

15<sup>th</sup> April 2012



## 1. IDENTITY

Name: RIGO  
Given name: Philippe

Date and place of birth: 14 September 1959, Liège, Belgium

Marital Status: Married, 3 children

Nationality: Belgian

Home address: 14 Av. des Pâquerettes, 4000 Liège, Belgium

Tel : +32/(0)42.63.48.36.

Office address: University of Liege, ANAST

Institut du Génie Civil (Bat. B52/3 ; Niv.+1)

Chemin des Chevreuils 1, 4000 Liège, Belgium

Tel.: +32/(0)43.66.93.66 (or 96.29) Fax : +32/(0)43.66.91.33

Email : ph.rigo@ulg.ac.be

## 2.1 EDUCATION

- **Agrégation Degree in Higher Education** (*Highest Academic Degree delivered in Belgium*), University of Liège, with unanimity (*highest grade*), January 1999.
- **Engineer in Naval Architecture**, with honors (First class) in June 1994.
- Post-doctoral studies, University of Kyoto, Japan (March 90 to March 91).
- **Ph.D. Thesis** (Applied Sciences) with honors (First class) in June 88.
- **Degree of Civil Engineering** (1977-82), University of Liege, with honors (First class) in July 82
- Training Period at the Research Laboratories of Fiberglass (Battice), 1983.
- Postgraduate studies:
  - " Finite Element Method", Prof. G. Sander (1985),
  - " The stiffened Sheathing Method Applied to Hydraulics Steel Structures", Prof. N.M. Dehousse (1985),
  - " Structure Optimization", Prof. C. Fleury (1992-93),
  - " Software Quality Control" by F. de Nazelle et L. Bernard, OFFIS S.A.
  - " NA470 - Prof. M. Parsons", "NA500 - Prof. M. Bernitsas", "NA540 - Prof. A. Troesch" and "NA562 - Prof. Th. Lamb", Univ. of Michigan, USA (2000-2001)

## 2.2 SCIENTIFIC RESEARCH ACTIVITIES & PROFESSIONAL BACKGROUND.

### Design and Optimisation of Ship/Offshore Structures & Hydraulic Structures

- Design and analysis of naval and floating structures (strength and stress analysis).
- Optimization of naval structures based on the manufacturing costs (LBR-5 Software).
  - ✓ Developer of the L.B.R.-5 software dedicated for the stress analysis of orthotropic steel structures. Data preprocessing and graphical post processing were developed to ease its use (hydraulic and naval structures).
- Optimization of the support structures of onshore and offshore wind turbines (monopile, jacket,...)
- Offshore wind turbines: predictive maintenance of the support structures.
- Virtual simulation of Ship Production (workshops) & Design for Production.
- Ultimate strength of the stiffened plates and hull girders (ISSC committee members since 1991).
- Strength analysis of ship and offshore structures.
- Design of hydraulic structures: storm surge and flood protection barriers, navigation lock, mobile weirs, sluices, floating bridges, etc.
- Design and strength analysis of aluminum structures, lock gates, prefabricated lock walls, naval architecture, etc.
- High rise navigation lock designed with saving basins (general design, locking, etc.).
- Study of the prefabrication of locks and mobile weirs (using prefabrication concepts)
- Concepts of lock for pleasure navigation (including innovative tilting gate), filling and emptying operations, automatic process,
- Experiments on naval and offshore structures, model scale in wave flumes with regular and random wave generation:
  - model test of floatover installations (jacket at model scale 1/20),
  - study of large submarine offshore structures (pipes), ...
  - seakeeping tests (measurement of the 6 components of a motion),
- Development of data acquisition system for laboratory experiments (strain gauges, 3D motions, wave gauges, displacement sensors, accelerometers, ...)
- River flow, water lines, weir discharges, piping, flood control, etc..
- Inland waterway design, length, effective cross section, water head, ...
- Study on scale model of reservoir dams, spillways, dissipation basins, galleries and sluices.
- Sedimentation in river modeling, model of silt transportation by using plastic particles (scale model).
- Feasibility study of earth dam, stability, spillway, emptying device, etc.
- River Navigation Dams (weirs) and flood control (Structural and hydraulic design, development of new design, ...)
- Transport Systems Analysis, Transport Modeling, Cost/Benefit Analysis.
- River Engineering (improvement of the navigation, river bank and bed protection, sediment transportation, environmental impact of works, ...)

### 2.3 LANGUAGES

French, English, Dutch and basic knowledge of Japanese

### 2.4 COMPUTING SKILLS

- Fortran, Quick-Basic.
- Data acquisition systems : LABVIEW© (National Instrument)
- Dynamic 6D Measurements System (RODYM DMM developed by Krypton)

### 3. ENGINEERING CAREER

- *Since October 1, 2008:*  
**Professor, University of Liege (teaching Ship Structures and Hydraulic Structures)**  
**Civil Engineering Dept (ARGENCO), Research Unit: ANAST**  
**Honorary Research Director of the National Fund for Scientific Research of Belgium.**
- *From October 1, 2003 to 30 Sept 2008*  
**Research Director**, National Fund for Scientific Research (N.F.S.R.) of Belgium,
- *From October 1, 2002 to September 30, 2008:*  
Associate Professor, University of Liege
- Visiting Professor at the University of Michigan (from August 2000 to July 2001)  
University of Michigan, Ann Arbor, USA, Dpt. of Naval Architecture & Marine Engineering.
- *From October 1, 1999 to September 30, 2003:*  
Senior Research Associate (N.F.S.R.) at University of Liege (ANAST).
- Lecturer at the University of Liege (1999-2002)
- *From October 1, 1991 to September 30, 1999:*  
Research Associate (N.F.S.R.) at University of Liege (ANAST).
- *From April 1, 1991 to September 30, 1991:*  
Research Engineer at the Naval and Hydraulic Structures Laboratories (LHCN) of Liege University,  
Professors N.M. Dehousse & J.M. Marchal.
- *From March 27, 1990 to March 31, 1991:*  
Research Engineer, Kyoto University, Japan  
(Ujigawa Hydraulics Laboratory, Disaster Prevention Research Institute).  
Post-doctoral fellowship provided by the J.S.P.S. (Japan Society for the Promotion of Science).
- *From February 15, 1984 to March 26, 1990:*  
Assistant , University of Liege,  
Hydraulic Structures Department, Professor N.M. Dehousse.
- *From September 1, 1983 to February 14, 1984 :*  
Engineer at the S.A. du Canal Maritime, Brussels  
Study bureau, field controls and surveying at the maritime lock of Hingene, Belgium

### EDITING COMMITTEE and REVIEW BOARD MEMBERS

- Deputy Editor of the “Journal of Marine Science and Technology” (Springler Verlag) - 2009-2013  
<http://www.springer.com/engineering/mechanical+eng/journal/773?detailsPage=editorialBoard>
- Reviewer for Journals (peer reviews):
  - “Marine Structures Journal (MAST)”, Elsevier Applied Science, reviewer since 1992, and Member of the Editorial Board since 2007).
  - “International Journal of Offshore and Polar Engg. – ISOPE”, Reviewer, since 2000
  - “European Journal of Mech. and Env. Engg.”, Reviewer, 2000
  - “Journal of Ship Research”, SNAME, Reviewer, since 2001.
  - “Ship and Offshore Structures”, SOAS, UK, Reviewer and Member of the Editorial Board, since 2004,
  - “Journal of Naval Architecture & Marine Engineering (JNAME) ”, Member of the Editorial Board, since 2004,
  - “International Journal of CAD/CAM”, [www.ijcc.org](http://www.ijcc.org), Reviewer, since 2005.
  - “J. of Marine Science and Technology”, JMCT, Japan, Member of the Editorial Board since 2006
  - “Ship Technology Research” , Germany – Member of Editorial Board – since 2010
  - “Engg. Optimisation”, Taylor & Francis, UK, since June 2011,
- Referee for the Research Council of Norway (Science and Technology), since 2001.
- Evaluator for the European Commission
  - Sixth Frame Work, FP6-Transport 3, May 2004,
  - VIRTUE IP Project «Virtual Towing Tank», FP6, 2007-2008
  - FP7-Transport, 2<sup>nd</sup> call, June 2008.
  - FP7, "The development of a novel rare-earth magnet based wave power conversion system - Snapper", 2010-2011
- Peer review pour le EPSRC (UK Research Council) – July 2009
- Member of the evaluation Commission for the Inter-University Projects (PIC) for CUD, 2004-2006
- Member of the scientific committees of International Conference,
  - SIM-OUEST, European Conference, Marine Technology, Industry and Simulation, 2000 & 2002
  - CETMEF Conf. «Journées Scientifiques et Techniques du CETMEF», France, 2004 & 2006
  - IMAM Conference (Reviewers), Lisbon 2005; Varna 2007; Turkey 2009, Genoa 2011;
  - PIANC Congresses: Lisbon’2006 , Liverpool’2010
  - COMPIT (since 2005), Computer Applications and Information Technology in the Maritime Industries
  - Intern Conf. «Ship Design, Production and Operation», Jan. 2007, Harbin, China [www.asialink-eamarnet.com](http://www.asialink-eamarnet.com).
  - OMAE (reviewer): San Diego 2007, Lisbon 2008, Hawaii 2009, Shanghai 2010, Rotterdam 2011, Rio 2012,
  - SMART RIVERS Conference : Vienna, Sept 2009 (Programme Committee Member); New Orleans 2011
  - NAV’2009 (Scientific and editing Committee) “Int. Conference on Ship and Shipping Research”, Messina 2009; Naples 2012
  - MARSTRUCT, International Conference on Marine Structures, Member of the Technical Programme Committee, Hamburg 2011
  - SMART RIVERS 2013, Maastricht-Liege, Co-organiser and Chairman of the Scientific Committee, <http://smartrivers2013.org/home/>

## ACADEMIC ACTIVITIES

### Lecturing – since Oct 2008

#### Hydraulic Structures (Civil Engineering and Environment)

1. GCIV2065-1 *Hydraulic Structures (Locks, barriers, movable weirs, ...)*, 30h+30h, 5 credits (Partim), Master in Civil Engineering, 2<sup>nd</sup> year.
2. GCIV0009-1 *Hydraulic Structures (Locks, barriers, movable weirs, ...)*, 30h+30h, 5 credits (Partim), Master in Civil Engineering, 1<sup>st</sup> year (since 2011-2012)
3. GCIV2048-1 *Inland Waterways*, 20h+20h, 4 credits, Master in Civil Engineering, 2<sup>nd</sup> year
4. GEOG0623-1 *Sustainable development of waterways*, 20h+20h, 3 credits, Master in Sciences et Environment Management
5. GEOL0272-1 *Gestion quantitative des eaux souterraines et de surface*, 10h+10h (Partim), 1.5 credits, Master in Sciences et Environment Management (2008 to 2011).
6. PROCO001-1 *Integrated Project - Locks* (en collaboration), Master in Civil Engineering, 2<sup>nd</sup> year

#### Ship Building and Naval Architecture

7. CNAV0014-2 - *Ship Structures*, 100h, 8 credits, EMSHIP Advanced Master in Naval Architecture
8. CNAV0018-2 - *Ship Technology and Composites Materials*, 40h, 3 credits (in collaboration with L. Courard ), EMSHIP Advanced Master in Naval Architecture
9. CNAV0020-1 - *Initiation to Naval Architecture*, 5 Credits (in collaboration with A. Hage), Master in Mechanic (2<sup>nd</sup> Year)

#### Coordinator of the EMSHIP Erasmus Mundus Master Course ([www.EMSHIP.EU](http://www.EMSHIP.EU))

Master in Naval Architecture with the University of UGAL-Romania, Rostock-Germany, Genoa-Italy, ECN-Nantes-France and ZUT-Poland: Funded by EU for 5 education cycles (1.5 years –master in 90 credits - ECTS): 2010-2012 to 2016-2018.

#### Executive Master between ULG and the Water Resources University (WRU) de HCMC, Vietnam. Master in «Sustainable Hydraulic Structures»

MoU signed by ULG and WRU in March 2010

Ph Rigo is the Coordinator. It is a 60 credits master (1 year), started in 2010-2011

### Other and previous Lectures

- Seminars in “Marine Structures” and “Ship Design”, University of Michigan, Dept. of Naval Architecture and Marine Engg. (as Visiting Professor)
  - NA410 : Marines Structures I: Bending of Stiffened Plates, (Fall 2000),
  - NA510 : Marines Structures II: Analysis of Stiff. Plates using Fourier Series Expansions (Winter 2001)
  - NA470/570 : Ship Design: Ship Structure Optimization (Winter term 2001),
- Naval Architecture, University of Liege  
*Construction, Technologie et Exploitation Navales* (CNAV002-0), since 1997-98.  
Since 2001-2002, Associate Professor (70h DSNV & 40h C2NAV),  
*Analyse des problèmes structureaux spécifiques à la construction navale* (20h),  
Since 99-2000 : DES and DEC2 Lectures for the Degree in Naval Architecture  
*Coordinator of the Master organized with ENSIETA (France) in Naval Architecture, since 2003-04*
- Initiation to Civil Engineering Techniques (2<sup>nd</sup> year of Engineering.) (16h),  
Since 2002-2003 (with S. Cescotto): Project on the Delta Plan “Storm surge barrier”
- Ship Structures (3<sup>ème</sup> année d’ingénieur, BAC+5), ENSIETA, Brest (5 unités de cours)  
Visiting Professor, 2005-2006
- Structure Optimization (with application to Ship and Civil Engg.) (30h),  
European Master in Computational Mechanics of Continua, MCMC (ULg –National Polytechnic University de Hanoi), Vietnam, 1999-2004,
- Optimization of ship Structures, TUDelft (4h+8h)  
Visiting Professor, Course MT815 of Prof. Vink, «Strength of Structures, Advanced Subjects», 2002-03
- Optimisation of Structures, Univ. of Helsinki (HUT) (3+2 credits), Postgraduate Course, National Graduate School in Engineering Mechanics, Finland, (3 days), April. 2004.
- Hydraulic Structures, ULg, Civil Engineering (5<sup>th</sup> grade students - Module B1)  
Design of Lock Gates (8h), 1992-93, 93-94.

- Training in Naval Architecture: AGCD - CIUF
  - Design of mid-ship Section (20h), Oct. 95,
  - Ship Construction (20h+30h), Oct. 1996, 98
  - Ship Structure (30h+40h), Oct. 1997, 99
  - Training to the staff of the “Ecole de la Marine” of Sousse, Tunisia (90h), Feb. and March 98,
  - CUD, Seminar , River engineering ; Port and Coastal Engg., Quito, Nov 2004
  - CUD, Short course, Struct navale (30h), Vimarù., Haiphong, Vietnam Dec 2006, June 2009
  - University of Fluminense (UFF), Niteroi, Invited Professor (2 weeks), July 2007, July 2011
- Institute for International Training in Transport (French & English sessions)
  - Navigation mobile weirs (15h), 1985, 89, 94, 95 et 96.
  - Locks (15h), 1988, 91, 92, 95 et 96.
  - Harbor Engineering (24h), 1995 et 96.
  - Inland Navigation (4h), APEC, 1995 et 96.
- Inland Navigation Training Centre, Palembang, Indonesia (in English)
  - River & Coastal Engineering and Waterways, Jan - Feb 1992 and Sept. 93.
  - Hydraulics & Piping Flow, Dec 1995.

### Tutoring Student Master Theses.

1. "Calcul des assemblages formés de panneaux orthotropes raidis", 1984-85.
2. "Etude sur modèle d'une écluse de plaisance ", 1985-86.
3. "Calcul d'un pont canal ", 1985-86.
4. "Avant-projet d'une porte de garde à construire sur le canal Albert", 1985-86.
5. "Rénovation d'une porte busquée ", 1987-88.
6. "Aménagement de la Vesdre ", 1988-89.
7. "Etude d'une porte marée-tempête flottante", 1988-89.
8. "Méthode des bordages raidis. Application aux portes d'écluses cylindriques.", 1989-90
9. " Etude de faisabilité, construction de Barrages mobiles et d'écluses sur le Fleuve Zaire", 1990-91
10. "Aménagement de la White River. Etude d'une porte flottante", 1991-92.
11. "Etude hydraulique de la rénovation des barrages mobiles de la Haute-Sambre", 1991-92.
12. "Theoretical and Experimental Investigations on Moored Ships", Ph.D in Ocean Engineering, Indian Inst. of Technology, Madras, India, 1992
13. "Ecluses de Lanaye. Mise au gabarit de 9000 t.", 1992-93
14. "Comportement d'une barrière marée-tempête soumise à la houle", ULB, 1992-93
15. "Etude d'une porte marée-tempête flottante (phase de ballastage)", 1993-94
16. "Etude expérimentale en bassin des carènes de la coque de Wigley", 1994-95
17. "Analyse comparative de barrages mobiles pour la Haute Meuse", 1994-95
18. "Optimisation des performances d'un amortisseur de houle", 1994-95
19. "Etude de la stabilité d'un émissaire sous-marin soumis à l'action de houles régulières et aléatoires", 1994-95.
20. "Avant projet d'un barrage mobile préfabriqué flottant en acier", 1997-98
21. "Avant projet d'une porte d'écluse flottante pour une écluse maritime de taille moyenne", 1997-98
22. "Etude d'une Unité F.S.O", DES in Naval Architecture, 1997-98
23. "Cost Model for Ship Structure Optimization", DEC in Naval Architecture, 1997-98.
24. "Optimisation d'une Structure Flottante", 1999-2000
25. "Méthodes d'Analyse de la Résistance Ultime de la Poutre Navire", DEC en Construction Navale, 1999-2000
26. "Tripping Analysis of Stiffened Panels", MSc Thesis, Univ. of Michigan and Univ of Trondheim, 2000-2001
27. "Avant-Projet d'un bateau de 90 m", Graduation Thesis, TFE-ULg, 2002-2003
28. "Analyse Comparative des Barrages Mobiles Modernes", TFE-ULg (ERASMUS, Spain), 2003-2004
29. "Modélisation des coûts d'achat et d'exploitation d'un navire", Graduation Thesis, TFE-ULg (EGSS), 2003-04
30. "Conception et dimensionnement des structures mobiles de contrôle des voies navigables", TFE-ULg, 2004-2005
31. "Conception, calcul et optimisation d'une porte d'écluse pour le port d'Anvers", TFE-ULg, 2004-2005
32. "A branch and bound framework applied to naval structure optimization problems", Master Thesis, Maud Bay, ROGP, ULG, Sept 2005.
33. "Optimization of surface utilization using heuristic approaches", Master Thesis, Yves Langer, ROGP, ULG, Sept 2005.
34. "Concept de barrage préfabriqué pour la rénovation de barrages mobiles", TFE-ULG, A Roth, 2006-07
35. "Effet du redressement dans la conception structurelle d'un navire", TFE-ULG, D. Hamoir, 2006-07
36. "Simulation et optimisation de la gestion d'une chaîne de production", TFE-ULG (Méca), S. Nouri, 2006-07
37. "Influence of cracks on the ultimate compressive strength of an unstiffened and stiffened plate", B. Vanhuysse, TFE-ULG, Epreuve compl. Const Navale (AWARD - URBIN 2008), 2007-2008
38. "Ship Structure optimisation - Tanker", Daniel Moguel (UPCT), Epreuve Compl. Const Navale, 2007-2008
39. "Aménagement de la voie navigable Seine-Escaut Est", Thomas Gernay –TFE-ULg(Const)- June 2009
40. "Bulk Carrier- Ship structure Analysis", Thiry Arnaud, TFE-ULg (Const)- Sept 2009
41. "Container carrier – Ship structure Analysis", Flawinne, TFE-ULg (Const)- Sept 2009
42. "Fatigue Analysis of LNG", Master Const Navale, Balaban Adrian, TFE ULG-HZS, June 2009
43. "Simulation de la production d'un bloc de construction de bateau", Master Const Navale, Aracil Fernandez, TFE ULG-HZS, June 2009
44. "Analyse structurelle et vérification à la fatigue d'un méthanier", Master Const Navale, De Bosschere T., TFE ULg-HZS, June 2009
45. "Scantling Opt. ROPAX Ship", Master Const Navale, Mr. Nguyen Tri Dung, TFE ULg-HZS, Sept. 2009

- 46 "Simplified Module for Fatigue Assessment...", Master Const Navale, Mr. Tran Nguyen Nguyen Khoi., TFE ULG-HZS, Sept. 2009
- 47 "Analyse des portes d'écluse sous sollicitation sismique", Mr Buldgen L. TFE - ULG (Master Const)- June 2010
- 48 "Analyse par éléments finis aux états limites ultimes d'une éolienne offshore de 5 MW", Master Mécanique, Mr. Aner Oyarzun Echeverria (Erasmus), TFE ULG, June 2010
- 49 "Optimization the central part of ferry using LBR-5 program", Master Const Navale, Melle Rubanenco I., TFE ULG-UGAL, June 2010
- 50 "Welding Distorsion", Master Const Navale, Chetouani A., TFE ULG-HZS, June 2010
- 51 "Feasibility Study and Basic Design of Floating Gate Solution for Flood Prevent in Ho Chi Minh City, Vietnam", Master Const Navale, Mr Trinh Cong Dan, TFE ULG-HZS, June 2010
- 52 "Prise en compte de l'effort tranchant dans les modèles LBR5 de bateaux passagers", Mr. O. Yerna, TFE ULG (Master Mécanique), septembre 2010
- 53 "Development of a generalized Life cycle cost/earning model for tanker ships structure based on the effective cost assessment of the corrosion, maintenance and scantling design variables", Master Const Navale, Mr. ALLOUI Riadh, TFE ULG-HZS, Sept 2010
- 54 "Optimisation of Double bottom of ship structures", Master Const Navale, Mr. Shifman A., TFE ULG-HZS, Sept 2010
- 55 "Non linear FEA of stiffened panels (Ultimate Strength)", Master Const Navale, Mr Abbas Bayatfar, TFE ULG-HZS, septembre 2010
- 56 «Protection de la ville de Saigon contre les inondations –Conception de la barrière de Thu Bo», TFE de Alice Vandebussche, ULG, June 2011
- 57 «Dimensionnement et étude comparative des éoliennes offshore de type monopile et tripod en acier», TFE de Nelson Moors, ULG, June 2011
- 58 «Prédimensionnement et étude de sous-structures en treillis (jacket) destinées à des éoliennes offshore de 5 MW», TFE de Edouard Riat, ECAM Bruxelles, June 2011
- 59 "Ultimate Strength of stiffened panels", Master Const Navale, Tien Dung Nguyen, TFE ULG-HZS, June 2011
- 60 «Jonction Seine-Escaut Est: contribution à une analyse coût bénéfique pour le transport fluvial suite au dragage de deux canaux », TFE de A. De Pauw, ULG, Jan 2012
- 61 Mr Muhabie Y.T. : "Production simulation", EMSHIP master thesis (1<sup>st</sup> Cohort), Feb 2012
- 62 Mr Bottero C. : "Wind Turbine – vertical axis", EMSHIP master thesis (1<sup>st</sup> Cohort), Feb 2012
- 63 Mr Madi Akram : "Fatigue analysis", EMSHIP master thesis (1<sup>st</sup> Cohort), Feb 2012
- 64 Mr Markulin M.: "FEA of bulk carrier", EMSHIP master thesis (1<sup>st</sup> Cohort), Feb 2012
- 65

#### Promotor and Jury of PhD Thesis

1. "Theoretical and Experimental Investigations on Moored Ships", Ph.D in Ocean Engineering (Doctorat), Indian Inst. of Technology, Madras, India, 1992 (membre du comité de thèse)
2. "Unified Solutions for Stiffened Cylindrical Shells and Sector Plates", Thèse de doctorat (**promoteur**), FSA, ULG, 1998-99.
3. Thèse de doctorat de T. Mouzelard, FSA, ULG, 2002 (membre du comité de thèse)
4. "Contributions à la modélisation du comportement non-linéaire statique et dynamique d'un système unitaire barrage voûte - terrain de fondation", Thèse de doctorat, UTCB, Bucarest, Roumanie, Juin 2005. (membre du comité de thèse)
5. "New Software Development for Ship Design", **Président** du comité de thèse de Mr Khai, Thèse de Doctorat, ULG, 2007-2008
6. Thèse de doctorat de Jianxia SHEN - «Durability Design on Concrete Hydraulic Structures», FSA, ULG, avril 2008 (membre du comité de thèse)
7. "Developments of Tools Focused on Production Simulation to Improve Productivity in Shipyards' Workshops", **Promoteur** de thèse de Mr F.Bair, Thèse de Doctorat, ULG, Janv 2009
8. "Decreasing the running cost of ships by implementing the maintenance and repair strategy for hull structural", Membre du comité de thèse (PhD) de Mr BASMAN Ismail, NAME, Univ. of Glasgow, UK, Nov. 2009
9. "Cost Effectiveness and Complexity Assessment in Ship Design within a Concurrent Engineering and "Design for X" Framework", **Promoteur** de thèse de Mr J-D Caprace, PhD, ULG, Jan 2010
10. "Estimation de la fiabilité du système d'ancrage des FSO/FPSOs au Vietnam, avec prise en compte de l'accumulation du dommage de fatigue », **Promoteur** de thèse de Mad. PHAM Hien Hau, PhD, ULG, April 2010
11. "Design Method For Safe Ship Structures", External Reviewer de la thèse (PhD) de Mr. Alan Klanac, Aalto University, Helsinki, Finland, Sept 2010
12. "Contributions sur la modélisation du comportement statique dû à la torsion des structures composites à parois minces utilisées dans le domaine naval», External Reviewer de la thèse (PhD) de Melle Chirica Raluca, Université of Galate, Romania, Oct 2010
13. «Learning Based Multi-agent Conceptual Ship Design Decision Support System», External Reviewer de la thèse (PhD) de Mr. Hao Cui, Université of Glasgow, UK, Oct 2010
14. Corrosion In Ballast Tanks On Board Of Merchant Navy Vessels, Membre du comité de thèse (PhD) du Capt. Kris DE BAERE, Univ d'Anvers (HZS), June 2011
15. "Non-Linear Buckling and Large Deflection Analyses of Isotopic and Composite Stiffened Panels using an Arbitrarily Orientated Stiffened Element Approach", External Reviewer de la thèse (PhD) de Mr. Roberto OJEDA, Univ of UTAS, Australia, Jan 2011
16. Optimization Methods for the design and production of Naval Structures, Co-promoteur et Membre du comité de thèse (PhD) de Mad Maud BAY, ULG, Oct 2011

17. 'Progressive Collapse Assessment of Lightweight Ship Structures', Membre du comité de thèse (PhD) de Mr Benson, University of Newcastle, UK, Nov 2011
18. 'Ultimate Strength of Aluminium Panels, considering HAZ Effects', Membre du comité de thèse (PhD) de Mr QIAOFENG CHEN, NTNU, Trondheim, Norway, Dec 2011
19. «Modèles d'écoulements incompressibles en plan vertical appliqués aux structures du génie civil», Chairman of the PhD Committee of Mr DETREMBLEUR S., ULG, Feb 2012

#### PhD Thesis in preparation (as promotor (\*))

Amrane A. (\*), Buldgen L. (\*), Bayarfar A. (\*), Gazerzadeh (\*), Georgescu A. (\*), Hetharia W., Lappy M., Mai\_Anh\_Quang (\*), Muhabie Y. T. (\*) and Petcu C. (\*)

#### Coaching of Internship Student (trainee)

- Mr. V Blanc, Cachun, April to Juillet 2003 (stage at ULG, ANAST)
- Mr. J-D Caparace, Stage in Industry, Alstom, St. Nazaire, May to Sept 2003
- Students (2) from ENSIETA, Stage of 1 month at ULG –ANAST, Sept 2003
- Mr. Mbaye El Hadji Médoune, Univ de Valenciennes.–Production Simulation , EM-Plant, 4 mois, 2003-04
- Mr Pierre Daelman, ENSIETA, France, 6 weeks at ULG-ANAST, July-Sept 2007
- Mr Yann Taton, ENSAN, Nantes, Stage in ship optimisation, July-Sept 2010

#### Practical Exercises:

- Practical exercises to the 4th and 5th grade students, Civil Engg., "Design of Maritime Locks", 1984 to 1990
- Practical exercises (DES), "Design and Strength Analysis of Naval Structure", 1985-86 and "Coastal & River Engineering", 1991-92, 92–93.
- Practical exercises to the 4th grade students, Civil Engineering, "Arch Dams", 1983–84, 84-85, 85-86.
- Practical exercises to the 5th grade, Civil Engg., "Preliminary Design of High Rise Nav. Lock", 1987-88, 88-89.
- Practical exercises to the 5th grade students, Civil Engineering, "Project on the Sambre River", 1989-90.
- Practical exercises to the 5th grade, Civil Engg., "Preliminary Design of an Inland Waterway Lock", 1991 to 1994
- "Coastal Engineering- Exercises", Module B2, 5th grade students (40 h), Civil Engineering, 1996-97, 97-98,
- Integrated Project– 2<sup>nd</sup> Master in Civil Engg – Design of a locks (20h) – 2008-09, 2009-10, 2010-11, 2011-12.

#### Lectures at Conference, Seminar, Congress and Symposium.

- MONOTECH, Mouscron, Belgium, 1986.
- Hydraulic Congress (Invited Lecturer), Quito, Ecuador, Nov. 1988
- SOFTECH, Software Exhibition, Liège, Belgium, Dec. 1988 and Nov. 1989.
- ATMA, 89th session, Paris, 17-21 April 1989.
- Second Conference on Mathematics for Engineers, Mons, Belgium, 17-19 May 1989.
- P.I.A.N.C., General Assembly, P.I.C., Munich, 20-26 May 1989.
- IASS, 10 years of progress in shell and spatial structures, Madrid, 10-15 Sept. 1989
- Belgian P.I.A.N.C. section, Antwerp (Invited Lecturer), Belgium, Feb. 1990.
- Hydraulic Seminar of the DPRI (Invited Lecturer), Kyoto University, Japan, June 1990.
- Annual Meeting of the DPRI, Kyoto University, Japan, Feb. 1991.
- IABSE -AIPC Symposium (Chairman of Session), Nyborg, Denmark, May 1991.
- IASS-CSCSE, International Congress, Toronto, Canada, July 92
- International Symposium, YSRI-AIRH, Wuhan, China, Nov. 92
- Inst. of Constructions of Bucharest (Invited Lecturer), Hydr. Seminar, Romania, June 93.
- 28th P.I.A.C.N Congress, Seville, Spain, May 1994.
- Osaka Univ. (Invited Lecturer), Dpt. of Naval Arch. and Offshore Eng., Osaka, Nov. 94.
- Symp. on Practical Design of Ships and Mobile Units, Prads'95, Seoul, Korea, Sept. 95
- Dalian University (Invited Lecturer), Coastal and Offshore Eng., Dalian, China, Sept. 95.
- Conference on Cable Dynamics, AIM, Liege, Belgique, Oct. 1995.

- Organizer of the Symposium of the ISSC Technical Committee II.1, Liège, March 96.
- University of Lausanne, EPFL, (Invited lecturer), Switzerland, July 1996.
- International Conference on Barrages, Cardiff, UK, Sept. 1996
- ISSC Mini-Symposium of Committee II.1, Yokohama, Japan, Dec. 1996
- 7th Hydraulic Congress, Quito, Equator, Nov. 1997.
- Conference on Structural Engineering, AIPC-IABSE, Brussels, March 1998.
- Chairman, Symp. on Naval Structures, ISSC Technical Committee VI.2, Liege, April 98.
- 29th P.I.A.C.N Congress, The Hague, The Netherlands, Sept. 1998.
- Conferences on LBR-5 in three universities in Osaka and Hiroshima, Japan, Feb. 99
- Chaire Aluminium (ULg), Belgian Aluminium Association, Liege, March 99
- Technical Univ. of Civil Engg. of Bucharest (UTCB), (Erasmus), Romania, May 99.
- University of Michigan (Invited Lecturer), Dpt. of Naval Architecture and Marine Engg., USA, June 99.
- Technical Univ. of Civil Engg. of Bucharest (UTCB), (Erasmus), Romania, Jan. 2000.
- French Research Centre in Naval Architecture (IRCN), Nantes, France, Feb. & June 2000.
- University of Michigan, Visiting Scholars's Seminar, Graduate and International Programs, USA, 7 Feb. 2001.
- University of California, Berkeley, Ocean Engineering Seminar, Optimization of Stiffened Structures, San Francisco, USA, 16 Feb. 2001,
- Ship Production Symposium, SNAME, Ypsilanti, USA, 14 June 2001,
- ALSTOM - Chantier de l'Atlantique (Shipyards), St. Nazaire, France, Sept. 2001,
- PRADS'2001, Shanghai, Chine, September 2001,
- ENSIETA (Invited Speaker), Brest, France, October 2001,
- IPSI, Forum in Structure analysis: Optimization (invited speaker), Paris, March 2002,
- CIEM, Hydraulic Structures, (Master in Transport), MET, Namur, May 2002.
- 30th P.I.A.C.N Congress, Sydney, Australia, Sept. 2002.
- MARTEC (Maritime Technology Section) of the Royal Dutch Society of Engineers, Delft, 10 Oct. 2002 (invited speaker).
- SIMOUEST'2002, Conference Chairman and invited speaker, Nantes, France, Nov. 2002
- Flensbuger (FSG, shipyard), Flensburg, Germany, May 2003
- IMDC'2003, Conference Chairman and speaker, Athens, Greece, May 2003
- TUDelft, Seminars on « Optimization of ship structures», Invited Professor, 13 & 20 Feb. 2003, Delft (NL).
- Helsinki, Masa-Yards Shipyard and University of Helsinki (HUT), Finland, 1 and 2 Oct. 2003.
- Invited speaker, NA&ME Seminar, University of Michigan, USA, 2-5 Nov 2003.
- Univ. of Helsinki (HUT), Invited Professor, Helsinki, Finland, 31 March-4 April 2004
- LIEGE, Chairman of the Workshop «Navigation Mobile Weirs», 35 persons (France, Germany, Belgium), Industries, Ministries et Universities, 30 April 2004,
- PARIS, Invited Speaker, Presentation of the PIANC WG26's activities: «Mobile Weir», 16 June 2004
- PRADS'2004, Lubeck, Germany, September 2004
- CSSRC (China Ship Scientific Research Center), Wuxi (Shanghai), Invited Professor, 11-18 Dec. 2004
- US Army Corps of Engineers, Engineer Research Development Centre, Coastal and Hydraulic Laboratory, Vicksburg, MS, USA, 6 May 2005 (invited speaker).
- ISOPE-2005, Co-Chairman of Session 28, Seoul, Korea, June 2005.
- AILG, (Eng. Assoc of ULg), Liege, February 2006
- GALATE, Univ. of Galate, Romania, Invited speaker, April 2006
- AIPCN'2006, Presentation of 3 papers, chairman of a session & invited speaker of INCOM session, Estoril, Portugal, 12-19 May 2006
- HUT (University of Helsinki), Invited speaker, Finland, June 2006
- ISSC'2006, Southampton, UK, Presentation of the III.1 report (Ult Strength), August 2006
- WEGEMT, Annual Meeting in Liege (coordinator : Ph Rigo), in collaboration with CAREMAR Meeting, ASIAN LINK and FP6-STREP-IMPROVE Kick-off meeting, 2-5 October 2006
- Hanoi, Maritime University (VIMARU), Invited Prof. (CUD), Vietnam (2 weeks), Nov 2006
- Cartagena, Espagne, Invited Professor (3 days), June 2006, May 2007
- Rio de Janeiro, University of Fluminense(UFF), Invited Professor (2 weeks of lecture), July 2007
- Paris, Séminaire sur les barrages mobiles (key note speaker), VNF-CETMEF, 11 MARCH 2008
- London, Invited by the British PIANC section (Invited speaker), 31 March 2008
- Beijing, International Navigation Seminar, PIANC AGA 2008 (Key note speaker), 26-29 May 2008
- RIVER Working Group- DG Environment – Representing PIANC & “Working With Nature” – Invited Speaker on 19<sup>th</sup> Feb 2009 Brussels
- PIANC-AGA'2009, Technical Seminar “Innovations on Navigation Lock Design”, Finnish Maritime Administration (invited speaker), Helsinki, Finland, 27<sup>th</sup> May 2009
- VIMARU (Vietnamese Maritime University), (1 sem de cours), Haiphong, Vietnam, juin 2009
- ISSC'2009, Korea, Seoul, Presentation of the IV.2 report (Design Methods), 15-23 August 2009
- Dubrovnick, Croatia, IMPROVE Workshop (co-organisateur et Key Note speaker 14-17<sup>th</sup> Sept 2009,
- 40<sup>th</sup> Intern. Symposium on Hydraulic Engineering Aachen (IWASA), RWTH (Invited speaker), Aachen, Germany, 7-8th January 2010.
- PIANC MMX - 32<sup>nd</sup> Congress, Présentation de 2 articles et chairman d'une session, Liverpool, UK, 9-14 May 2010.
- DELFT Univ., The Port Infrastructure Seminar, TUD, Delft, NL., June 2010.

- SMART RIVERS 2011, Workshop Chairman on Lock innovations, New Orleans, USA, Sept 2011.
- SEP “Fluvial Transport and Port Infrastructures”, SEP executives (Ministry of Ports) and Brazilian Port Authorities, [www.labtrans.ufsc.br/](http://www.labtrans.ufsc.br/), Video Conference, Coordination by Dr De Fazio, Santa Catarina, Brazil, 21 Nov 2011.
- CETMEF, Journées Scient. et Techniques, Compiègne, France, June 2012 (invited Speaker).
- BAW, Federal Waterways Engg. and Research Institute, Karlsruhe, Germany, July 2012 (Invited speaker).

#### **Coordinator of International Seminar and Conference**

- Workshop “Ship Structure” by Committee II.1 - ISSC, Liège, March 96
- Workshop “Ship Structure” by Committee VI.2 - ISSC, Liège, 21-23 April 98
- Chairman and coordinator of the Workshop on «Barrages Mobiles de Navigation», 35 persons (France, Germany, Belgium), Industries, Ministries & Universities, Liège 30 April 2004 ;
- WEGEMT, Annual Meeting in Liege (coordinator), in collaboration with CAREMAR Meeting, ASIAN LINK and FP6-STREP-IMPROVE Kick-off meeting, 2-5 October 2006.
- Organisateur (and editor) of the internationale conférence COMPIT'2008 at Liège, April 2008 <http://www.anast.ulg.ac.be/COMPIT08/>
- Organisation of the IMPROVE Workshop (Design of Improved and Competitive Products Using an Integrated Decision Support System for Ship Production and Operation – FP6 EU project), Dubrovnik, Croatia, 17-19 September 2009
- PIANC Workshop, New Orleans, Sept 2011
- Co-organisateur of the internationale conference COMPIT'2012 at Liège, 16-18 April 2012
- SMART RIVERS 2013, Maastricht-Liege, 23-27 Sept 2013, Co-organisor

#### **Organisation of National conferences**

Organisation at ULg of conferences for the CERES (at ULg) – conferences for large public:

- o The Queen Mary II, by Mr. Saint M'leux René (Chantier de l'Atlantique), 2005
- o The Panama Lock, by Mr. J. De Regge (Technum-Tractebel), 11 May 2009
- o Etudes de la nouvelle écluse de 225 m x 25 m sur la Meuse à Ivoz-Ramet, by MM Barlet (SPW) and Monford (BEG), 1<sup>st</sup> March 2010
- o Le défi du ‘Prestige’ - extraction de 14.000 tonnes d'hydrocarbures de l'épave du ‘Prestige’ par une profondeur de 4000 m., 31<sup>st</sup> May 2010.
- o Le projet Seine Escaut Est en Wallonie, by Mr Y. LOYAERTS (Directeur Général, DGO2, SPW), 8<sup>th</sup> Nov 2010
- o Le Port de Bruxelles et son intégration dans la ville, by Alfons MOENS, Directeur Général du Port de Bruxelles, 12<sup>th</sup> March 2012

**Invited Professors at ULg** (at ANAST reserach unit):

- Professor Bin Teng, Dalian University, China – Scholarship of NFSR (1 year, 1998-99)
- Professor Sarghiuta R., UTCB, Bucharest, (1 year, 2001) – Scholarship of NFSR)
- Professor Bogdan Luca, UTCB, Bucharest, (1 year, 2003) – Project FRFC
- Professor Gouga, Civil Engg. Dpt., Univ of F. Abbas, Setif, Algeria (1 month in 2005, 2006 and 2007)
- Professor Ionel Chirica, Galate University, Romania, 1 month, June 2006
- Professeur Popa, Univ. de Galate, Roumanie, Projet CGRI, 1 month, Sept 2007
- Dr Adrian Constantinescu (Post doct ULg), ENSIETA, 2 years, 2007-2009
- Professeur Sarghiuta R., Vice-Doyen, UTCB, Bucarest (3 months, 2008-2010) –CGRI Project
- Mr. Catalin Popescu, UTCB, Bucarest – Projet SEE & Projet Arzal (3 months, 2009)
- Professor Tran Gia Thai, Vietnam – EMSHIP visiting professor in Ship Design (2 months, 2010)
- Professeur Coulibaly, Ivory Cost – EMSHIP visiting professor in Ship Hydrodynamics (3 months, 2010)
- Professor Prusty G., Australia (NSWU) – EMSHIP visiting professor in Ship composite material (2 months, 2010)
- Professor Hasegawa K., Japan (Osaka) – EMSHIP visiting professor in Ship Seakeeping (2 months, 2011 and 2012)
- Professor Schachter R., Brazil (UFRJ) – EMSHIP visiting professor in Design of High Speed vessels (1 month, 2011)
- Professor Iqbal (Bangladesh) – EMSHIP visiting professor in Ship Transportation (2 months, 2011 and 2012)
- Professor Bal Sakir (Turkey) – EMSHIP visiting professor in Ship hydrodynamics(2 months, 2011)
- Professor Collette M., USA, Michigan Univ – EMSHIP visiting professor in Ship Optimisation (1 month, 2011)



#### 4. DISTINCTIONS & AWARDS

- J. DEPRez Foundation for research on the strength analysis of radial gate, 88 and 89.
- Honorary Member of the Hydraulic Association of Ecuador, Quito, 25 Nov. 1988.
- International P.I.A.N.C Gustave WILLEMS Award (Permanent International Association of Navigation Congress), Munich, 1989.
- Fernand de WAELE Award of NFSR (National Fund of Scientific Research in Belgium), 1989-90.
- Post doctoral Fellowship of the Japan Society for the Promotion of Science (J.S.P.S.), (first fellowship awarded by JSPS to a Belgian researcher less than 35 years old), 1990.
- Charles LEMAIRE Award, BELGIUM ROYAL ACADEMY (Class of Sciences, biannual 1990-92) for research completed in Civil Engineering, Dec. 1992.
- Prix MAGNEL du Bureau SECO 1996-98, for the development of the LBR-5 Optimization Model for hydraulic and naval structures, Brussels, June 1999.
- Prix Président André LEROUX of the «Association des Amis de l'ULg», Liège, Nov. 2000
- Adolphe WETREMS Award, BELGIUM ROYAL ACADEMY (Class of Sciences, 2001-02), Brussels, 2002.
- Hann Award winner, SNAME – American Society of Naval Architecture and Marine Engineering, Boston, USA, Sept. 2002
- COMPTIT'2007 – Germanisher Lloyd Award – for the paper “A data Mining Analysis Applied to a Straightening Process Database” (in collaboration with Caprace, Losseau, Bair and Archambeau), Cortona, Italy, May 2007.

##### Awards received by students for their works/papers under my supervision

- **PRIX URBIN 2008**. Mr B. Vanhuyse got this award for his master these TFE-ULg “Influence of cracks on the ultimate compressive strength of an unstiffened and stiffened plate” under my supervision
- VISION AWARD ([www.maritime-visions.net](http://www.maritime-visions.net)), three of my ULG students got the silver VISION 2007-2008 Award (3000€) for their project «*Thermal Offshore Station*», under the supervision of Ph Rigo; January 2009.
- **Vision Award** ([www.maritime-visions.net](http://www.maritime-visions.net)), a student team of ULg and ENSAN (Fr) got the first AWARD (5000€) for the VISION 2008-2009 project «*FERRYBIRD*», under the supervision of Ph Rigo; May 2010
- **De Paepe Willems PIANC AWARD**, Mr T. Gernay (aspirant FNRS, ULg) got the award for his master thesis, done under my supervision Liverpool, May 2010

#### 5. POST STUDY SCHOLARSHIP

- Post-doctoral scholarship awarded by the J.S.P.S. (Japan Society for the Promotion of Science), March 90-March 1991.  
Experimental researches on dynamic behavior of floating structures, University of Kyoto, Ujigawa Hydraulics Laboratory, Disaster Prevention Research Institute.
- Visiting Professor at the University of Michigan, Dept. of Naval Architecture and Marine Engineering (NA&ME), Ann Arbor, Michigan, USA (August 2000 to July 2001).

#### 6. SPIN-OFF (DN&T in 2006 and two others are in project)

Promotor of the DN&T SPIN-OFF (Design Naval & Transport), from a Research Project funded by Walloon Region (DGTRE), 2002-2006, to industrialized the LBR5 software (tools to optimise ship structure)  
This company has as shareholders Spin Venture (ULG), Meuse-Invest (RW), IDP Shipyard and 4 researchers.  
I am the President of the Scientific Committee and member of the Director Board.

A second «Spin off» should be initiated by the EOSIM - RW-DGTRE SPIN-OFF Project (submitted in Feb 2012), in the field of Offshore wind farm production simulation and Ship production simulation

#### 7. STUDY TRIP, CONGRESS AND MISSIONS IN FOREIGN COUNTRIES

This list does not include the conference and seminars given abroad (see list of conferences here after)

- 27th P.I.A.N.C. Congress, OSAKA, Japan, (1 week), May 1990.
- Post-doctoral Fellowship, University of Kyoto, Ujigawa Hydraulics Laboratory, Disaster Prevention Research Institute (1 year from April 90 to March 91).
- Technical visit of the Mitsubishi Shipyard (Kobe Shipyard and Takasago Research Institute), Kobe, (3 days), August 1990.
- 45th Annual Conference of the Japan Society of Civil Engineers, Niigata, Japan, (3 days), Oct. 1990.
- Technical visit to the Steel structure and naval Architecture Departments of IHI (Ishikawajima-Harima Heavy Industries), Tokyo, (4 days), October 1990.
- Chairman of the "Storm Surge Barriers" session, IABSE - AIPC Conference, Nyborg, Denmark, (4 days), May 1991.
- Mandated by GACD (Belgian Governmental Agency for Cooperation and Development) to supervise the "River Engineering" and the "Waterways" lecturers at the Inland Navigation Center of Palembang, Indonesia (1 month), Jan. 92.
- Technical visit to Kobe Mitsubitshi Shipyard and Hitachi Zosen (Shipbuilder), (1 week), Japan, Feb. 1992.
- PRADS'92 Conference in Newcastle and present at the first meeting of the ISSC Technical Committee V.1, Newcastle, UK, (1 week), May 1992.
- IASS-CSCSE Intern. Congress (Innovative Structures of Large Span), Toronto, (1 week), July 92.
- International Symposium on Hydraulic Research in Nature and Laboratory, Yangtze River Scientific Research Institute, Wuhan, China, (1 week), Nov. 92.
- Offshore Technology Conference and present at the 2nd meeting of the ISSC Technical Committee V.1, Houston, USA, (1 week), May 1993.
- Inst. of Construction of Bucharest (Civil Engineering), Romania, (1 week), June 1993.
- Mandated by GACD to supervise the "Coastal Engineering" lectures at the Inland Navigation center of Palembang, Indonesia (2 weeks), Sept. 93.
- Technical visit of the towing tank of the Naval Architecture Department of Osaka University and Akashi Towing Tank, Japan, (1 week), Oct. 1993.
- 29th Congrès International P.I.A.C.N. Congress, Seville, Spain, (1 week), May 1994.
- El Pardo Model Basin (model tests), Madrid, Spain, (3 days), June. 1994.
- 12th International Ship and Offshore Structures Congress, St. John's, Newfoundland, Canada, (1 week), Sept. 1994.
- National Academy of Science, ISSC Technical Committee II.1, Washington, USA, (1 week), March 1995.
- PIC Meeting of P.I.A.C.N., New-Orleans, USA, (1 week), May 1995.
- University of Osaka, Naval Architecture and Ocean Engineering Department, Osaka, Japan, (3 weeks) Nov. 1994, April 1995 and Oct. 1995.
- PRADS'95, Seoul, Korea, (1 week), Sept. 1995.
- Nagasaki Mitsubitshi Shipyard and Hitachi Zosen Shipyard (Shipbuilder), (1 week), Japan, Sept. 1995.
- Dalian University (Prof. Li Yu-Cheng), Civil Eng., (1 week), China, Oct. 1995.
- Mandated by GACD to supervise the Hydraulic Laboratory at the Inland Navigation center of Palembang, Indonesia (2 weeks), Dec. 95.
- University of Lausanne (EPFL), Switzerland (3 days), July 1996
- University of Newcastle (Dpt. of Marine Engineering), HR Wallingford (Hydr. Laboratory) and Imperial College of London (Dpt. of Civil Engg.), UK (2 weeks), Sept.1996
- Hiroshima National University (technical visit), Yokohama National University, (ISSC Technical Committee II.1), Osaka National University (Exchange agreement between Liege and Osaka universities), Japan, (10 days), Dec 1996.
- 13th International Ship and Offshore Structures Congress (ISSC'97), Trondheim, Norway, (1 week), Aug. 1997.
- University Central of Quito, 7th Hydraulic Congress, Navigation project on the Napo River, Quito, Equator, (2 weeks), Nov. 1997.
- Training to the staff of the “Ecole de la Marine Marchande” of Sousse, Tunisia (2 weeks), Feb. 98,
- 29th PIANC International Navigation Congress, The Hague, The Netherlands, (1 week), Sept. 1998.
- DERA (Defense Evaluation Research Agency), ISSC Interim Meeting of Committee VI.2, Dunfermline (Scotland), (4 days), Oct. 1998.
- IRCN (French Research Institute in Naval Architecture), Nantes (10 days), Feb. 99.
- Hiroshima National University (lecture), Osaka National University (CGRI project) et Osaka City University (lecture), Japon, (10 days), feb. 98
- Technical University of Civil Engg. of Bucharest, UTGB, (Exchange Erasmus), Romania (6 days), May 99.
- National Technical University of Hanoi, DES –European Master MCMC, Vietnam (12 days), May 99.

- University of Michigan, Dept. of Naval Architecture and the American Bureau of Shipping (ABS) in New-York, USA, (6 days), June 99.
- Technical University of Civil Engg. of Bucharest, UTCB, (Exchange Erasmus), Romania (6 days), January 2000.
- University Central of Quito, Projet Trans-Amazone of Rio Napo, Tena, Equator, (3 semaines), fév. 2000.
- IRCN (French Research Institute in Naval Architecture), Nantes (10x2days), Sept. 99 to June 2000.
- Nagasaki, 14th International Ship and Offshore Structures Congress (ISSC'2000), Japan, (1 week), Oct. 2000.
- University of Michigan, Ann Arbor, Visiting Professor (Dept. of Naval Architecture), (1 year), 8-2000/7-2001.
- University Central of Ecuador, Quito, Navigation Project: Napo River, Quito, Ecuador, (2 weeks), June 2001.
- Shanghai, interim meeting of ISSC'2003 (PRADS'2001), China (1 week), Sept. 2001.
- National Technical University of Hanoi, DES –European Master MCMC(3), Hanoi, Vietnam (10 days), Nov 2001.
- ALSTOM (Shipyard), Optimization of a gas carrier, St. Nazaire, France, (6x 3 days), Sept. to Dec. 2001.
- Technical University of Civil Engg. of Bucharest, UTCB, (Exchange Erasmus), Romania (5 days), May 2002.
- ALSTOM (Shipyard), Cost analysis, St. Nazaire, France, (4x 3 days), June to Dec. 2002
- 30th PIANC International Navigation Congress, Sydney, Australia, (1 week), Sept. 2002,
- DTU(Copenhagen), Interim meeting of ISSC'2003 (committee III.1), Denmark (3 days), Oct. 2002.
- National Technical University of Hanoi, DES –European Master MCMC(4), Hanoi, Vietnam (10 days), Dec. 2002
- Antananarivo and Tamatave (Madagascar), World Bank Expert – Marpol Project (15 days), Jan. 2003,
- Flensburg (FSG shipyard), Impulsion Fund: «Virtual Production», Flensburg, Germany (2 days), May 2003
- IMDC'2003, Congress (Chairman), Athens, Greece (1 week), May 2003
- Technical University of Civil Engg. of Bucharest, UTCB, (Exchange Erasmus), Romania (5 days), May 2003.
- British Waterways, Thames Barrier Center, PIANC Working Group (WG26), London, (3 days), June 2003
- San Diego, 15th International Ship and Offshore Structures Congress (ISSC'2003), USA, (1 week), Aug. 2003.
- Helsinki, WEGEMT Annual Meeting, Univ. of Helsinki (HUT), Finland, (3 days), Oct 2003.
- Pittsburgh, Interim Meeting, PIANC's WG26, Corps of Engineering, USA, (4 days), Oct 2003.
- Rotterdam, Interim Meeting, PIANC's WG26, Rijkswaterstaat, Pays-Bas, (3 days), March 2004.
- Masa-Yard (Shipyard) et Univ. of Helsinki (HUT), Finland, (4 days), April 2004
- Technical Visits (VNF, CETMEF), Mobile weirs (Yonne, Soane, Seine, Meuse) + Expert Committee (Paris), 8 days (2004)
- Newcastle, WEGEMT Executive Meeting, Univ. of Newcastle (UNEW), UK, (3 days), June. 2004.
- Technical University of Civil Engg. of Bucharest, UTCB, (Exchange Erasmus), Romania (5 days), July 2004.
- Berlin, PIANC INCOM meeting, Magdeburg Locks, Federal Ministry of Transport (3 days), Sept. 2004
- PRADS'2004, Lubeck, Germany (5 days), September 2004
- Lisbon, WEGEMT Annual Meeting, Univ. of Lisbon (IST), Portugal, (3 days), Sept. 2004.
- Edinburgh, Interim Meeting, PIANC's WG26, British Waterway, UK, (3 days), Oct. 2004.
- Quito, Ecuador, CUD Training, Central Univ. of Quito, (1 week) Nov. 2004
- CSSRC (Wuxi) and Shanghai Hudong Shipyard (Chinese CSSC Corporation), (1 week), Dec. 2004
- Aker FinnYards (Turku shipyard) and Univ. of Helsinki (HUT), Finland, (4 days), April 2005
- Charleston, PIANC-AGA'2005, USA, (1 week), May 2005
- Lapeenranta, (Finland), INCOM Meeting (PIANC), (1 week), July 2005
- St. Nazaire, CAT-ALSTOM (France), LBR5 Training, (1 week), Nov 2005
- Bucharest and Galate, Univ of Galate (UGAL) and Univ of Bucharest (UTCB), Romania (1 week), April 2006
- Estoril, AIPCN'2006 Congress, Portugal, (1 week) May 2006
- Finlande, Chairman of Interim meeting of PIANC WG29 on Locks, Finish Waterways Adm, (1 week), June 2006
- Cartagena, Coordination mission for the European Master in Naval Architecture, Spain, (3 days), June 2006
- Flensburg, FSG Shipyard, Participation of ANAST at SIMCOMAR, Germany (3 days) July 2006,
- Southampton, 16th Intern. Ship and Offshore Structures Congress (ISSC'2006), UK, (1 week), August 2006
- Magdeburg, Visit of locks with saving basins (WG29 PIANC), 3 days, Germany, Nov 2006
- Hanoi, Maritime University (VIMARU), Invited Prof. (CUD), Vietnam (2 weeks), Dec 2006
- Brest, Mission d'enseignement ERASMUS, France, (3 days), Dec 2007
- Nantes, voyage d'études avec les étudiants ULG 2006-2007, (1 week), Janv 2007
- Galati, Roumanie, Assemblée générale des chantiers navals roumains, 3 days, April 2007
- Cartagena, Mission de coordination du Master Européen en Constructions Navales, Espagne, (3 days), May 2007
- IMPROVE meetings (2-4 days/meeting), FP6 project (coordinateur of the project):
  - o Liège, Oct 2006,
  - o St Nazaire, Oct 06;

- o Delft, Nov 06;
- o Zagreb-Croatie, Dec 06,
- o St. Nazaire, March 07,
- o Tallinn-Estonia, June 07;
- o Szczecin-Poland, Sept 07,
- o Paris, Dec 07;
- o Pula-Croatia, March 08;
- o Hamburg, June 2008
- o Helsinki, Sept 2008
- o Antwerp, Dec 2008
- o Galate, Romania, March 2009
- o Glasgow, UK, June 2009
- o Paris, July 2009
- o Dubrovnick, Croatie, Sept 2009
- Rio de Janeiro (Niteroi), Université de Fluminense (UFF), Professeur Invité (2 weeks), July 2007
- Lorient, formation LBR5 à la DCN de Lorient, (4 days), Oct 2007
- Nantes, ULG Students strip 2007-2008, (1 week), Nov 2007, Feb 2008 and April 2009
- Madrid, General Assembly of WEGEMT, (3 days), Jan. 2008
- Paris, Journée d'échanges sur les Barrages Mobiles, organisé par le CETMEF (France) et la Section Française de PIANC, 11 MArch 2008
- Beijing, International Navigation Seminar, PIANC AGA 2008 et WG29 (Locks), (1 week), May 2008
- New Orleans - USA, Review of the Storm Surge Project (IHNC), invited by the US Corps of Engineering to be members of the expert Group "Tiger Group), (1 week), Mars 2009.
- Galate-UGAL, Romania (IMPROVE Project) and Bucharest (Erasmus, UTCB), 20 to 27 March 2009
- Helsinki, PIANC AGA 2009 and Technical Seminar (1 sem), May 2009
- VNF- Projet Seine Nord Europe (réunion comité scientifique) –Paris (2009: Jan, March, April, June, Sept, ...)
- PANAMA - expertises pour ACP (Panama) – 3<sup>rd</sup> lock lane (lock gate expert – review of the technical proposal), 13 au 22 avril 2009 and 5 to 11 May 2009
- Ho Chi Min City (HCMC) –technique support "Flood protection system" (3 weeks, June, Sept and August 2009), Vietnam
- Seoul, 17<sup>th</sup> International Ship and Offshore Structures Congress (ISSC'2009), Korea, (1 week), August 2009
- Osaka, Séjour à l'Univ. of Osaka, August 2009 – 23-28<sup>th</sup> August 2009
- Ho Chi Min City (HCMC) – assistance technique "Flood protection system" (1 week, April 2010), Vietnam
- EMSHIP meetings (2-4 days/meeting), ERASMUS MUNDUS MASTER (Ph Rigo is the coordinator ):
  - o Liège, Oct 2009; Oct 2010
  - o Szczecin, Poland, March 2010
  - o Galati, Romania, Sept 2011
  - o Nantes/Paris, France , Feb 2012
  - o Genoa, Italy, Sept 2012
- PANAMA - expert for the GRUPO (Panama) – 3rd lock line (lock gate expert – assistance technique au calcul des portes), Dec 2010 and March 2011 (2 x 5 jours) + 2 meetings at Rotterdam (meeting at Iv Groep)
- Liverpool, UK, PIANC Congress 2010 (1 week), May 2010
- Hanoi and Ho Chi Min City (HCMC) –technical assistance "Flood protection system" (1 week, July 2010), Vietnam
- HCMC, Executive Master "Sustainable Hydraulic Structures" by WRU and ULG, (1 week), Dec 2010, Vietnam
- Berlin, Germany, PIANC AGA 2011 (1 week), May 2011
- Paris, VNF French Ministry, Review of the design of 27 new mobile weirs (10 meetings), 2011-2013
- Rio de Janeiro (Niteroi), Université de Fluminense (UFF), Professeur Invité (1 week), July 2011
- New Orleans (USA), PIANC WG 140 and INCOM meeting, (1 week), Sept 2011
- Amsterdam, RWS Dutch Ministry, Review of the design of the new Ijmuiden Sea lock (5 meetings), 2011-2012
- Karlsruhe-BAW (Federal Waterways and Research Institute), PIANC WG140 meeting, Germany, Feb 2012
- Amsterdam (RWS), PIANC WG140 meeting, NL, April 2012
- Rostock, 18<sup>th</sup> International Ship and Offshore Structures Congress (ISSC'2012), Germany, (1 week), Sept. 2012

## 8. SOCIETY MEMBERSHIPS & SCIENTIFIC COMMITTEES

- International Ship & Offshore Structures Congress (I.S.S.C.) (\*),
  - International Technical Committee V.1 "Applied Design", for 1991-94
  - International Technical Committee II.1 "Quasi-Static Loads" for 1994-97,
  - International Technical Committee VI.2 "Ultimate Strength of Hull Girder" for 1997-2000,
  - International Technical Committee III.1 "Ultimate Strength" for 2000-2003 and 2003-2006
  - International Technical Committee IV.2 "Design Methods" pour 2006-2009 et 2009-2012 (\*\*)
  - Belgium Corresponding Member to the ISSC Standing Committee since 2003
- (\*) ISSC is the world scientific reference association for Ship and Offshore structures
- (\*\*) Nominate for the ISSC'2012 Technical Committee IV.2, "Design Method"  
This committee is charged to review design & analysis methods in Naval Architecture (state of art).
- International Association of Navigation (P.I.A.N.C.), Member since 1990
  - Member of the PIANC Belgium executive board (since 2002)
  - PIANC International Belgium Delegate assigned by the Walloon Ministry (SPW), since 2005
  - INCOM (Inland Nav. Commission), Belgian representative (since 1999), Vice Chairman (since 2008)
  - Chairman of Working Group WG26 "Movable Navigation Weirs"
  - Chairman of Working Group WG29 "Locks".
  - Member of WG137 «Resilience of hydraulic structures », 2010- ..
  - Member of WG140 «Semi probabilistic approach», 2010- ..
  - Promoter of WG151 "Ship impact and Seismic on lock Gate" 2010-...
  - Promoter of WG155 "Ship behaviour in locks..." 2011-...
  - Candidate to PIANC Presidency, May 2011
  - Organiser of SMART RIVERS 2013, Liege, Sept 2013 (<http://smartrivers2013.org>)
- Society of Naval Architects and Marine Engineers (SNAME) as "Member",
- Royal Institution of Naval Architects of UK (RINA): "Member"
- WEGEMT (European Association of Universities in Marine Technology and related Sciences). Member of the executive Committee since 2003.
- Membre du comité de pilotage de VNF (France) relatif aux «Barrages mobiles», 2003-2007 et du comité scientifique «Ouvrages Hydrauliques» dans le cadre du Canal Seine Nord Europe (2008-...)
- Member of ISO TC8/SC8 «Structures on Ships and Marine Technology», [www.iso.org](http://www.iso.org), since 2003
- Member of the "Ship Structure Committee Research Project", USA ([www.shipstructure.org](http://www.shipstructure.org)):
  - o SR-1449 "Reliability Based Performance Assessment of Damaged Ships"
  - o SR-1452 "Buckling Collapse Testing on Friction Stir Welded Aluminum Stiffened Plate Structure"
- Member of the scientific committee of the Waterwegen en Zeekanaal NV (Flanders) for the Lys Project - with the-Baafs-Vijve and Harelbeke locks, Belgium, since 2010
- Member of the «RIVER Working Group» de la commission Européenne (DG-TREN & DG-ENV), PIANC representative, in 2009-2010
- Member of the review committee for the design of the new Ijmuiden Sea lock, RWS - Dutch Ministry, NL, 2011-2012
- Member of the scientific committee of the Waterwegen en Zeekanaal NV (W&Z, Flanders) for the reconstruction of inflatable movable weirs on the Dendre River, Belgium, since 2011

## 9. ACTIVITIES AT THE UNIVERSITY OF LIEGE

### 9.1. Research Projects

- Project FIRST SPIN OFF – EOSIM – Production Simulation of Wind Farm, Project of DGTRE, Walloon Region, Belgium, Project Submitted in Feb 2012 (Mr Cris Petcu)
- OFFSHORE MAINTENANCE, Funded by the Walloon Region DG04 (convention 1151051), 2012-2014
- EOL-OPTI – Proposal to ERABLE projects (SPW), with Tractebel and Arcelor – 2011 (not funded)
- Proposals to European Research Projects (presented for the 7<sup>th</sup> Frame Programme), 2011
  - NEPTUNE, *New Engineering Paradigms for the sustainable Technological Utilisation of Nutritional and Energetic resources in the marine environment*, FP7-OCEAN.2011 Multi-use offshore platforms, with 20 EU partners from Spain, UK, Norway, Germany, ... (not funded)
  - INTEGRATE «System for collaborative and concurrent ship design and production planning», with Croatia (not funded)
- EASYSHIP (Improve Ship Design Complexity); European MANUNET Project, Funded by the Walloon Region, Convention 1017249 (with Partners from Romania and Belgium), 2010-2013
- EUROGIA Project with BUREAU VERITAS, DN&T, IFREMER, MME(NL), SAIPEM «Hull Life Cycle & Asset Integrity Management System - HLC-AIMS», Project N° EOG- EG+ 204, (2009-2011)
- ARCELOR : R&D – «Plate» Research Group – Support to ARCELOR to develop the «Plate» products (2009)
- Participation at the ARCELOR-ULG's annual meeting (in the framework of the collaboration between the ARGENCO dept. and ARCELOR as Corporate Long Term Partner) – May 2009
- ARCELOR: Project WINDSTEEL (Offshore Windmills) - *Développement de solutions acier de haute qualité pour la construction éolienne*, Funded by RW-DGTRE, 2009-2011
- Project FIRST SPIN OFF – OPTIVIEW – Simulation de la production, Project of DGTRE, Walloon Region, Belgium, 2009-2013 (Mr Aracil Fernandez)
- Ship Structure Optimization of Multihulls – in collaboration with the MAE department, California State University, USA, (Prof. Hamid Hefazi) – US funded (2009-2012)
- BEST (Advanced Methods for Early Structural Assessment) - FP7 (EU)-2008: EU Research project accepted by the 2<sup>nd</sup> call of FP7 Transport – 2009-2013.
- INPASS (Risk-Based Design of Innovative Product Models for Cruise Liner)- project presented at FP7, 2<sup>nd</sup> call, May 2008 (not funded)
- CGRI – DRI(RW), Projet ULG-UTCB (Bucarest)- UGAL (Galati), «Innovations de la conception des écluses de navigation et Optimisation de la logistique du transport fluvial et des flux de production », Part III», 2008-2010 (en attente de signature du cabinet)
- PROMODULE (standardization of engine rooms), SHIPRED (simulation of welding distortion) & EFCASET (simulation of production): 3 projects presented at the 1<sup>st</sup> call of the FP7, May 2007 (not funded)
- Project FIRST SPIN OFF: "Membrane maintenance bulkheads for river weirs", DGTRE's project COFDAM, Ministry of Technology of the Walloon Region, Belgium, 2006—2010
- SIMCOMAR Joint venture «Simulation Cooperation in the Maritime Industries», with as partners TUDelft, FSG Flensburg, CMT Hambourg , ... <http://www.simcomar.com/>
- FNRS «The Modelling of the Ship Cost Structure», Research Project in collaboration with JD Caprace (Aspirant FNRS 2006-2010)
- Research Agreement with BUREAU VERITAS (Paris), Development of an interface between Mars (BV) and LBR5 (ANAST-ULG), 2006.
- CGRI – DRI(RW), Project ULG-UTCB(Bucharest), «Hydraulic Structures, Part II», 2005-2007
- Project INTERSHIP (IP Project – FP6) 2<sup>nd</sup> par , Study of the strengthening of ship decks (in collaboration with the PEPITE ULG Spin off), Oct 2005 to March2006,
- Project IMPROVE (coordinator), "Design of improved and competitive products using an integrated decision support system for ship production and operation", FP6-Strep Project, 4000k€ budget, 2006-2009.
- Project VISION (FP6- NOE), "Generating and assessing visionary concept outlines for vessels and floating structures", Expert and promoter of Academic Competition, 2005-2008
- FIRST-EUROPE Project, «SIM-PROD: Virtual Simulation of Ship Production in Workshops», Ministry of Technology of the Walloon Region (n° 415818), Belgium, 2005-2008.
- FRIA 2004, «Optimisation of Double Hull Structures», Research Project, 4 Ing./an, 2005-08.



- INTERSHIP (European Project, 6 Framework): "Design for Production" in collaboration with Newcastle Univ., CMT (Germany), Sirehna (Fr), Alstom Chantiers de l'Atlantique (Fr) and IZAR (Spain), 2004-2006
- ISO: WG3 "Standard Guidelines for Ultimate Strength Limit State Assessment of Ship Structures" of ISO TC8/SC8 «Structures on Ships and Marine Technology», <http://www.iso.org>, 2003-2006
- MARSTRUCT (European Project, 6 Framework): «Marine Structures: Design, Strength, Reliability,...», in collaboration with Glasgow and Lisbon Universities, 1 Eng et 2 PhD students, 2004-2008
- CREDIT D'IMPULSION (ULG): «Virtual modeling of ship production», 2 Eng/an, 2003-2005.
- VNF (Voies Navigables de France): "River control weirs", 2003-2004 (Part I), 2005 (Part II)
- Project FIRST SPIN OFF: "OPTI-LBR5" (Industrialisation of the LBR-5 software), DGTRE's project 215062, Ministry of Technology of the Walloon Region, Belgium, 2002-2005.
- CGRI – DRI(RW), Projet ULG-UTCB(Bucharest), «Hydraulic structures », 2003-2005.
- Fonds Spéciaux de la Recherche (Research Fund), Renovation of the towing tank wave maker at ULG (32000€, part II), 2004.
- Project "Recherche d'Initiative 5": OPTI-COUT (Integration of the production cost as objective function of a global structural optimisation model), DGTRE's project 215176, in collaboration with ULB, 2003-2006.
- WG26 (PIANC Working Group) : «Design of Control Structures Used on Navigable Waterways: Controllable Weirs and Gates», WG Chairman with 15 international experts, 2003-2005.
- FNRS (Research Fund), Renovation of the towing tank wave maker at ULG (25000€, part I), 2003-04.
- FRFC Project (FNRS): Progressive Collapse Analysis of Ultimate Bending Moment with Use of the FEM for the stress-strain elementary curves, in collaboration with UCL and ULB (Prof. E. Smith) and Univ. UTCB of Bucarest (Prof. R. Sarghiuta), project 2001-2004.
- AVPRO-LBR-5 : Development of design tools for the preliminary stage of ship design, (1) PRINCIPA Project (2002), (2) «Development of a Pre-processor for the LBR-5 Optimization Software», presented in Oct. 2000 and Oct. 2001 for "Crédit d'Impulsion (ULG)".
- FEM-INTERBARGE, Design of a new concept on inland navigation barges, in collaboration with FEM Engineering, Trondheim, Norway, 2001-2002 (also presented for the 5<sup>th</sup> Frame Programme, call of Sept. 2001).
- Proposals to European Research Projects (presented for the 5<sup>th</sup> Frame Programme), 2000
  - ALUSHIP, Bateaux rapides en aluminium, résistance ultime et crash, en collaboration avec Univ. Trondheim, Univ. Athènes, Det Norske Veritas, des chantiers navals (norvégien, français, grec et anglais) et des instituts de recherche (France, UK),
  - INTERBARGE, Développement d'un nouveau concept de barge pour le transport de containers, navigation intérieure, en collaboration avec Société Engg. Norvégienne (FEM), Univ. Gand, VBD (D), Chantiers, ...
  - ULTIMATE, Résistance ultime de la poutre navire, en collaboration avec Univ. de Lisbonne, Univ. de Gènes, Univ. Maritime de Szczecin (Pol.), DnV (Soc. Class.), IRCN, CAT,
- Impact of the Stress-Strain Curves on the Ultimate Strength of Hull Girder, Research funded by the French Research Institute (IRCN), 1999-2000.
- Member of the «Pôle Métal de Wallonie» and «Centre d'Excellence Interfacultaire des Métaux (CEIM)», Fiche Recherche n°99-10: Aluminium Structures, 1999-2000.
- Floating structures and Ship Movement Measurement System – Dynamic 6D Measurement System, RODYM DMM (Research Funds of NFSR –1998 and University Research Funds 1999, collaborative project)
- Analysis of Unsteady Hydraulic Flows to Study River Flow, Hydraulic Structures, Coastal Engineering and Ship Hydrodynamic (University Research Funds: Application with Professors Lejeune, Marchal and Piroton), 1997 & 1999.
- Update of the Classification Rules for Inland Navigation Vessels, Bureau Veritas, Paris, 1996-2001.
- Set up of a new random wave maker, with active damping at the Val-Benoît Hydraulic Laboratory, University of Liege (Research Funds of ULG), 1997.
- Interreg Project (Euregio), High Rise Navigation locks & Canal between the Meuse and the Rhine rivers, 1995-1997
- Belgo-Japanese Research Project financed by the "Commissariat Général aux Relations Internationales - Belgium", 1993-95 (Study on the river and estuary protection techniques with storm surge barrier ), 96-98 (behavior of floating unit on sea) and 99-2001 (Structures Optimization).
- Wave actions on submerged pipelines: Validation of a numerical model with experimental studies -Bilateral studies - ULG/ANAST and Dalian University of Technology (Prof. Yu-Cheng LI), since 1994.
- Resistance Flow Optimisation of Push-boats designed with tunnels (Research Funds of NFSR - 1993-94 with J. Marchal), 1994.
- Standards for Ship Calibration in Towing Tanks (Fonds Spéciaux de la Recherche - 1993 with J. Marchal, S. Rodriguez and A. Hage), 1994.
- Feasibility analysis of high rise navigation locks. Projects subsidized by the "Région Wallone"; in collaboration with industrial partners, 1992-93.

- EURET 1.3 Regional Traffic Information Service; (Tasks 3.2, 25 and 28) in collaboration with european partners, 1992-93.
- The renovation of the Sambre River - Feasibility Study. Project subsidized by the "Région Wallone"; in collaboration with the Meuse & Sambre Shipyard, 1991 and 92.
- Wave action on large floating caissons for storm surge barriers (Fonds Spéciaux de la Recherche - 1989 with J Marchal and S. Rodriguez), 1991.
- Member of the Naval Architecture Department charged to develop a new scientific collaboration with Cockerill Mechanical Industries through the Interface ULG-CMI : Wave loads on Floating and Offshore Structures, 1991.
- BRITE Research Projects financed by the EEC to develop CAD software for small and medium shipyards, 1989-92.
- ANAST working group to develop scientific collaboration in the field of Inland Waterways in Ecuador, since 1988.

## 9.2. High Level Engineering activities at the University

- Scale model of reservoir dams, flows, spillways, energy dissipation basin, etc.
  - Martil Dam in Morocco for Bonnard & Gardel - Morocco, 1984
  - Boukourdane Dam in Algeria pour Bonnard & Gardel - Switzerland, 1985
  - El Agrem Dam in Algeria for Tractebel - Belgium, 1986
  - Cherf dam in Algeria for Tractebel - Belgium , 1986
- Design of a new hydrocyclone prototype for Voest-Alpine, Belgo-Austrian group, 1985
- Feasibility study of the Comoe River Dam, Burkina Faso, for Seragri (Société d'Etudes et de Réalisations Agricoles), May 1987.
- Preliminary studies and design of a new prototype of tidal surge barrier, "Stormvloedkering-Nieuwe Waterweg, Rotterdam", September 1987.
- Shelving Strength Analysis, CRIF - Assistance Technologique, Cornix S.A., May 1987 and Avasco S.A., September 1987.
- Strength Analysis of a Sluice, GIREC Study Department, April 1988.
- Locking of a high rise navigation lock designed with saving chambers, Meuse-Rhine junction, May 1988.
- Sedimentation scale model of the Pont-de-Loup slipway located on the Sambre River, Belgium Ministry of Public Works, March 1989.
- Feasibility study of a high rise navigation lock for the Three Gorges Project on the Yankse River in China; locking analysis, strength analysis of the cylindrical gates and chamber design, June 1989.
- Strength Analysis of 9 radial gates for a mobile weirs in China, Société de Construction Naval Ermans (Paris), July 1990.
- Feasibility study of the prefabrication of 9 mobile weirs composed aluminum floating elements. Preliminary study, design, strength analysis, numerical and experimental floating stability, project planning, etc. , 1991
- Experimental studies on the stability of the new designed floating storm surge barrier, roll motion and damping and added-mass coefficients, 1992-95.
- Wave basin experiments to check the feasibility of the design of a immersed pipe for the port of Casablanca, Morocco ; the ballasted pipe was loaded with regular and irregular waves (Jonswap spectrum) ; Bouygues Travaux Maritimes, 1993.
- Economic Analysis of the Maritime Transportation: Design and Assessment of a Regional Traffic Management System (VTS) - Measures Impacts - Cost/Benefit Analysis, 1994.
- Validation Test of the BOSFORT System - Experimental Tests in Wave Basin to Validated the Landing of a 5000t Deck on a Jacket (Offshore Platform) - Computerized Data Acquisition System; BOS (Bouygues Offshore), 1994-95.
- Tests on Immersed Towed Body in towing tank (Thomson - Paris), 1995
- Floatover installation for 2 jackets (ABB Global Eng. - Holland), 1995
- Waste Vitrification by using Metallurgical Slags, Application to Hydraulic Structures, Brite Euram Programme, 1995
- Feasibility study of a stability model of the Maritime Jetty of Moheli, Comores (CFE, Brussels), 1996
- Physical and Numerical Modelling of the Wave Action on Offshore Jetties, Marine Jetty and LNG Jetty, Sultanate of Oman (BESIX, Brussels), 1996
- Design and sizing of a new floating unit for water intake, Morocco (SEE, Brussels), 1997

- Analysis of a Bridge Canal for the Canal du Centre in Belgium (Steel project of the Ministry of Transport), (Bureau d'Etudes ST and SOFICO), 1997
- Pre-Feasibility Study of a Transportation System for the Itaipu Dam (COPEL - Brazil and TRANSPLAN - Italy), 1997-98.
- Design and analysis of 5 tilting sluices (automatic closure system) - (AIDE & A.C Herstal), 1998.
- Study of a barge with Moonpool for the Golf of Guinea (Bouyghes Offshore), 1998.
- Study of the Emergency Floating Gate of the Strepny Ship Lift (Bureau ST & MET), 1998.
- Design of the Floating Gate for the New Canal (Canal du Centre) – Floating Stability Control (Bureau ST, Van Clemput S.A & MET), 1999.
- Research of Ship Collapse modes, Expertise for an Insurance Company: Assoc. Batelière, 1999
- Design and project of an artificial canal for kayaks, with EDF (France), for the Sport Department of the French Community Ministry of Belgium, 1999.
- Seakeeping tests of a new prototype of fishing vessel (in collaboration with Lisboa University), 1999.
- Ship Optimization (Cruise vessel, fast ship, trimaran, ...), for IRCN (Nantes) and Chantiers de l'Atlantique (CAT, ALSTOM), 1999 et 2000.
- Optimization of the «Blanc Pain» river emergency gate, MET: Hydraulic Division of Mons, Belgium, 2000 (optimization) and 2001 (technical assistance).
- Design of Lock Gate for the Panama Canal (Tender application with Binnie Black and Veatch (UK) and Black and Veatch (USA), 2001.
- Ship Optimization (72000m<sup>3</sup> gas carrier) for ALSTOM, St. Nazaire, France, 2001.
- Design of a Closing Gate for the Port of Zeebrugge, TECHNUM, Feb. 2002
- Certification of conformity of inland vessels, Bureau Veritas, Antwerp, May 2002 (3 ships)
- Analysis of the Vigneux Lock Gate”, SOGREAH- VNF, France, Sept. 2002,
- Production Cost Assessment (ALSTOM, Chantiers de l'Atlantique Shipyard (R&D1 to R&D4), 2002-2003
- Feasibility study on MARPOL (Maritime Pollution) at Madagascar (World Bank Projet), Bureau CADIC & Gombert, Janv. 2003.
- Design of the canal “Seine-Nord”, 150 km, 4 locks of 15-25 m high with saving basins, French Waterways (VNF), May 2004.
- Design and analysis of double-hull Ship structures (ALSTOM Chantiers de l'Atlantique Shipyard (R&D7 to R&D9), 2004-2005
- Optimization of surface utilization for the 180 t workshop of ALSTOM, St. Nazaire, (in collaboration with the ROGP Dept, Y. Crama, EGSS), 2004
- Tender to the «Feasibility Study» for the Seine-Nord Europe Canal for VNF (in collaboration with Bureau Griesch and SNC-Lavelin , and with Tractebel-Technum-IMDC), September 2004
- Partner of Black & Veatch (USA): Huntington District - Engineering Design Services for the Great Lakes and Ohio River Division, Solicitation No. W91237-04-R-0012, USA, July 2005
- Seine-Nord Europe Canal: Assistance au Maître d'Ouvrage (VNF) - Hydraulic – Review of the Lock Design – Hydraulic Impact of the canal in the Oise river, ... (with EDF, France), April 2005 to June 2006.
- Study of the coherence between the design of Havre- Port 2000 with the SNE standard– VNF – ARCADIS, March to June 2006
- Studies for VNF: Project in the framework of the renovation of the movable weirs in France, (1) membrane bulkhead, (2) Knowledge Management, (3) Innovation; June 2006
- Prefabriqued Movable Weirs (aluminium floating structure), with Soc LEVAUX et METALU - France, Sept 2005 to June 2006
- Analysis of a movable walkway (FEA) for ING-HydroConsult, June 2006
- Simulation of surface workshops of assembling (120 & 180t) and pre-erecting zone (in collaboration with N-side Spin off), INTERSHIP Project, Aker Yards St Nazaire, France, Jan-Sept 2006
- Design of locks with integrated saving basins for the Seine-Nord-Europe Junction (comparative study), in collaboration with ARCADIS-France, studies for VNF , March 2006 to September 2006.
- Consulting for the Storm Surge barrier in the New Orleans (Louisiana Coastal Protection Project – LACPR), Tendering, with Black & Veatch, Nov 2006
- Expert for DCNS (France) to replace a sea lock gate in the Port of St. Nazaire, June 2007

- Study of the distortions induced by welding, AKERYARDS St Nazaire, in collaboration with GDTECH & MS2F (Dr Habraken), June 2007
- Conceptual Design Analysis (APS) of 4 movable weirs on the Dendre River, Waterwegen & Zeekanaal NB, Afeling BovenSchelde (Ministry of Public Works of Flanders), Gent, Belgium, June – Oct 2007.
- Preliminary Design (APS) of 4 locks and 2 movable weirs (Jonction Seine-Escaut Est), in collaboration with the HYDROCONSULT Consulting, Belgium, 2008-2009 (Study-APS – 250k€)
- Training to DCNS (Marine française, France) about the LBR5 optimisation software, Lorient, France, Octobre 2007
- IN the framework of the tender «*Design and build of the third set of locks under the Panama Canal Expansion Program*», consultant for the consortium composed by Bouygues Travaux Publics Sa., France ; Construções E Comercio Camargo Correa S.A., Brazil ; Construtora Queiroz Galvão S.A., Brazil ; Construtora Andrade Gutierrez S.A., Brazil ; Bilfinger Berger A.G., Germany ; Vinci Construction Grands Projets S.A.S., France ; Alstom Hydro Energia Brasil Ltda., Brasil; Et Bardella S.A. Indústrias Mecânicas, Brasil ; Consortium short listed by ACP, Dec 2007 to Dec 2008.
- Panama's Third Lock Lane, Technical assistance to Panama Canal Authority (ACP) for the design of the new Panama Locks (member of the committee «Mechanical Engineering Advisory Board (MEAB)», March 2009- ...
- Projet Seine Nord Europe –SNE- Member of the VNF scientific committee «Ouvrages Hydrauliques», for Voies Navigables de France (VNF)- 2008-2010
- HCMC – Flood protection Saigon city (Ho-Chin-Min)– design of three «flood barriers», for the «Hydraulic Engineering Consultant Corp.-HEC2» and the Vietnamese Government, Vietnam, 2009- ...
  - o Leader of an international experts group in charge to advise the Vietnamese Administrative for the design of 3 flood protection barriers in HCMC, Vietnam
  - o Design of swing-floating protection barrier (development of a new patent)
- New Orleans - USA, Storm Surge Project (IHNC), Project of the US Corps of Engineering, INCA Engineers Inc, Member of the Review expert Group “Tiger Group), 2009-2011.
- Arzal Lock (Nantes, France), in collaboration with SOGREAH, ARCADIS and SBE– short listed consortium (195 kEuros) – Preliminary Design (APS), March-Oct. 2009
- Strength Assessment of a floating gate of 25 m span for Hydroconsult, Belgium; April 2009
- Scientific Committee of the Waterwegen en Zeekanaal NV for the Seine-Escaut Project (Flandre, Belgium). This project includes 2 navigation locks of classe Vb at Sint-Baafs-Vijve and Harelbeke on the Lys river, Belgium, 2010-2013.
- Member of the advisory Board of the Design of the IJMUIDEN Sea Lock (60x 500 m) , Rijkswaterstaat and Port of Amsterdam, NL, 2011-2012.
- Member of the Advisory Committee for the DBFM project of replacement of 25 movable control river weirs for Voies Navigables de France (VNF)- 2011-2013
- Workflow Optimisation of a production infrastructure for VINCI Construction Grands Projets / Bouygues Travaux Publics – NOVARKA, 2011-2012
- J. De Nul, Optimisation of the gates of the new Antwerp Lock Gates, 2011
- Jonction Seine-Escaut Est: contribution à une analyse coût bénéfice pour le transport fluvial suite au dragage de deux canaux, Etude pour le SPW, avec Prof J Teller, 2011
- Implementation of the OPTIVIEW software (surface allocation optimisation) for DCNS Shipyard, Lorient, France, 2012
- Electrabel, Feasibility Study of «propulsion de navires avec énergie verte produite à partir de granulés de bois», Brussels, Belgium, 2011-2012
- Feasibility Assessment of Optimisation of Supply Chain using OPTIVIEW for Elettric 80 S.p.A., Italy, 2012
- Advisor for the Waterwegen en Zeekanaal NV, Construction of Inflatable movable weirs on the Dender River, Ghent, Belgium, 2011-2012.
- Design of St Marry Barriers, tender with Tetratex (short listed) New Orleans, USA Dec 2011,
- Tractebel Engineering, Development of a Software for Production and Installation of Offshore Wind Farm, Brussels, Belgium, 2011-2014
- DCNS, Simulation of the production at the Lorient Shipyard, Lorient, France, 2012

### 9.3. Administrative Activities in the University.

- Coordinator of the Agreement on Academic Exchange between the NA&ME (University of Michigan) and ANAST (University of Liege). Signed by W. Legros, Rector, in 2002.
- Coordinator of the Agreement on Academic Exchange between the Faculty of Engineering of Osaka and the Faculty of Applied Science (Engineering) of University of Liege. Signed by A Bodson, Rector, November 1996 and extended by W. Legros, Rector in 2001.
- Member of the Faculty Council of the Faculty of Applied Sciences (since 1988),
- Member of the Administrative Council of the University, Scientist Delegate, Oct. 1995- July 2000 and Oct. 2001- Sept 2005,
- Members of Section, Faculty and many University committees, attendance to promotion days (at the university and in secondary schools), ...
- Member of the Scientific Board of the Joseph Deprez Foundation (since 1997) and the Hela Foundation (since 1996), Member of the Directory Board of the Chinese Center of ULg, CECLI (1995-2000)
- Coordinator of an Exchange ERASMUS (Socrates Program) for ULG with:
  - UTCB, Bucarest, Dept. of Hydraulic Structures, depuis 1998 (Const Hydr.)
  - ENSIETA (Grande Ecole Française d'Ingénieur) Brest, France, depuis 2002 (Const. Navale)
  - UGAL - Univ. de Galati, Roumanie, depuis 2005 (Const. Navale)
  - Univ. de Cartagena (UPCT), Espagne, depuis 2005 (Const. Navale)
  - Ecole Nationale Supérieure d'Architecture de Nantes (ENSAN), depuis 2007 (Const. Navale)
  - Ecole Centrale de Nantes (ECN), Nantes, France, depuis 2009 (Const. Navale)
  - Bremen Univ , Germany , depuis 2009 (Const. Navale)
  - Czczecin Univ (ZUT), Poland, depuis 2009 (Const. Navale)
  - ICAM, Nantes - France, depuis 2010 (Const. Navale)
- Member of the "Hydraulic and Transport" department council and its executive board, since Sept. 2001.
- Coordination of the exchange program with ENSIETA (French «Grande Ecole» of Engineering, Brest, France) with the framework of a new European Master, since 2002.
- ULG representative at the «Commission d'Evaluation des Projets Interuniversitaires (PIC)» , CUD, since 2004-2007
- Initiator of the DN&T SPIN-OFF (Design Naval & Transport), Member of the Board, January 2006
- Coordinator of the ULG FNRS Group in charge of an internal audit "Etat des lieux des FNRS permanents au sein de l'ULG", since December 2005 (21 April 2006 – meeting with the Rector and Administrative Staff of ULG)
- Coordination of the EMSHIP ERASMUS MUNDUS European Master in Naval Architecture, with ECN (Nantes), UGAL (Romania), ZUT (Poland), URO (Germany) and UNIGE (Italy), Project Funded for 5 cycles (1.5 years –master of 90 credits - ECTS): 2010-2012 to 2016-2018.
- Promotor of the Dr Honoris Causa of Prof. J.K PAIK, Pusan Korea, March 2012
- Member of the Commission de Qualification du FNRS «Génie Civil et Architecture», Dec 2006-2008
- Organisation of the CERES Conferences (at ULg):
  - o The Queen Mary II, by Mr. Saint M'leux René (Chantier de l'Atlantique, France), 2005
  - o The New Locks of the Panama Canal, by Mr. J. De Regge (Technum-Tractebel), 11 May 2009,
  - o The new 225 x 25 m lock at Ivoz-Ramet, by MM Barlet (SPW) and Monford (BEG), 1<sup>st</sup> March 2010,
  - o Le défi du 'Prestige' - extraction de 14.000 tonnes d'hydrocarbures de l'épave du 'Prestige' par une profondeur de 4000 mètres, 31 Mai 2010.
  - o Le projet Seine Escaut Est en Wallonie, Mr Y. LOYAERTS (Directeur Général, DGO2, SPW), 8th Nov 2010
  - o Le Port de Bruxelles et son intégration dans la ville, by Alfons MOENS, Directeur Général du Port de Bruxelles, 12<sup>th</sup> March 2012

### 10. PUBLICATIONS

A full list of publication is available (see attached document or <http://orbi.ulg.ac.be>)

Ph. RIGO (on 1-4-2012) is the author of:

- 20 books and chapters of books
- 62 papers in international journal (with peer review)
- 94 papers in international conferences (with peer review)
- and about 90 research reports