp. 1-18, Popes' Palace Conference Center, Avignon, France, October 2-6, 2005

IC39 M. Bucci, W. Ambrosini, N. Forgione, F. Oriolo, S. Paci (2006) **Validation of a CFD Model based on Condensation Heat and Mass Transfer Analogy by TOSQAN ISP47 Test Facility**, 14th International Conference on Nuclear Engineering (ICONS 14), Miami, Florida, USA, July 17-20, 2006.

IC40 W. Ambrosini, JC Ferreri (2006) **Analysis of Basic Phenomena in Boiling Channel Instabilities with Different Flow Models and Numerical Schemes** 14th International Conference on Nuclear Engineering (ICONS 14), Miami, Florida, USA, July 17-20, 2006.

IC41 W. Ambrosini, MB Sharabi (2006) **Dimensionless Parameters for Stability Analysis of Heated Channels with Supercritical Fluids at Pressures**, 14th International Conference on Nuclear Engineering (ICONS 14), Miami, Florida, USA, July 17-20, 2006.

IC42 MB Sharabi, W. Ambrosini, N. Forgione, He S. (2007) **Prediction of Experimental Data on Heat Transfer to Supercritical Water with Two-Equation Turbulence Models**, The 3rd International Symposium on Supercritical Water-Cooled Reactors - Design and Technology, March 12-15, 2007, Shanghai, China.

IC43 W. Ambrosini, MB Sharabi (2007) **Assessment of Stability Maps for Heated Channels with Supercritical Fluids versus the Predictions of a System Code**, The 3rd International Symposium on Supercritical Water-Cooled Reactors - Design and Technology, March 12-15, 2007, Shanghai, China.

IC44 M. Sharabi, W. Ambrosini, N. Forgione, He S. (2008) **SCWR Rod Bundle Thermal Analysis by a CFD Code**, Proceedings of ICONS 16, 16th International Conference on Nuclear Engineering, May 11-15, 2008, Orlando, Florida USA. Paper ICONS 16-48501.

IC45 M. Sharabi, W. Ambrosini, S. He, Jiang Pei-xue, Chen Zhao-ru (2008) **Transient Stability Analysis of 3D SCWR Rod Bundle subchannels by a CFD Code**, Proceedings of ICONS 16, 16th International Conference on Nuclear Engineering, May 11-15, 2008, Orlando, Florida USA. Paper ICONS 16-48701.

IC46 W. Ambrosini, N. Forgione, F. Oriolo, E. Semeraro, M. Tarantino (2008) **Experimental Study on Natural Circulation and Air-Injection Enhanced Circulation With Different Fluids**, Proceedings of ICONS 16, 16th International Conference on Nuclear Engineering, May 11-15, 2008, Orlando, Florida USA. Paper ICONE16 - 48707.

IC47 W. Ambrosini (2009) **Continuing Assessment System of Codes and CFD for Heat Transfer and Stability in Supercritical Fluids**, 4th International Symposium on Supercritical Water-Cooled Reactors, March 8-11, 2009, Heidelberg, Germany, Paper No. 83.

IC48 St. Gallen, ME Pasquini, W. Simonini, W. Ambrosini, N. Forgione, F. Oriolo, Dzodzo M. (2009). **CFD Evaluation of the Parallel Jet Mixing Phenomena in the IRIS downcomer.** The 13th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (Nureth-13), Kanazawa City, Ishikawa Prefecture, Japan, September 27-October 2, 2009.

IC49 W. Ambrosini, N. Forgione, A. Manfredini, F. Oriolo, ME Pasquini. (2009). CFD Analysis of Mixing Phenomena in the IRIS Reactor Vessel downcomer and Lower Plenum. The 13th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (Nureth-13), Kanazawa City, Ishikawa Prefecture, Japan, September 27-October 2, 2009.

IC50 M. Bucci, E. Studer, JP Magnaud, W. Ambrosini (2009) **Modeling of Steam Condensation Phenomena in the Presence of Noncondensable Gases: Analysis of Separate Effect Tests in Forced, Natural and Mixed Convection.** The 13th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (Nureth-13). Kanazawa City, Ishikawa Prefecture, japan, September 27-October 2, 2009.

IC51 Walter Ambrosini (2010) **Dimensionless Parameters for Stability Analysis of Heated Channels with Supercritical Fluids at Imposed Heating Flux and Wall Temperature Conditions,** IAEA Technical Meeting on Heat Transfer, Thermal-Hydraulics and System Design for Supercritical Water Cooled Reactors, Pisa, Italy, July 2010

IC52 M. Mucci, S. He, W. Ambrosini, N. Forgione, JD Jackson (2010) **Assessment of Turbulence Models in the Simulation of Heat Transfer to Water at Supercritical Pressure in Upward and Downward Flow,** IAEA Technical Meeting on Heat Transfer, Thermal-Hydraulics and System Design for Supercritical Water Cooled Reactors, Pisa, Italy, July 2010

IC53 B. Calgaro, P. and W. Andreussi Ambrosini (2010) **Enhancement in the prediction of stratified gas-liquid flow. Pressure losses and liquid height.** EUROMECH Fluid Mechanics Conference - 8, Bad Reichenhall September 13-16, 2010.

IC54 Mattia De Rosa, Gabriele Guetta, Walter Ambrosini, Nicholas Forgione, Shuisheng He and John Derek Jackson (2011) Lessons Learned from the Application of CFD Models for the Prediction of Heat Transfer Fluids to at Supercritical Pressure, International Symposium on Supercritical Water-Cooled Reactors(ISSCWR-5), P060, Vancouver, British Columbia, Canada, March 13-16, 2011.

IC55 Walter Ambrosini, Sama Bilbao y León and Katsumi Yamada (2011) **Results of the IAEA Benchmark Exercise on Flow Stability in Heated Channels with Supercritical Fluids,** International Symposium on Supercritical Water-Cooled Reactors(ISSCWR-5), P115, Vancouver, British Columbia, Canada, March 13-16, 2011.

IC56 Walter Ambrosini and Mattia De Rosa (2011) **Application of Similarity Principles for Heat Transfer and Fluid-Dynamics to Different Fluids at Supercritical Pressure,** The 5th International Symposium on Supercritical Water-Cooled Reactors(ISSCWR-5), P059, Vancouver, British Columbia, Canada, March 13-16, 2011.

IC57 Walter Ambrosini, Sama Bilbao y León and Katsumi Yamada (2011) **Analysis of the IAEA Benchmark Exercise on Flow Stability in Heated Channels with Supercritical Fluids,** Proceedings of ICAPP 2011, Nice, France, May 2-5, 2011, Paper 11357.

IC58 Ferry Roelofs, Martin Rohde, Ivan Otic Guillaume Brillant, Iztok Tiselj, Henryk Anglart, Bojan NiceneLaurent Bricteux, Diego Angeli, Walter Ambrosini, Djamel Lakehal, Emilio Baglietto, Yassin Hassan A., Xu Cheng (2011) European Developments in Single Phase Turbulence for Innovative Reactors, The 14th International Topical Meeting on Nuclear Reactor Thermalhydraulics, Nureth-14, Toronto, Ontario, Canada, September 25-30, 2011.

IC59 Matteo Bucci, Walter Ambrosini, Nicholas Forgione, Francesco Oriolo, Sandro Paci (2011) **Experimental and Computational Analysis of Steam Condensation in the Presence of Air and Helium,** The 14th International Topical Meeting on Nuclear Reactor Thermalhydraulics, Nureth-14, Toronto, Ontario, Canada, September 25-30, 2011.

IC60 Matteo Bucci, Walter Ambrosini, Nicholas Forgione, Donato Lioce (2011) **Experimental Investigation on Steam Condensation in the Presence of Air and Helium: Forced Convection Conditions,** The 14th International Topical Meeting on Nuclear Reactor Thermalhydraulics, Nureth-14, Toronto, Ontario, Canada, September 25-30, 2011.

IC61 Angelucci MorenaWalter Ambrosini, Nicholas Forgione (2011) Prediction of Wall Friction for Fluids at Supercritical Pressure with CFD Models, The 14th International Topical Meeting on Nuclear Reactor Thermalhydraulics, Nureth-14, Toronto, Ontario, Canada, September 25-30, 2011.

IC62 Eugenio Molfese, Walter Ambrosini, Nicholas Forgione, Pallippattu K. Vijayan, Manish Sharma (2011) **Study of Supercritical Carbon Dioxide Natural Circulation by the Use of CFD Codes,** The 14th International Topical Meeting on Nuclear Reactor Thermalhydraulics, Nureth-14, Toronto, Ontario, Canada, September 25-30, 2011.

IC63 D. Lioce, M. Asztalos, A. Alemberti, W. Ambrosini (2012). **AP1000 Recovery Improvement After ADS Inadvertent Actuation.**CD-ROM. The 9th International Topical Meeting on Nuclear Thermal-Hydraulics, Operation and Safety (NUTHOS-9), N9P0281, Kaohsiung, Taiwan, September 9-13, 2012

IC64 W. Ambrosini, G. Damiani, N. Forgione, E. Ampomah-Amoako (2012). **Studies on the adoption of CFD codes for the analysis of stability in heated channels with supercritical fluids**. CD-ROM. The 9th International Topical Meeting on Nuclear Thermal-Hydraulics, Operation and Safety (NUTHOS-9), N9P0281, Kaohsiung, Taiwan, September 9-13, 2012

IC65 W. Ambrosini, PP De Regge (2013). **10-year Experience of European Nuclear Education Network.** NESTet 2013, Madrid, Spain, 17-21 November 2013

IC66 W. Ambrosini, N. Forgione, S. Durand (2013). **Analysis of Experimental Data of Condensation in the Presence of Non-Condensable Gases by a CFD code.**Nureth-15, p. 1-12, Pisa Congress Palace - Via Matteotti 1, 56124 Pisa, Italy, May 12-17 2013

IC67 W. Ambrosini, N. Forgione, S. Badiali, JD Jackson, M. Sharabi (2013). **Capabilities of Two-Equation Low-Reynolds Number Turbulence Models for Predicting Heat Transfer Fluids to at Supercritical Pressure.**Nureth-15, p. 1-10, Pisa Congress Palace - Via Matteotti 1, 56124 Pisa, Italy, May 12-17 2013

IC68 W. Ambrosini, M. Bucci, N. Forgione, F. Merli, F. Oriolo, S. Paci (2013). **Comparison and Analysis of the Condensation Benchmark Results.** Proceedings of ERMSAR 2013, 6th International Conference on SEVERE ACCIDENT RESEARCH, JRC, Avignon, in October 2013.

IC69 W. Ambrosini, Chatoorgoon V. (2013). **Comparison of Non-Dimensional Parameters for Flow Dynamics at Supercritical Pressures.** The 6th International Symposium on Supercritical Water-Cooled Reactors,ISSCWR-6, p. 1-10, Shenzhen, Guangdong, China, March 03-07, 2013.

IC70 Walter Ambrosini, Peter Baeten, José Luis Delgado Criado, Peter De Regge, Javier Dies, Petre Ghitescu, Martin Kropík, Claude Renault, John Roberts, Christian Schoenfelder (2013). **ENEN Past Achievements and Future Challenges: ten years of European E & T actions in nuclear engineering, waste management and radiation protection**. FISA 2013. Vilnius, Lithuania, 14-17 October 2013

IC71 Walter Ambrosini and Founding Members of Enen (2013). **Lessons-learned from 10 years of ENEN collaboration: from a knowledge to an end-user driven approach**. FISA-2013. p. 1-16, Vilnius, Lithuania, 14-17 October 2013

IC72 F. Roelofs, M. Rohde, Otic I., G. Brillant, I. Tiselj, H. Anglart, B. Niceno, M. Duponcheel, E. Stalio, W. Ambrosini, D. Lakehal, E. Baglietto, YA Hassan , X. Cheng (2013). **European Developments in Single Phase Turbulence for Innovative Reactors.**Nureth-15. p. 1-15, Pisa Congress Palace - Via Matteotti 1, 56124 Pisa, Italy, May 12-17 2013

IC73 F. Roelofs, D. Visser, M. Rohde, N. Warncke, W. Ambrosini, M. Jaromin, M. Sharabi, X. Cheng (2013). **SCWR Related Activities Within the European Thermal-Hydraulics for Innovative Nuclear Systems (thins) Project.**ISSCWR-6, p. 1-12, Shenzhen, Guangdong, China, March 03-07, 2013

IC74 Andrea Pucciarelli, Irene Borroni, Medhat Sharabi, Walter Ambrosini (2014). **Results of 4-equation turbulence models in the prediction of heat transfer to supercritical pressure fluids.**Thins 2014 International Workshop. p. 1-10, Modena, Italy, January 20-22, 2014

IC75 Walter Ambrosini, Andrea Coppedè (2015). **A low numerical diffusion scheme for the stability analysis of natural circulation loops containing fluids at supercritical pressure.**ISSCWR-7 2015. p. 1-13, Helsinki, Finland: VTT Technology, ISBN: 9789513882907, Helsinki, Finland, 15-18 March 2015

IC76 Andrea Pucciarelli, Walter Ambrosini (2015). **CFD prediction of heat transfer in rod bundles with water at supercritical pressure.** The 7th International Symposium on Super-Critical Water-cooled Reactors,ISSCWR 7-2015, VTT Technology, ISBN: 9789513882907, Helsinki, Finland, 15-18 March 2015

IC77 Xiaolu Li, Xu Ruina, Zhang Zhen, Peixue Jiang, Walter Ambrosini (2015). **Experimental study of heat transfer and flow instabilities in heated channels with supercritical CO2.** The 7th International Symposium on Super-Critical Water-cooled Reactors,ISSCWR-7 2015, ISBN: 9789513882907, Helsinki, Finland, 15-18 March 2015

IC78 Andrea Pucciarelli, Walter Ambrosini (2015). **Numerical Study of Heat Transfer and Flow Instability of Water at Supercritical Pressure in a Vertical Tube.** The 7th International Symposium on Super-Critical Water-cooled Reactors,ISSCWR 7-2015, VTT Technology, ISBN: 9789513882907, Helsinki, Finland, 15-18 March 2015

IC79 W. Ambrosini, R. Jaspers, C. Schoenfelder (2016). **Success Factors of International Education and Training Networks.** Engineering Nuclear Science and Technology - NESTet 2016. European Nuclear Society, Berlin, Germany, 22-26 May 2016

IC80 Cizelj L., Porras Dieguez P., W. Ambrosini, Anzieu P., Coeck M., J. Dies, Eaton M., R. Geisser, Kropík M., Tuomisto F. (2016). The European Nuclear Education Network and Its Actions in Favor Of Education, Training, Information and Transfer of Expertise. Engineering Nuclear Science and Technology - NESTet 2016, European Nuclear Society, Berlin, Germany, 22-26 May 2016

IC81 Katsumi Yamada, Laurence Leung, Ambrosini Walter (2016). **New IAEA Coordinated Research Project on Thermal-Hydraulics of Supercritical Water Cooled Reactors. International Conference on Nuclear Engineering,**International Conference on Nuclear Engineering (ICONE24). ASME, Charlotte, North Carolina, June 26-30, 2016

IC82 Francesco Carbone, Ambrosini Walter (2016). **Steady-state and stability analysis of natural circulation with fluids at supercritical pressure.**International Conference on Nuclear Engineering (ICONE24). ASME, Charlotte, North Carolina, June 26-30, 2016

IC83 Papp Vera Andrea Pucciarelli, Sharabi Medhat, Ambrosini Walter (2016). **Use of algebraic heat flux heat transfer models to improve predictions for supercritical pressure fluids.**International Conference on Nuclear Engineering (ICONE24). ASME, Charlotte, North Carolina, June 26-30, 2016

IC84 Churkin, Andrey, Attila, Kiss, Krutikov, Alexey, Luka, Golibrodo, Vasilii, Volkov, Vaidya Abhijeet, V.a.i.d.y.a. Abhijeet M., Ambrosini, Walter, Pucciarelli, Andrea, Podila, Krishna, Yanfei, R.a.o., Laurence, Leung, Chen, Yuzhou, Anderson, Mark (2017). **Summary on the results of two CFD benchmarks of tube and different channel geometries.** In: The 8th International Symposium on Super-Critical Water-Cooled Reactors (ISSCWR-8). p. 698-719, Chengdu, China: Nuclear Power Institute of China, Chengdu, China, March 13-15, 2017

IC85 Pucciarelli, Andrea, Ambrosini, Walter, He, Shuisheng, Wang, Wei (2017). **Fluid to fluid scaling of heat transfer with supercritical pressure fluids: recent considerations and future perspectives.** In: The 8th International Symposium on Super-Critical Water-Cooled Reactors (ISSCWR-8). p. 720-735, Chengdu, China:Nuclear Power Institute of China, Chengdu, China, March 13-15, 2017

IC86 Pucciarelli, Andrea, Ambrosini, Walter, Sharabi, Medhat (2017). **Considerations on CFD studies about heat transfer to supercritical fluids.** In: The 8th International Symposium on Super-Critical Water-Cooled Reactors (ISSCWR-8). p. 736-748, Chengdu, China:Nuclear Power Institute of China, Chengdu, China, March 13-15, 2017

IC87 Kassem, S.; Pucciarelli, A.; Ambrosini, W. **Outcomes of a Successful Fluid-To-Fluid Similarity Theory for Heat Transfer at Supercritical Pressures.** In Proceedings of the 10th International Symposium on Supercritical Water-Cooled Reactors, ISSCWR-10, Prague, Czech Republic, 15–19 March 2021; ISSCWR-10-014.

IC88 Pucciarelli, A.; Kassem, S.; Ambrosini, W. **Considerations on a Fluid-To-Fluid Scaling Theory for Heat Transfer to Super-critical Fluids: Recommendations for Non-Uniform Heat Flux Conditions**. In Proceedings of the 10th International Symposium on Supercritical Water-Cooled Reactors, ISSCWR-10, Prague, Czech Republic, 15–19 March 2021; ISSCWR-10-012.

IC89 De Angelis, A.; Pucciarelli, A.; Kassem, S.; Ambrosini, W. **Advances in the Development of a Fluid-To-Fluid Similarity The-ory for Fluids at Supercritical Pressure: Results from Sensitivity Analyses.** In Proceedings of the 2021 28th International Conference on Nuclear Engineering, ICONE28, online, 4–6 August 2021; ICONE28-64713.

IC90 Kassem, S.; Pucciarelli, A.; Ambrosini, W. **Extending a Fluid-To-Fluid Similarity Rationale for Heat Transfer at Supercritical Pressure to R134a.** In Proceedings of the 2021 28th International Conference on Nuclear Engineering, ICONE28, online, 4–6 August 2021; ICONE28-64822

National congresses

NC-1. W. Ambrosini, F. D'Auria, F. Oriolo (1985) **Simulation of heat transfer by conduction in the structures of nuclear installations light water as a result of accident**, 40th Congress of the Italian Heat - ATI - Trieste, 11 to 13 September 1985

NC-2. W. Ambrosini, B. Montagnini, F. Oriolo (1986) **A coarse-mesh method for the calculation of the heat exchanged by conduction in the structures of a light water nuclear power plant**IV National Conference on Heat Transfer of the Italian Union of thermal fluid - ITU - Genoa, 5-7 June 1986

NC-3. W. Ambrosini, F. D'Auria, Vigni P. (1987) **Blowdown phenomenon: critical analysis of some calculation models for the Safety Analysis of Nuclear Power Plants**V National Conference on Heat Transfer of the Italian Union of thermal fluid - ITU - Turin 25-27 June 1987

NC-4. W. Ambrosini, F. D'Auria, P.Vigni (1988) **Comparison between some constitutive models ADOPTED CATHARE in V1.3 and RELAP5 / MOD2 system codes**, VI National Conference on Heat Transfer of the Italian Union of thermal fluid - ITU - Bari 9-10 June 1988

NC-5. W. Ambrosini, F. D'Auria, B. Montagnini, F. Oriolo (1989) **Analysis of well-posed thermalhydraulic models through numerical methods based on the characteristic form of balance equations**VII National Congress on Heat Transfer Thermal Fluid Dynamics Italian Union - ITU - Florence 15-17 June 1989

NC-6. W. Ambrosini, F. D'Auria, A. Soldati (1990) **A mechanistic model for counter-current flow at the Upper Tie Plate**VIII National Congress on Heat Transfer Thermal Fluid Dynamics Italian Union - ITU - Ancona: 28-29 June 1990

NC-7. W. Ambrosini, F. D'Auria, GM Galassi (1994) **Boundary Conditions and Evaluations Uncertainty in System Thermalhydraulics**XII National Conference on Heat Transfer Thermal Fluid Dynamics Italian Union - ITU - L'Aquila, 23 to 24 June 1994

NC-8. W. Ambrosini, F. Oriolo, Vigni P. (1994) **Modeling of Heat Transfer from a Falling Film in the Presence of Interfacial Shear**XII National Conference on Heat Transfer Thermal Fluid Dynamics Italian Union - ITU - L'Aquila, 23 to 24 June 1994

NC-9. W. Ambrosini (1995) **Application and Improvement of Numerical Methods for Heat Transfer and Fluid Flow,** XIII National Congress on Heat Transfer Thermal Fluid Dynamics Italian Union - ITU - Bologna, 22 to 23 June 1995

NC-10. W. Ambrosini, F. D'Auria, Giglioli A. (1995) **Coupled Thermal-Hydraulic and Neutronic Instabilities in the LaSalle-2 BWR Plant,** XIII National Congress on Heat Transfer Thermal Fluid Dynamics Italian Union - ITU - Bologna, 22 to 23 June 1995

NC-11. W. Ambrosini, N. Forgione, F. Oriolo, P. Vigni, H. Graf (1997) **Experimental Investigation on the Thickness of a falling film,** 15th UIT National Heat Transfer Conference 1997, Turin, June 19 to 20, 1997

NC-12. W. Ambrosini, N. Forgione, A. Manfredini, F. Oriolo (1998) **Models for the Heat Transfer and Mass in Gas Noncondensabili Presence** 16th UIT National Heat Transfer Conference 1998 Siena, June 18 to 19, 1998

NC-13. W. Ambrosini, P. Di Marco, JC Ferreri (1998) **Analysis of Density Wave Instability Phenomena by Means of Nonlinear Analytical Tools,** 16th UIT National Heat Transfer Conference 1998 Siena, June 18 to 19, 1998

NC-14. W. Ambrosini, No Forgione, D. Mazzini, F. Oriolo (2000) Computational Study on Heat and Mass Transfer in a Rectangular Channel, 18th UIT National Heat Transfer Conference 2000 Cernobbio, June 28 to 30, 2000.

NC-15. W. Ambrosini, N. Forgione, F. Oriolo, Wasle J. (2000) **Experimental Investigation and Modeling of Film Evaporation in the Presence of countercurrent Air Flow,** 18th UIT National Heat Transfer Conference 2000 Cernobbio, June 28 to 30, 2000.

NC-16. W. Ambrosini, N. Forgione, F. Oriolo (2001) Measurement of Heat Flux in a Thick Aluminum Wall Cooled by Internal Cylindrical Channels, 19th UIT National Heat Transfer Conference 2001, 61, Modena, 25 to 27 June 2001.

NC-17. W. Ambrosini, F. D'Auria, A. Pennati, JC Ferreri (2001) Numerical effects in the prediction of single-phase natural circulation stability, 19th UIT National Heat Transfer Conference 2001, 313, Modena, 25 to 27 June 2001.

NC-18 W. Ambrosini, G. Forasassi, N. Forgione, F. Oriolo, F. Schneider (2002) **Natural Circulation in a One-Dimensional Loop**, 20th UIT National Heat Transfer Conference 2002 Maratea, 27-30 June 2002

NC-19 B. Bands, F. Fineschi, W. Ambrosini (2003) **A Computational Fluid Dynamic Code to Simulate Catalytic Hydrogen Recombiner**, 21st UIT National Heat Transfer Conference in 2003, Udine, 23 to 25 June 2003, pp. 495- 500.

NC-20 W. Ambrosini, N. Forgione, F. Oriolo, F. Varano **(**2004) Condensation of an Air-Steam Mixture on a Flat Wall in a Vertical Channel Square, 21st UIT National Heat Transfer Conference in 2003, Udine, 23 to 25 June 2003, pp. 197-202.

NC-21 W. AmbrosiniN. Forgione, F. Oriolo, F. Varano (2004) Steam Condensation in the Presence of Air: Prediction of Test Conditions by One-dimensional and CFD codes, 22nd UIT National Heat Transfer Conference 2004, Genova, 21-23 June 2004 , CD-ROM.

NC-22 W. Ambrosini, N. Forgione, F. Oriolo, Pellacani F., M. Tarantino, C. Struckmann (2005) **Experimental Investigation on Natural Circulation and Air-Injection Enhanced Circulation in a Simple Loop**, 23rd UIT National Heat Transfer Conference 2005, Parma, 20 to 22 June 2005 CD-ROM.

NC-23 W. Ambrosini, G. Benamati, S. Carnevali, C. Foletti, N. Forgione, F. Oriolo, G. Scaddozzo, M. Tarantino (2006) **Experiments on Gas Injection Enhanced Circulation in Pool-type Liquid Metal Apparatus**, 24thUIT National Heat Transfer Conference, Naples (Italy), June 21 to 23, 2006.

NC-24 W. Ambrosini, N. Forgione, F. Oriolo, Catarci V. (2007) **Natural Circulation and Air-Injection Enhanced Circulation of HFE-7100 A Simple Loop**, XXV UIT National Heat Transfer Conference, Trieste, 18-20 June 2007.

NC-25 No Forgione, G. Galgani, W. Ambrosini, F. Oriolo (2008) **Study of Natural Circulation and Air-Injection Enhanced Circulation with Different Fluids**XXVI National Congress UIT Heat Transfer, Palermo, 23 to 25 June 2008.

NC-26 B. Calgaro, W. Ambrosini, P. Andreussi (2010) **Prediction of pressure losses and liquid holdup in horizontal stratified and wavy-stratified gas-liquid flow in a pipe.** 28th ITU Heat Transfer Conference, Brescia, italy, June 21-23, 2010.

NC-27 S. Di Sarno, N. Forgione, D. Hammer, F. Oriolo, W. Ambrosini (2011) **Natural Convection Heat Transfer in Thermally Stratified Liquid Metal,** 29th ITU Heat Transfer Conference, Torino, 20-22 June 2011.

NC-28 SK Debrah, W. Ambrosini, M. De Rosa, N. Forgione (2011) **Analysis of Heat Transfer to Supercritical Carbon Dioxide by the STAR-CCM + CFD Code,** 29th ITU Heat Transfer Conference, Torino, 20- 22 June 2011.

NC-29 Antonio Di Buono, Walter Ambrosini (2014). **On the effect of heating structures in the analysis of flow stability of heated tubes with supercritical pressure fluids.**32nd ITU Heat Transfer Conference. p. 1-10, Pisa 23-25 June 2014

Other Publications

OR-1. Giot M., D. Emmerechts, Seynhaeve JM and J. Zhang; W. Ambrosini, F. D'Auria, P. and G. Fantappie Di Marco ', Analysis of Experiments Performed at the University of Hannover with RELAP5 / Mod2 and CATHARE Codes on Fluid Dynamic Effects in the Top Fuel Element Nozzle Area during and Refilling Reflooding, Commission of European Communities, Nuclear Science and Technology, Shared Cost Action, Reactor Safety Program 1985-1987, Contract No. 3145-87-07 ELISPB, Final Report, JRC Ispra, November 1989

OR-2. Giot M., D. Emmerechts, Seynhaeve JM and J. Zhang; F. D'Auria, G. Fantappie ', and W. P. Di Marco Ambrosini,**Analysis of Hannover Experiments on Counter-Current Flow in the Top Fuel Element Nozzle Area,** Seminar on the Commission Contribution to Reactor Safety Research, Commission of European Communities, Varese, 20 to 24 November 1989

OR-3. W. AmbrosiniR. Bovalini, F. D'Auria, Comparison Report of the OECD / CSNI International Standard Problem 21 (PIPER-ONE Experiment OP-SB-7). Vol. 2: Evaluation of code accuracy in the prediction of OECD / CSNI ISP 21, presented to 'OECD / CSNI Final Workshop on ISP 21, Pisa 13 to 14 April 1989 DCMN RL 389 (89) - Published by the OECD-NEA as CSNI Report No. 162, November 1989

OR-4. F. D'Auria (Editor) et al., W. Ambrosini, T. Anegawa, J. Blomstrand, J. In De Betou, S. Langenbuch, Lefvert T., K. Valtonen, State-of-the-Art Report on Boiling Nuclear Reactor Stability, Committee on the Safety of Nuclear Installations, OECD Nuclear Energy Agency, OECD / GD (97) 13, NEA / CSNI / R (96) 21 January 1997

OR-5. W. Ambrosini, N. Forgione, F. Oriolo, **Literature Survey on Falling Water Film Evaporation,** University of Pisa, Proceedings of the Department of Mechanical and Nuclear Engineering, DCMN 014 (97), Issued in the Frame of EU DABASCO Project, CONT-DABASCO (97) -D003, 1997

OR-6. W. Ambrosini, N. Forgione, F. Oriolo, F. de Cachard, G.-R. Monauni,**Main Conclusions from EU INCON Project Concerning Modeling Condensation on Compact Finned Tube Heat Exchangers**, University of Pisa, Proceedings of the Department of Mechanical and Nuclear Engineering, DCMN 04 (98), Issued in the Frame of EU INCON Project, 1998

OR-7. JC Ferrer and W. Ambrosini, **Verification of RELAP5 / MOD3.1 Stability Results with Theoretical,** Prepared as Part of the Agreement on Research Participation and Technical Exchange under the Thermal-Hydraulic Code Assessment and Application Program (CAMP), Issued by the US Nuclear Regulatory Commission as NUREG-IA-0151, February 1999

OR-8. W. Ambrosini, N. Forgione, F. Oriolo, **EFFE Work Package Experimental Data Report,**University of Pisa, Proceedings of the Department of Mechanical, Nuclear and Production, DIMNP 034 (99), Issued in the Frame of EU DABASCO Project, CONT-DABASCO (99) -P014, October 1999

OR-9. W. Ambrosini, N. Forgione, F. Oriolo,**Modeling Falling Film Evaporation from EFFE Work Package Tests,** University of Pisa, Proceedings of the Department of Mechanical, Nuclear and Production, DIMNP 037 (99), Issued in the Frame of EU DABASCO Project, CONT-DABASCO (99) -P015, December 1999

OR-10. W. Ambrosini, N. Forgione, F. Oriolo, **DABASCO Project - Work Package EFFE Final Report,** University of Pisa, Proceedings of the Department of Mechanical, Nuclear and Production, DIMNP 03 (2000), EU DABASCO Project, CONT-DABASCO (99) -P011, January 2000.

OR-11. K. Fischer, L. Wolf, G. Yadugaroglu, R. Danisch, R. Krieg, X. Cheng, Jackson JD, J. Malet, W. Ambrosini, N. Forgione, F. Oriolo, G. Caruso, B. Bartoníček , W. Klein-Hessling, G. Weber, A. Tkáč, A. Orden, L. Coudert, **Scaling of Containment Experiments - SCACEX,** European Commission, 5th Framework Program 1998-2002 Contract N ° FIR1-CT2001-20127, December 2002.

OR-12. W. Ambrosini, M. Bucci, N. Forgione, F. Oriolo, S. Paci, H. Paillère, E. Studer (Editors), **CFD Models for Predicting Condensation in Nuclear Reactor Containments SARNET Within the Network of Excellence,** University of Pisa, DIMNP 001 (2006), Pisa, February 2006.

OR-13. W. Ambrosini, M. Bucci, N. Forgione, F. Oriolo, S. Paci, **Results of the SARNET Condensation Benchmark No. 0,** University of Pisa, DIMNP 006 (2007), Pisa, August 2007.

OR-14. Walter Ambrosini (Co-Editor of two Chapters) (2014) of **Heat Transfer Behavior and Thermohydraulics Code Testing for Supercritical Water Cooled Reactors (SCWRs)**. IAEA-TECDOC-1746. p. 267-316, IAEA, ISBN: 9789201076144

Contributions to collections of articles

C-1. W. Ambrosini, **Development and application of numerical techniques for the heat exchange and the two-phase flow,** Research and Researchers in the Faculty of Engineering of memories Collection published on the occasion of the 80th Anniversary of the Faculty of Engineering, University of Pisa, Pisa Printing Publishing, February 1995.

Internal Department Reports

DR1. W. Ambrosini, B. Montagnini, F. Oriolo, **COMETS: a coarse-mesh code for the calculation of thermal transients in the structures,** Universita 'di Pisa, Department of Mechanical and Nuclear Engineering, RL 197 (85), 1985

DR2. W. Ambrosini, M. Mazzini, F. Oriolo, **A coarse-mesh method for the calculation of the conductive heat exchange to be inserted into FASTRAP code,** Universita 'di Pisa, Department of Mechanical and Nuclear Engineering, RL 209 (85), 1985

DR3. W. Ambrosini, F. D'Auria, **Activities in progress at Pisa University Concerning the validation of the code CATHARE - 1st Report,** Presented at the 7th Meeting of the Technical Code du Club des Utilisatuers CATHARE (Grenoble, February 11, 1987) - DCMN NT 074 (87) - Pisa, February 1987

DR4. W. Ambrosini, F. D'Auria, Activities in progress at Pisa University Concerning the validation of the code CATHARE - 2nd Report, presented the 8th Technical Meeting of the Club des Utilisateurs du Code CATHARE (Grenoble, 15 September 1987) - DCMN NT 076 (87) - Pisa, September 1987

DR5. F. De Pasquale, W. Ambrosini, F. D'Auria, **CATHARE Code V1.3: sensitivity study 'on the nodalizzazione delcomponente pressurizer,** Universita 'di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 087 (87), 1987

DR6. Tempini M., W. Ambrosini, F. D'Auria, **CATHARE Code V1.3: sensitivity study 'on the nodalizzazione of PUMPS component,** Universita 'di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 088 (87), 1987

DR7. W. Ambrosini, F. D'Auria, GM Galassi, **Activities in progress at Pisa University Concerning the validation of the code CATHARE - 3rd Report,** Presented at the 9th Meeting of the Technical Code du Club des Utilisateurs CATHARE (Grenoble, 10-11 March 1988) - DCMN NT 099 (88) - Pisa, March 1988

DR8. G. Fantappie ', W. Ambrosini, F. D'Auria, **Analysis of CCFL phenomenon by CATHARE V1.3 and comparison with the results of RELAP5 / MOD2 application,** Universita 'di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 098 (88), 1988

DR9. G. Fructuosus, W. Ambrosini, F. Oriolo, **Development of a procedure for the graphics processing by the data package Starsis calculated with CATHARE code** Universita 'di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 113 (88), 1988

DR10. W. Ambrosini, F. D'Auria, GM Galassi, **Activities in progress at Pisa University Concerning the validation of the CATHARE code - 4th Report,** Presented at the 10th Technical Meeting of the Club des Utilisateurs du Code CATHARE (Grenoble, 8-9 November 1988) - DCMN NT 125 (88) - Pisa, November 1988

DR11. W. Ambrosini, R. Bovalini, F. D'Auria, P. Petrini, **Advancements in evaluating the accuracy of calculations thermalhydraulic codes,** Presented at the Meeting of the PWG-2 CSNI Task Group on the Status and Assessment of Codes for Transients and ECCS - Paris 1-3 June 1987

DR12. W. Ambrosini, F. D'Auria, G. Fantappie ', **Preliminary activities related to the application of CATHARE V1.3 to CCFL experiments,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 133 (89), March 1989

DR13. W. Ambrosini, F. D'Auria, G. Fantappie ', **Analysis of steam-water countercurrent flow experiments in rod bundles with the CATHARE V1.3 code,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 137 (89), July 1989

DR14. A. Soldiers, W. Ambrosini, F. D'Auria, **Application of a simplified correlation to flooding flooding experimental data,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 142 (89), October 1989

DR15. W. Ambrosini, F. D'Auria, GM Galassi, A. Soldati, **Activities in progress at Pisa University Concerning the validation of the code CATHARE - 5th Report,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 145 (89), November 1989

DR16. W. Ambrosini, F. D'Auria, GM Galassi, **Nodalization of the LOBES / MOD2 facility for the CATHARE 2 V1.2 code,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 149 (89), November 1989

DR17. W. Ambrosini, F. D'Auria, A. Soldati, **Analysis of flooding models for rod bundle geometry based on momentum balance at the upper tie plate,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 150 (89), December 1989

DR18. W. Ambrosini, F. D'Auria, GM Galassi, **Post test analysis by CATHARE 2 LOBES A2-81 V1.2 of the experiment (ISP 18)** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 152 (90), January 1990

DR19. W. Ambrosini, F. D'Auria, GM Galassi, **Post test analysis by CATHARE 2 LOBES A1-84 V1.2 of the experiment,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 153 (90), February 1990

DR20. W. Ambrosini, F. D'Auria, GM Galassi, **Implementation of CATHARE 2 V1.2 on the IBM 3090 of the CNUCE at Pisa University,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 159 (90), June 1990

DR21. W. Ambrosini, F. D'Auria, GM Galassi, **Activities in progress at Pisa University Concerning the validation of the code CATHARE,** 6th Report, Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 160 (90), June 1990

DR22. W. Ambrosini, F. D'Auria, A. De Varti, P. Lombardi, F. Oriolo, **Development and qualification of the nuclear nodalizzazione AP600 for RELAP5 / MOD2 code** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN RL 452 (90), June 1990

DR23. W. Ambrosini, F. D'Auria, A. De Varti, G. Fruttuoso, F. Oriolo, **Analysis of the transient resulting from an interfacing system LOCA nuclear installation AP600 with RELAP5 / MOD2 code,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN RL 457 (90), June 1990

DR24. W. Ambrosini, F. D'Auria, A. De Varti, G. Fruttuoso, F. Oriolo, **Analysis of the transient resulting from LB-LOCA with rupture guillotine in cold nuclear installation leg AP600 with RELAP5 / MOD2 code,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN RL 458 (90), June 1990

DR25. W. Ambrosini, F. D'Auria, GM Galassi, **Post test analysis by CATHARE 2 V1.2 of the LOBES BL-21 experiment,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 161 (90), July 1990

DR26. W. Ambrosini, F. D'Auria, G. Forasassi, F. Oriolo, **Research program on the thermo-hydraulic response of reactors greater passive safety SBWR-600 and AP-600 to incidental events,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN RL 464 (90), June 1990

DR27. W. Ambrosini, A. Manfredini, F. Oriolo, **Integration of SIMSIP and SMOKE codes for the cross-analysis of reactors greater passive safety,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN RL 508 (91), June 1991

DR28. W. Ambrosini, A. Manfredini, F. Oriolo, S. Paci, **AP-600 Nuclear Power Plant: analysis of an interfacing system LOCA sequence using the integrated version of the FUMO code,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN RL 506 (91), June 1991

DR29. W. Ambrosini, Calastri A., F. D'Auria, **Application of CATHARE 2 V1.2 code to the ISP 25 reflood experiment performed in ACHILLES facility,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 167 (91), June 1991

DR30. W. Ambrosini, P. Breghi, F. D'Auria, **Evaluation of code accuracy in the prediction of OECD / CSNI ISP 22,** OECD / CSNI ISP22 Final Workshop, Pisa, 2-4 July 1991, Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 176 (91)

DR31. W. Ambrosini, A. Manfredini, F. Oriolo, S. Paci, **SBWR Nuclear Power Plant: analysis of a Loss Of Feed Water sequence using the integrated version of the FUMO code,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN RL 511 (91)

DR32. W. Ambrosini, F. D'Auria, G Fructuosus, F. Oriolo, P. Vigni, **Some considerations on the revision of the model and ENEL of LOCA analysis in AP-600 reactor made with the RELAP5 / MOD2 code,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 177 (91), June 1991

DR33. W. Ambrosini, F. D'Auria, **Activities in progress at Pisa University Concerning the validation of the code CATHARE - 7th Report,** Presented at the '15th Meeting of the CATHARE User Club', Grenoble, France 26-27 September 1991, University of Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 181 (91), September 1991

DR34. W. Ambrosini, M. P: Breghi, F. D'Auria, GM Galassi, **Evaluation of post-test analyzes of OECD-CSNI International Standard Problem 22,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 184 (91), October 1991

DR35. W. Ambrosini, S. Barsotti, S. Belsito, F. D'Auria, M. Frogheri, **OECD / CSNI ISP 33: pretest prediction of the Pactel natural circulation experiment performed by CATHARE 2 V1.2E code,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 202 (92), December 1992

DR36. W. Ambrosini, F. D'Auria, GM Galassi, M. Mazzini, M. Virdis, **Preliminary planning of BIP tests to be performed in PIPER-ONE apparatus,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 207 (93), May 1993

DR37. W. Ambrosini, S. Belsito, F. D'Auria, M. Frogheri, **OECD / CSNI ISP33: post-test analysis of the Pactel natural circulation experiment performed by CATHARE 2 V1.3 code,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 208 (93), May 1993

DR38. W. Ambrosini, S. Belsito, F. D'Auria, GM Galassi, T. Bajs, N. Debrecin, **IAEA SPE-4: Pre-Test Calculations Performed jointly by the University of Pisa and the University of Zagreb,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 219 (93), October 1993

DR39. P.'s undershirts, W. Ambrosini, G. Fruttuoso, **RELAP5 / MOD2-KM1 - Introduction of one-dimensional neutron in RELAP5 / MOD2,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 223 (94), February 1994

DR40. W. Ambrosini, S. Belsito, F. D'Auria, GM Galassi, T. Bajs, V. Bencik, N. Debrecin, **IAEA SPE-4: Post-Test Calculations Performed jointly by the University of Pisa and the University of Zagreb,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 230 (93), May 1994

DR41. W. Ambrosini, F. D'Auria, GM Galassi, **Notes to the Results Obtained by DCMN of Pisa University in the Participation to the NEA-OECD Benchmark BWR,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 246 (94) - Rev. 1, December 1994

DR42. W. Ambrosini, F. Oriolo, **Application of RELAP5 to STORM Thermal-Hydraulic Benchmarks,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 255 (95), April 1995

DR43. O. Feldmann, W. Ambrosini, F. D'Auria, **Effect of Plant Systems (BoP) on the Stability Behavior of a BWR,** Universita 'degli Studi di Pisa, Department of Mechanical and Nuclear Engineering, DCMN NT 259 (95), April 1995

DR44. W. Ambrosini, N. Forgione, F. Oriolo, **Free Convection Condensation Heat Transfer on Smooth Inclined Tubes in the Presence of Gas Noncondensable,** University of Pisa, Dipertimento of Mechanical and Nuclear Engineering, DCMN RL 707 (96), Issued in the Frame of EU INCON Project

DR45. W. Ambrosini, N. Forgione, F. Oriolo, **Free Convection Condensation Heat Transfer on Inclined Finned Tubes in the Presence of Gas Noncondensable,** University of Pisa, Dipertimento of Mechanical and Nuclear Engineering, DCMN RL 709 (96), Issued in the Frame of EU INCON Project

DR46. W. Ambrosini, N. Forgione, F. Oriolo, **Forced Convection Condensation Heat Transfer on Finned Tube Heat Exchangers in the Presence of Gas Noncondensable,** University of Pisa, Dipertimento of Mechanical and Nuclear Engineering, DCMN RL 749 (97) Rev. 1, Issued in the Frame of EU INCON Project

DR47. W. Ambrosini, N. Forgione, F. Oriolo, M. Rosellini, **EFFE Experimental Facility Status Report,** University of Pisa, Department of Mechanical and Nuclear Engineering, DCMN RL 748 (97), EU DABASCO Project, CONT-DABASCO (97) -D004

Theses

T-1. **Thesis of MSc in Nuclear Engineering**, Discussed April 12, 1985 pressso the Universita 'di Pisa (Academic Year 1983/84), entitled: Simulation Problems of heat transfer by conduction in the structures of nuclear installations light water, in case of accident

T-2. **Thesis of PhD in Nuclear Engineering (Safety of Plants)**, Discussed on October 2, 1989 at the National Board of Examiners 089-Nuclear and filed with the National Libraries of Florence and Rome, entitled: Analysis of thermal-hydraulic codes RELAP5 / MOD2 system CATHARE V1.3 with particular reference to the basic hydrodynamic model