

Newsletter of the VKI Alumni Association

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From the Editors





by HANS-PETER DICKMANN, DC 1987
AND EDITOR, EUROPE
AND
JOHN WENDT, FORMER DIRECTOR OF THE VKI
AND EDITOR, NORTH AMERICA

You are reading now newsletter number 12. Is 12 or "a dozen" a special number? What comes into your mind when you see the number 12? Books and movies like "The dirty dozen", "12 angry men", "12 Monkeys", "Cheaper by the Dozen"? The "Baker's Dozen" – a special box with 12 eggs? We assume that our Italian friends immediately think about "Ferrari", because many of their engines use(d) to work with 12 cylinders. May be there are more soccer teams who follow the same policy, but we are thinking about this year's triple cup winner "Bayern München". A soccer team consists of eleven players. A club must have many more than 11, because some players may be unable to play because of injuries, red or yellow cards and 3 of them can be substituted during a match. In Europe numbers on the backside of the sweaters are allowed to count from 1 to 99. It is a tradition at Bayern München that no player is allowed to wear the "12". Because this number is reserved for their supporters. We need you. You are our twelth player in the field – literally spoken by this German soccer club. This is the link to this letter from the editors.

We need you – we need our readers

- to support us to write interesting newsletters
- to continuously receive creative ideas for future newsletters
- to receive interesting, funny and sometimes also very sad news, which we would not get, if we were not in contact with you and which is also important for all the others who did not know before

So please continue to support us with material and ideas for future newsletters. Please let us know suggestions for improvement or what you especially do not like.

We are looking forward to emails or phone calls from you.

...and as we are not superstitious (there are no "Number 13" seats in most airplanes and there is no "13" on Formula 1 cars) we are sure that there will be a 13th newsletter in 2014.

Interview with Mickey Greenblatt, DC 1963



by JOHN WENDT
FORMER DIRECTOR OF THE VKI
AND EDITOR, NORTH AMERICA

Mickey Greenblatt has conducted a number of interviews for the VKI-AA Newsletter. For this issue, I asked Mickey to conduct a self-interview, emphasizing how he made the transition from researcher to entrepreneur. The objective in the next few issues is to highlight the many companies which have been started by VKI graduates, the pros and cons of making such a major change in one's career, and sharing the secrets of success. Mickey has asked me to inform the readers that he will be pleased to reply to questions which other graduates who are contemplating entry into the business world may have. And I am asking VKI graduates who have already made this transition to share their thoughts on why and how they made such a shift in their careers.

Mickey, describe your professional career.

"After VKI in 1963, I went to Princeton for my PhD, and then did plasma physics research at NASA and Naval Research Lab. I quit NRL to start Fusion Systems Corp. with four friends. We had invented, at night, a microwave-powered ultraviolet lamp for curing coatings. So I gave up solving MHD equations by Finite Element Analysis methods for marketing/sales/finance, for which I was more suited by temperament, not by training. Best decision of my life.



Mickey receiving his diploma in 1960

"After that company, I started a metals-testing company, which later took over management of a university's research nuclear reactor. I sold both companies in 1993 and retired. I have been on the boards of directors of two public companies, both subsequently sold, and am now on three private boards. One is SOL, Inc., an American solar lighting company, and one is Phocos, a German solar controller maker. The hardest work I have ever had is on the boards of companies I started with my sons, the latest being Marlin Wire. Be careful before you go into business with a child. Trapeze walking, heavyweight boxing, and crocodile wrestling are calmer activities you might consider instead."

When did you know you wanted to be in business for yourself? *"Two years after I graduated from VKI at age 25, I read a book,* ***How to Buy Stocks*** *by Louis Engel. It described inventing a product, starting a company, going public, and being your own boss. Immediately, I knew fluid dynamics research was a mistake, even though I was in the middle of my PhD program. Having grown up above the family grocery store where my parents worked 89 hours/week, 363 days/year, I may have business genes."*

What are your best memories of VKI, 1962-63?

"Meeting Theodor von Kármán himself, a few weeks before he died. Making friends with wonderful classmates, many of whom I remain in contact with: Jim McCroskey (USA), Joop Sloof (NL), Werner Geuenich (DE), Gunnar Beck (NO), Frans Breugelmans (BE), Hans Van Ditzhuisen (NL), and Jim McBrayer (USA). Introducing classmate Bob Kirk (USA) to the Belgian lady he married in 1963. (First fix-up at VKI leading to marriage?) Drinking coffee in the lunchroom while arguing about politics, especially WWII. Hearing Belgian beer jokes from Karol Gronert (BE). Learning so much about my country and world history. Going to Köln for Karneval (Mardi Gras) with Peter Schneider (DE) as our Sherpa. Ogling the Danish groupies who hung around the class bachelors. Marveling at the breadth of Professors Smolderen, Ginoux, Moulin, Korkegi, and Templemayer (visiting). Co-winning the Belgian Government prize with Jim McCroskey. Translating the VKI textbook on electronics from French to English for $150. Having my research project made into a VKI/TCEA note. Did I mention the Belgian beer jokes?"

How did VKI change your life?

"First, VKI meant taking some big risks that worked out ok, so risk scares me less than other people. For example, I applied to VKI even though I did not have the master's degree required for Americans, so I was accepted on probation. I left America for the first time to go to Belgium (my longest previous trip was 150 km from the grocery store). I performed the first non-experimental research project at VKI (calculation of flow behind a shock wave, on VKI's first computer, an IBM 1620). Plus, VKI prepared me for a demanding doctoral program and taught me computer skills that I used throughout my career.

"Second, because of my VKI experience, in every company I worked, I was always the only founder interested in seeking foreign business. I loved going to Europe to sell for my companies (and to tour with my wife), an addic-

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Chaussée de Waterloo 72, 1640 Rhode-Saint-Genèse, Belgium
www.vki-alumni.org +32-2-35 99 600 vki-aa@vki-alumni.org

tion that persists to this day. The touring "itch" was first "scratched" while I was at VKI, and I am eternally grateful to the school for broadening me. I know few American engineers who can speak a foreign language and have the big-picture view that VKI gave me."

What's the best moment of your business career?

"In 1977, I sold an ultraviolet lamp to the Banque de France, so they could dry ink on French currency. The sales pitch was entirely in French, at a trade show in Düsseldorf, which was possible only because of my year at VKI learning French (and aerodynamics). None of my partners wanted to go to the trade fair. Other special moments: convincing a venture capitalist to invest in a company run by five scientists with no business experience, taking over the nuclear reactor, and selling two companies. These are just moments; the best continuous reward for this entrepreneur was driving up to work every day, to a company I started, and seeing a parking lot full of cars owned by average people paying for the cars, their homes, and their kids' college education, thanks to the company. C'est merveilleux; c'est incroyable. I never forget that my four grandparents were peasants starving in Ukraine 101 years ago."



A recent photo of Mickey.

What are the keys to success in business?

*"**Brains**: Find partners who are smarter than you. **Integrity**: Never cut corners on honesty. **Be unique**: As Willie Keeler said about hitting a baseball: hit 'em where they ain't. So fill a need that no one is filling. **Network**: Tell friends, relatives, everyone what you are doing/want to do. You can get ideas from many sources. **Tenacity**: Brains are good, luck is nice, but tenacity is better than everything else. As Churchill said to graduates at Harrow,* "Never, never, never, never, never, never, never, never, never, never, never, never, never give up." ***Scientific training**: We have a natural advantage in business, because we can analyze quantitatively and respect empirical data. It is amusing to listen to a lawyer or anthropology major struggling to explain trends, "exponential" growth, net present value, and second-order effects. Many of them think an "order of magnitude" is asking for 10 Big Macs at McDonald's."*

Who are your business heroes?

"Benjamin Franklin, Thomas Edison, Steve Jobs, and General Georges Doriot."

Where do you find good mentors?

*"Many universities sponsor entrepreneurship programs for alumni. Many angel funds sponsor breakfast/lunch meetings for entrepreneurs seeking funds. Go to these, learn the needs, see what "spiels" are persuasive, and get ideas for what is hot. With the help of a local banker, find a retired successful businessperson, take him/her to lunch, and pick his/her brains. People love to talk, and they'll probably pay for lunch, too. Mentors of a sort are your parents and in-laws; you will soon be borrowing money from them, so be nice. Good reading: **Forbes** magazine. Jim Collins' **Good to Great** (don't bother developing strategy, i.e., where the bus is going; just get the right people on the bus). Eliyahu Goldratt's **The Goal** (how to open bottlenecks). Peter Drucker on **The Effective Executive**. **How to Buy Stocks** by Louis Engel."*

What is the difference between an entrepreneur and an employee?

"An employee enjoys a 40-hour workweek, relatively predictable tasks at work, a regular paycheck, and no worries about the bank honoring that paycheck. An entrepreneur does not understand any part of the previous sentence."

Thanks, Mickey, for a very entertaining description of your career as an entrepreneur. I hope your success will inspire other VKI graduates who are contemplating a similar career to take similar risks. And thanks for offering to correspond with any of our readers who would like to have additional information and advice.

Interview with Vincent Soumoy, DC 1987



by HANS-PETER DICKMANN, DC 1987
AND EDITOR, EUROPE

Vincent and Hans-Peter are members of DC 86/87. Some of Hans-Peter's memories are: Vincent was the youngest DC student and as the only Belgian participant he taught us a lot about his country; he even invited all TU students to his birthday party at his parents' house in Mariembourg, which we enjoyed very

much. All students who bought a Côte d'Or chocolate bar in the canteen had to give the envelope to Vincent, because he collected these to change them into gifts you could order at Côte d'Or.



Birthday Party at Vincent's home in Mariembourg, 1987. 1-Patrick Chavanon, 2-Ralf Dietmar Baier, 3-Pierpaolo Puddu, 4-Frank Loth 5-Fernando Lopez-Peña 6 Vincent Soumoy, 7-Hans-Peter Dickmann

Vincent, as I bought... and consumed... really a lot of these chocolate bars I could add many envelopes to your collection, I was and still am curious about what you could get for these. Do you remember? You never told us this secret. What was it?

"Hans-Peter, your memory seems better than mine... I remember that in the past, some chocolate manufacturers, namely Côte d'Or, organized contests or picture collections... but sorry I do not remember the details of this 25 year-old story. I know that you work in Switzerland now and that chocolate was a primary condition of your choice, but I am sure we would discover more interesting souvenirs between us."



Birthday Party at Vincent's home in Mariembourg, 1987. 1-Erkan Ayder 2-Petra Lippert 3-Patrick Chavanon, 4-Vincent Soumoy, 5-Lucie Huang

Vincent, what did you do, where did you work directly after your Diploma Course?

"After my Diploma Course, I moved to Nancy, in the East of France, to start my Ph.D. at INRS (National Institute for Research and Safety) where I worked on Lagrangian particles dispersion, with application to fume hoods I stayed there 3 years, from 1987 to 1990."



Coal Mine Visit in Genk with Prof. Breugelmans, 1987. 1-Petra Lippert 2-Lucie Huang, 3-Vincent Soumoy, 4-Hans-Peter Dickmann

What benefits could you take from your DC time at VKI for your professional career?

"'You are a former VKI DC Student'... is a sentence that I am pleased to hear... When I am contacting people in the industry or new potential customers or project partners, it could help to open some doors or to give respectability.



Vincent receives his VKI-Diploma, Graduation Day 1987

"In the domain of CFD, VKI is well-known worldwide. It is difficult to say precisely what the benefits are. Before coming to VKI, if I was more interested by numerical methods than experiments, my main courses were related to Solid State Physics. I had some knowledge of Fluid Mechanics through an optional course of Prof. Marcel Crochet who opened the door to me, but I really started Fluid Dynamics at VKI... and I never closed the door. Five years as research engineer in industry, about 6 years as application engineer with software vendors (Phoenics, Fidap, Flowmaster) and in 2000, I crossed the very small river

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to become Salesman and later Sales Manager for CFD Software and Services. From 2000 to 2008, I continued to work with Flowmaster (now Menthor Graphics). From 2008 to 2012, I created all the Sales and Marketing aspects of EURO/CFD, a French based company dedicated to CFD consulting in Europe.

"Last year, I crossed an ocean, and I am proud today to work with Prof. Wagdi Habashi, one of the big names in CFD, as International Sales Manager of Newmerical Technologies International in Montreal. Our main activity is in-flight icing: design, simulation and certification.



Vincent entering a plane for flight lessons at Air France

"Since 2009, I am a member of the CFD Working Group of NAFEMS.

"VKI was always present in my mind."



Vincent today in 2013

Is there anything special you could tell us about your DC life at VKI and in Brussels in 1986/87... at least Brussels was far away from your home town in Belgium...?

"My life in Brussels was probably different from all other students. Because I am Belgian, I was living the week in Brussels but going to my parents' home (80 km from VKI) weekly.

"But I also remember that I tried to be a 'standard' student... I was amongst students working as waiter for the Lecture Series opening cocktail... and I also participated in the main student activities, inside or outside VKI."

Are you still in contact with the colleagues of your DC?

"Yes and no, sometimes I am in contact with you and I also encountered some former colleagues when visiting VKI for anniversaries or Alumni activities.

"Sometimes I happen to meet DC students when visiting customers."

Did you return to VKI for attending or contributing to Lecture Series or did you have any collaboration with VKI?

"A long time ago, I attended one or two Lecture Series but never contributed. When I was working for the French Iron and Steel Industry, I visited Prof. Van den Braembussche. We thought about starting a collaboration, but unfortunately a joint project was not realized.



Vincent conducting a choir at an UNESCO event, the final concert of the yearly "Paris Choir Festival". Vincent directed choirs there between 2004 and 2011.

"When I worked for CD-adapco in 2008 I sold an academic license of STAR-CCM+ to VKI"

What were the most exotic types of fluid dynamics problems you had to work on in your professional life until today?

"I worked in many areas, so your question is difficult...

"When I was with the Iron & Steel Industry, I was working on a quite complicated problem of coating, with

an air blade to dry a strip moving out of a Zinc bath. About 20 years later when I visited this company as a supplier, I understood the problem was not yet solved. . .

"I also worked on the fire extinguishing systems of the tunnel between Danish islands.

"With Flowmaster & EURO/CFD, I saw a lot of CFD applications in various domains like shipbuilding, nuclear power or oil & gas industry. But it is probably now with in-flight icing that I discover exotic problems: how to simulate icing on a wind turbine or on electric cables to avoid breakage."



. . . and a very numerous choir in front of the stage at the same occasion, where his wife Virginie is playing piano.

Finally – we should talk about your hobbies, sport activities or whatever you regard as worth to mention, Vincent – I remember that you or/and your wife play instruments and that you worked as something like a music manager in your spare time.

"In 1990, I was hired by Air France to become a pilot including a complex selection process (5 days, only 30 people selected over 4000) and I started a training. . . after 3 months, they stopped 3 persons in my team of 18. I was amongst the 3 but I have a lot of nice memories of those CAP 10 and TB 20 flying hours.

"We could discuss about sport activities. . . but it risks to be very short. . .

"Since my youth, I like to sing. You probably remember that for my birthday party in 1987, most of the turbomachinery team sang together with me at home.

"Since a long time I was a member of several choirs in Belgium and France. I also took lessons to become a Choir Director and I conducted different choirs, with concerts in France, Belgium, Italy, Canada. . .

"I got married in 1990 with Virginie, a professional pianist and was involved as a manager of professional musicians.

"I had to stop all of that, although I am still an administrator of the French Choir Director Society, before leaving to Canada.

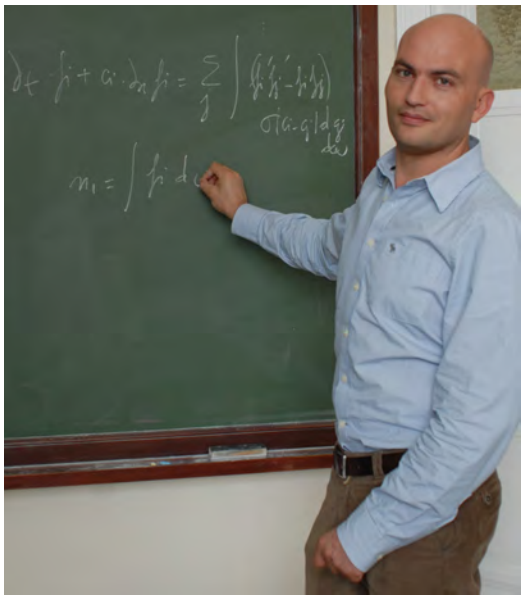
But I was recently selected for a casting role of the Bishop of Dignes in Les Miserables. . . *"*

Developing Aerospace Modeling Tools for Tomorrow's Space Journeys.



by THIERRY MAGIN
DC'99, PHD 2004 AND ASSOCIATE PROFESSOR, AR DEPARTMENT

The European Research Council (ERC) is a European funding initiative, designed to stimulate scientific excellence by supporting creative scientists, scholars and engineers to be adventurous and take risks in their research. They are encouraged to go beyond established frontiers of knowledge and the boundaries of disciplines. Since 2007, ERC grants are awarded through open competition to projects headed by starting and established researchers. In 2010, Thierry Magin, associate professor in the AR Department, has been awarded a $1.5 million individual ERC Starting Grant for building a research team to work on the AEROSPACEPHYS project: *"Multiphysics models and simulations for reacting and plasma flows applied to the space exploration program."*



The investigator: Prof. Thierry Magin

The prestigious ERC grant catalyzed scientific and academic collaborations with external institutions crucial to the project. In particular, the principal investigator has been appointed at Ecole Centrale Paris and the University of Liège, where his PhD students have the

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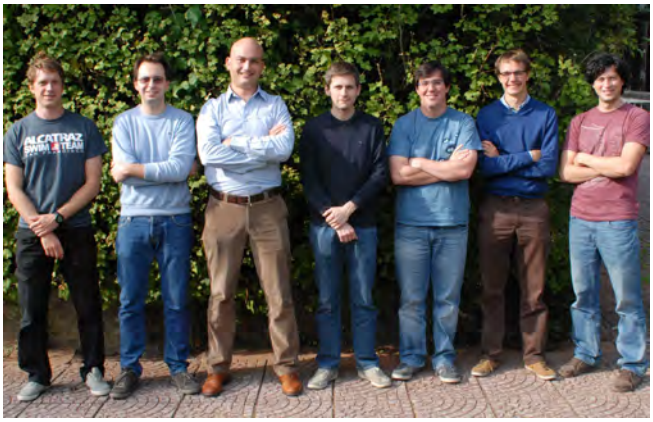
possibility to register in the doctoral school of these institutions. During the first phase of this five-year project, the AEROSPACEPHYS team was composed of the principal investigator, two PhD students and two postdocs, reinforced by three PhD students sponsored by Belgian funding agencies and VKI. Several research master students and one collaborative PhD student were also integrated into the research group that has reached today its critical mass to start with the second phase of the project.



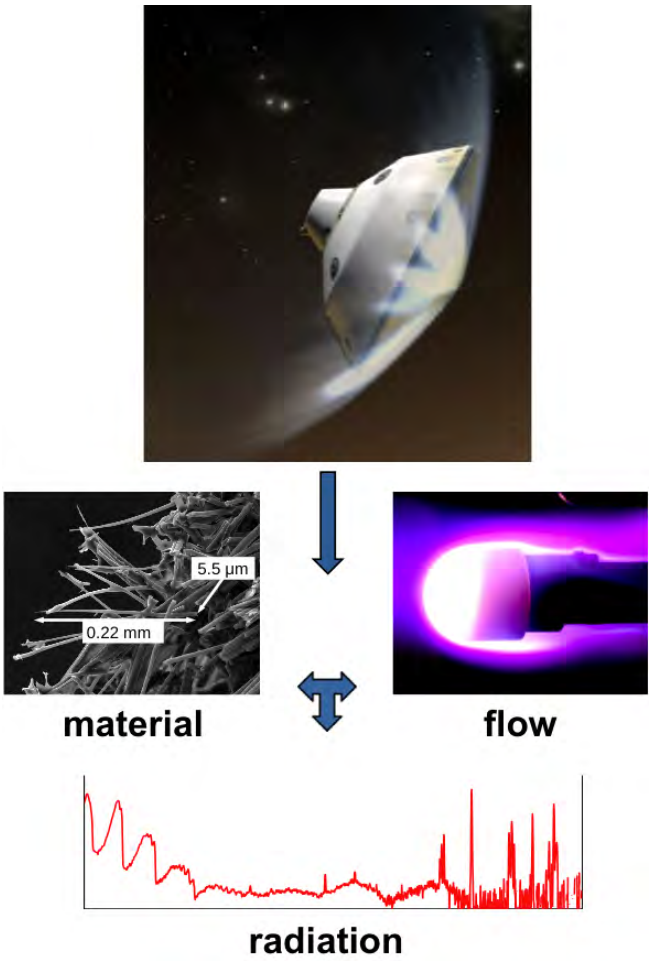
Current and past team members: (left to right) Bernd Helber, Alessandro Munafó, Thierry Magin, Erik Torres, J.B. Scoggins, Pierre Schrooyen, Alessandro Turchi, and (not pictured) Michael Kapper, Julien de Mûelenaere, Olaf Marxen, Gennaro Serino, Gilles Bailet, Georgios Bellas Chatzigeorgis.

Space exploration is one of the boldest and most exciting endeavors that humanity has undertaken and holds enormous promise for the future. After the successful manned missions to the Moon and many probe entries into the atmosphere of outer planets, our next challenges include bringing back samples to Earth by means of robotic missions, as well as continuing the manned exploration program to send human beings to Mars and bring them safely home. Inaccurate prediction of the heat load on the surface of a spacecraft may be fatal for the crew or the success of robotic missions. Rocket scientists estimate this quantity during the design phase for the heat shield used to protect payload and astronauts. To help them with this estimation, the team is investigating the following aerospace mission killers:

- Radiation of the hot dissociated plasma in front of the vehicle,
- Complex degradation, or ablation, of the thermal protection material,
- Flow transition from laminar regime to turbulent regime.

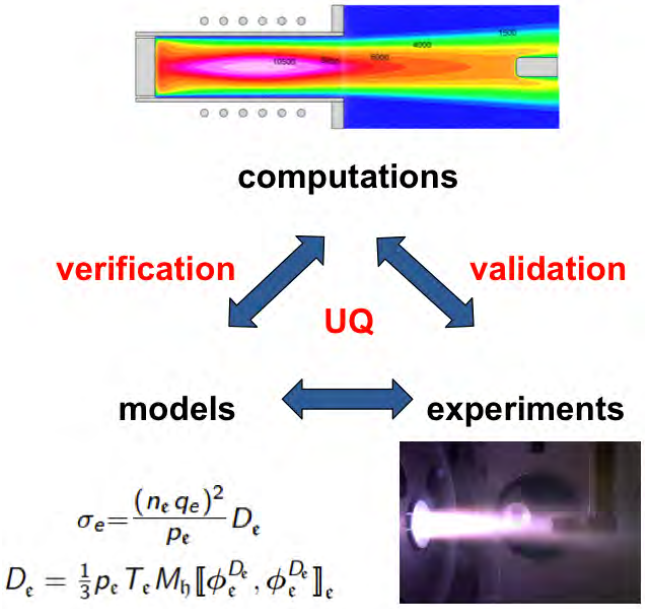
A poor understanding of the coupling between the radiation, ablation, and transition phenomena can lead to severe errors in the heat load prediction.

To avoid space mission failure and ensure safety of the astronauts and payload, aerospace engineers resort to safety factors by increasing the heat shield thickness at the expense of reduced mass of the embarked payload. Determination of safety factors relies on a discipline called uncertainty quantification that aims here at developing rigorous methods to characterize the impact of "limited knowledge" on the heat load. The design of the Apollo, Galileo and Huygens probes are famous examples of "lucky" heat shield design with an insufficient safety factor. A possible explanation is that the conventional physico-chemical models used for entry simulations are often stretched dangerously and used out of the validity range for which they have been conceived. Thinking out of the box and basic research are thus necessary for advancements of the models that will define the environment and requirements for the design and safe operation of tomorrow's space vehicles and planetary probes for the manned space exploration.



Example of complex multiphysics coupling during the entry of the Mars Science Laboratory into the Martian atmosphere (artistic view courtesy NASA): surface roughness on a thermal protection material can trigger laminar-turbulent transition (larger convective heat-flux) while the boundary layer can absorb radiation (lower radiative heat-flux).

Let us recall the three basic ingredients for predictive science: 1) physico-chemical models, 2) computational methods, 3) experimental data. The AEROSPACEPHYS team follows a complementary approach for prediction by integrating new advanced physico-chemical models and computational methods, based on a multidisciplinary approach developed together with physicists, chemists, and applied mathematicians. The goal is to create a top-notch multiphysics and multiscale numerical platform for simulations of planetary atmosphere entries, crucial to the new challenges of the manned space exploration program. Experimental data obtained by the group of VKI Prof. Olivier Chazot are also used for validation, following state-of-the-art uncertainty quantification methods. The research focuses on the needs of the space agencies, benefitting from a long research experience from the host institution, the von Karman Institute for Fluid Dynamics, in supporting aerospace missions. In particular, a close collaboration with the aerospace industry aims at developing a methodology for the characterization of a new generation of low-density carbon-resin composite materials that will enable tomorrow's space journeys.



Example of complementary tools used for engineering prediction: kinetic theory models for transport phenomena/simulation of temperature field in inductive plasma flow/heat-flux measurement in VKI Plasmatron facility

The researchers and their collaborators from NASA Ames Research Center have integrated for the first time an *ab initio* rovibrational quantum chemistry database for molecular nitrogen energy excitation and dissociation in fluid dynamical models. Detailed chemistry calculations have shown that the assumption of equilibrium between the translational energy and the rotational energy used in conventional multi-temperature models is not valid for atmospheric entry conditions. An alternative coarse-graining model has been developed to reduce the full model. For this work, the European Space Agency has attributed the *"Fundamentals on Aerothermodynamics"* award to the team, and the American Institute of Aeronautics and Astronautics, the *"David Weaver best student paper in Thermophysics."*

The group is developing a methodology for the characterization and prediction of a new generation of low-density carbon-resin composite materials in collaboration with NASA Ames Research Center. Preliminary experimental results obtained for materials provided by Astrium Space Transportation and Lockheed Martin UK show that ablation is not only a surface phenomenon, but it happens in volume, as opposed to the assumption made in models inherited from the Apollo program that proved to be accurate for dense materials. A new model for material response is currently under development. The thermodynamic data for the complex gas mixture of ablation products are obtained in collaboration with Caltech.

The European Space Agency has emphasized the relevance of Uncertainty Quantification (UQ) in aerospace science by organizing a course as part of the 2011 *"7th European Aerothermodynamics Symposium"* in collaboration with the von Karman Institute and Stanford University. The researchers have already applied UQ tools and obtained pioneering results in two aerospace applications: the prediction of transition from laminar to turbulent, and, the rebuilding of freestream conditions from flight stagnation point measurements in collaboration with applied mathematicians from INRIA Bordeaux.

During the first period of the project, the group has developed a library for atmospheric entry flows. MUTATION++ is a modern, object oriented, extensible framework, supplied with detailed in-source and user's guide documentation in order to facilitate model improvement and collaboration. The library can easily be interfaced to any Computational Fluid Dynamics solver for high enthalpy and plasma flows. The most efficient algorithms and state-of-the-art basic data are implemented in the library, including the nonequilibrium models developed by the team and their collaborators. Basic data are regularly updated, such as rate coefficients, cross-sections, and spectroscopic constants. Two CFD platforms are currently used as benchmark for the library: COOLFluiD, developed at VKI by the group of Prof. Herman Deconinck, and SU2, developed at Stanford University by the group of Prof. Juan Alonso. A wider distribution of the library is foreseen. Several collaborators are already using the MUTATION++ library in aerospace projects involving the European Space Agency and NASA.

Association of the Alumni of the von Karman Institute
Chaussée de Waterloo 72, 1640 Rhode-Saint-Genèse, Belgium
www.vki-alumni.org +32-2-35 99 600 vki-aa@vki-alumni.org

About the Wednesday beer meeting...





by Sébastien Paris
Research Engineer, AR Department
and
Christophe Schram
DC 1998,
Associate Professor in EA and AR Departments

A long time ago, the sport center was a rather busy place. It was possible to play tennis, minigolf, or even use a sizeable swimming pool. At that time, dedicated staff was working to maintain the equipment and organize the registration. Another facility available in the sport center was the bar where people enjoyed playing billiard or bowling. It was of course also a place to share good times with friends in front of a glass. This service was available every day up to six o'clock, and later on Wednesdays. That's how it became a tradition to meet on Wednesday to share beers. The "Wednesday beer meeting" was born...



The two VKI amateur brewers, Christophe Schram and Sébastien Paris, testing their production before distribution.

At that time, a few people only were participating, but it quickly became usual to meet on Wednesday, more and more students joining the gathering. All was going fine... But suddenly, the sport center closed and all the 'sportive' activities had to close, including the bar. The tennis court became quickly a forest and the minigolf a post-apocalyptic jungle. Fortunately, under the initiative of Remy Dénos, professor in the turbomachinery department, a beer-meeting resistance group obtained from the direction the use of one of the small rooms of the sport center. We purchased for ourselves a couple of boxes of beer, we found a fridge and proposed the beer for a very low price, just to be able to re-supply the week after. The 'clandestine' times of the beer meeting had begun...

The main objective of this meeting is the same since the beginning: meet people, exchange ideas and (eventually) drink beers. VKI is well known to be an international institute where students from many countries can work together. The Wednesday beer meeting gives the opportunity to share a bit more than the exams and the projects. It corresponds perfectly to the initial wish of Professor von Kármán. Many visitors are coming to the VKI (professors, industrial engineers, lecturers...), sometimes from very far. It offers the possibility to enjoy the local product after a long day of meetings. It is where the informal discussion and real relationships can often happen.





As the purpose is to share a good time, all the money is used to maintain the supply of beers and the extra is invested for the community. It can be a coffee machine, a new fridge, new set of table and chairs for the terrace...

Amongst the usual suspects regularly present at the beer meeting was Tyler Zawacki (DC 2010). He was fascinated by Belgium and more specifically by Belgian beers. He was the missing trigger to start the local production. The results of the first brewing attempts were of course proposed for tasting during the beer meeting. The techniques have improved for a couple of months and in June 2011, the quality of the beer was estimated good enough to be proposed for the diploma ceremony under the name "The Von Kármán spirit" (see label below). The beer meeting had finally become a respectable institution...

It was immediately a great success. The "von Kármán spirit" is now proposed for every event: the Beer and Cheese Party in October and the diploma ceremony in June. The production starting with only 20 liters per month, it became quickly too little to supply the beer meetings, the special events and the producer himself. A new brewery was built to produce 60 liters per month. The production started in March 2013 and can now supply everybody with the same spirit. An industrial age began...

Over the years the success of the beer meeting has been growing steadily. Students and PhDs are coming from generation to generation but more and more engineers, technicians and professors are now coming along for a beer with students or with visitors to enjoy the spirit. In 'hop' to see you there...

The VKI Gliding-Week:
"To invent an airplane is nothing. To build one is something. But to fly is everything."
Otto Lilienthal

by Aurélie Beelemans, DC'14
Ceyhun Şahin DC'08
Christophe Schram, DC'98

The interest of VKI students for fluid mechanics is sometimes not only theoretical, numerical or experimental, but quite practical as well... Some of them are even ready to experience the consequences of flow separation in a very intimate manner! The VKI Gliding Week is undoubtedly one of the nicest activities organized by generations of DCs (now RMs) and PhDs, offering to their colleagues a rare opportunity to 'feel' fluid mechanics.

Twice a year, VKI pilots meet to fly together for one week in Laucha an der Unstrut, a little town in the east of Germany, about 50 km 'as the glider flies' west of Leipzig, and 650 km by road from VKI. During the Gliding Week, confirmed pilots are allowed to fly solo enjoying beautiful German landscapes, while new pilots are formed by qualified in-house instructors.



Laucha airfield (right) on top of its hill, east of the slope descending to the Unstrut river and 'landable' crop fields.

This initiative was born in 2001, when freshly graduated DC students decided to celebrate the end of their 9-months purgatory with an ultimate experience: checking for themselves if the aerodynamic theories they were taught would fit reality. It was thanks to Falk Klinge (DC 2000-2001 and already a glider pilot back then, now a flight instructor) that VKI members had the chance to be introduced to one of the very historical and local gliding clubs in the east of Germany, Haus der Luftsportjugend. Any pilot knows how the passion of flying is a contagious and chronic disease, and Falk did an excellent job contaminating some of his colleagues, who perpetuated the tradition of the Laucha Gliding Week after he left VKI. His followers were Carlo Bagnera (DC 1999-2000), Hyun Woo Krassilchikoff (DC 2005-2006) and Ceyhun Sahin (DC 2007-2008), who's now equally eager to complete her PhD and sad to leave soon the organization of such a nice event. But she feels comforted knowing that the Laucha Gliding Week will be well handled by Guillaume Grossir (DC 2009-2010). Coincidentally, the organizer is usually crowned with a solo flight, offering extra motivation if needed! Beyond the convenient opportunity to learn flying without engines (the only real way of flying, according to one of the authors...), during that week we get to know our colleagues in a different way, make new friends and find a unique meeting place for VKI Alumni who have booked one week in Easter or July in their agenda for the years to come.



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A typical day in Laucha starts early in the morning, with an invigorating German breakfast at the canteen. It is a time to meet with the instructors and to discuss the weather forecast for making some practical arrangements. After this little briefing everybody meets at the hangar to solve the puzzle of taking the gliders out of the hangar without any harm – considering the intricate way they were fitted in the tiny volume on the previous evening. Once the white birds are freed, they are subjected to a number of checks about their general state and controls, to be pushed towards the airfield for flying.

There are two methods to take off with a glider: aerotowed behind an airplane, or by a grounded winch. The Laucha pilots use a winch. The procedure, quite spectacular even when you've been flying for 20 years with aerotowing, consists in being literally catapulted in the air, the rolling time not exceeding 2-3 seconds. After about 30 seconds of a steep ascent, mostly spent watching after the possible 'cable-break' we've been well trained for, the cable is released and we're free! The Laucha winch, controlled by the incredible Wolfgang, is a homemade design made of a big engine rolling a cable mounted on a truck, a sturdy masterpiece of engineering. It can launch the gliders up to 600 m ground altitude when the wind direction permits using the maximum length of the airfield. The duration of the flights is then a function of the aerology, presence of thermals, and pilot skills.



Winch take-off on the snow: an interesting experience!

In terms of aerology and thermals, the last Easter edition of 2013 has been memorable since we were welcomed by a beautiful 10 cm thick blanket of snow... To our legitimate question "Er... do you normally fly in these conditions?", our unforgettable instructors Ringo and Juan laconically replied "Well, normally no, but since you're here now..." and we did fly! The record duration for the week was... 6 minutes. But those few minutes filled our memories with magnificent beautiful winter scenery from the sky... a truly magical experience, which we all look forward to renewing with the next RM students. Perhaps with less snow next time!

VKI Research Master Diploma Ceremony, June 28, 2013



by Claus Sieverding,
DC 1966, VKI-AA President

On June 28, at 10:15 the VKI Lecture Hall was hardly big enough to accommodate the invited guests, parents and friends, faculty members, PhD students and VKI personnel assisting in the Research Master Diploma Ceremony for the freshly graduated thirty three RM students, half of them having graduated with honors. Following a long tradition five students received special prizes for outstanding performance. The two overall best performing students Mendez Miguel Alfonso from the U. of Florence, Italy, and Thiry Nicolas from the U. Catholique de Louvain, Belgium, received respectively the Theodore von Kármán prize and the Belgian Government Prize. Vincent Van der Haegen, Katholieke Hoge School, Leuven, Belgium, received the Prince Alexander of Belgium Award for Best Presentation and Guiseppe Caridi from the Polytechnic U. of Turin, Italy, and Sara Gonzales Ruiz from the Carlos III U. of Madrid, Spain, received respectively the prizes for Excellence in Experimental and Numerical Research. The delivery of the RM diplomas was followed by the presentation of the Best Collaboration Award offered by the VKI Alumni Association to Julien Clinckemaillie, U. Catholique de Louvain, Belgium.



Dr. J.-M. Muylaert, VKI Director, opened the ceremony with a report on the achievements during the

past Academic Year. Professor J.-P. Contzen, President of the VKI Board of Directors, called to mind Theodore von Kármán, a lifetime of research, while Major General A. Husniaux, NATO Chief Scientist, and Dr. P. Mettens, President of the Belgian Science Office, insisted on the role of the von Karman Institute for NATO and for Belgium, respectively.

The address to the students was delivered by Dr. Luiz Lourenco, DC 1979, Owner and President/CEO of Integrated Design Tools, Inc., Pasadena, California, who in an inspiring speech conveyed to the students the message "luck comes with work . . . hard work".



Dr. Luiz Lourenco, second from left

On behalf of the RM students, Mrs. Giuliana Litrico closed the ceremony with the "Vote of Thanks to the Guests".

VKI Alumni Association Research Travel Grant

1 month at the University of Bremen, Germany

by IMRE HORVATH,
DC'11, PH.D. STUDENT

My name is Imre Tamás Horváth and I am at the beginning of the 3rd year of my PhD studies at VKI. My research topic is the development of a light-scattering-based nanoparticle characterization technique. I am writing these lines just after returning from my one-month research visit spent at the Particle Characterization Workgroup of the University of Bremen, Germany. Hereby I would like to express my gratitude to the Alumni Association for providing me the unique opportunity of meeting and collaborating with the latter group.

The town musicians of Bremen

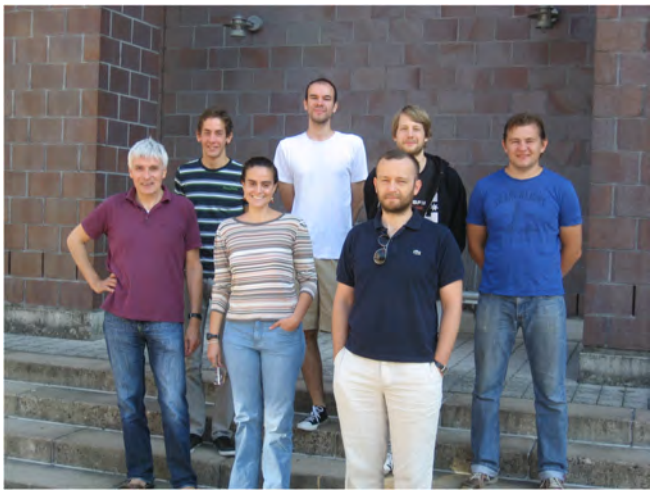
The story of my research visit shows great analogy with the German folktale recorded by the Grimm brothers: *The town musicians of Bremen*. In order to better illustrate how my research visit has unfolded, I would like to shortly recall this folktale.



Four outcast animals: a donkey, a dog, a cat and a rooster set off to a journey to find a new home, where they may spend the rest of their life in usefulness. On the way to Bremen, they see a lighted cottage; they look inside and see four robbers enjoying their ill-gotten gains. Standing on each other's backs, they decide to sing for the men in hope of gaining food. Their 'music' has an unanticipated effect; the men run for their lives, not knowing what the strange sound is. The animals take possession of the house, eat a good meal, and settle in for the evening. Later that night, the robbers return and send one of their members in to investigate. He sees the Cat's eyes shining in the darkness and the robber thinks he is seeing the coals of the fire. He reaches over to light his candle. Things happen in quick succession; the Cat scratches his face with her claws, the Dog bites him on the leg, the Donkey kicks him with his hooves, and the Rooster crows and chases him out the door, screaming. Traumatised by the unknown, he tells his companions that he was attacked by a horrible witch who scratched him with her long fingernails, an ogre with a knife, a giant who had hit him with his club, and worst of all, the judge who screamed in his voice from the rooftop. The robbers abandon the cottage to the strange creatures that have taken it, where the animals live happily for the rest of their days.

If I put myself in the place of the robbers, the analogy becomes clear instantly: By the autumn of 2012 I had been celebrating some little experimental success that gave me hopes that the developed technique may operate reliably. All of a sudden I heard strange noises through my window, which screamed: "Why are you trying to ignore us, we are here!". I looked outside carefully and observed a large variety of non-spherical parti-

cles, gathering under my window. Desperate from what I saw, I abandoned my cottage in a hurry and ran to the dark forest, where these noises could not reach me any more. Some hours later, encouraged by my supervisor (Prof. Vetrano), I sneaked back to the abandoned cottage to better investigate the source of the noises. In the darkness I was once again terribly threatened by the complexity of the mathematical formulations, which describe light scattering by non-spherical particles. Finally I was busted by the large variety of numerical approaches and had to turn back towards the dark forest. Just after a few steps, a tall figure came in front of me, who I immediately believed to be a wizard. As it turned out, he was Prof. Sieverding in the representation of the VKI Alumni Association. The wizard handed me a magical lamp, which was labelled by the script: VKI-AA RTG. Darkness faded quickly by the light of my new lamp: upon re-entering the cottage I saw a world of miracles: a large crowd of non-spherical particles scattering light in a predictable and understood manner – I could say they were perfectly domesticated. Their master was Prof. Thomas Wriedt, the head of the Particle Characterization Workgroup of IWT of the University of Bremen. After he saw my interest in his miraculous world, he allowed me to stay with his group for the period of one month.



From left to right: Thomas Wriedt, Imre Horváth, Renata F. Da Costa, Krzysztof Skorupski, Mirza Karamehmedovic, Christoph Meyer, Vladimir Schmidt

During this month I was treated as a full member of this group. The inspiring discussions opened a wide horizon for my research. I gained insight in the most recent modelling approaches and have collected sufficient confidence for starting to domesticate my own non-spherical particles. In return, the group has profited from my experience in solving inverse light scattering problems. We all believe that my research visit will encourage future exchanges of knowledge and can be the first product of a long lasting fruitful collaboration between the group of Prof. Wriedt and VKI.



Belgian beer tasting with the group

Some Statistics about the Professional Careers of VKI Alumni



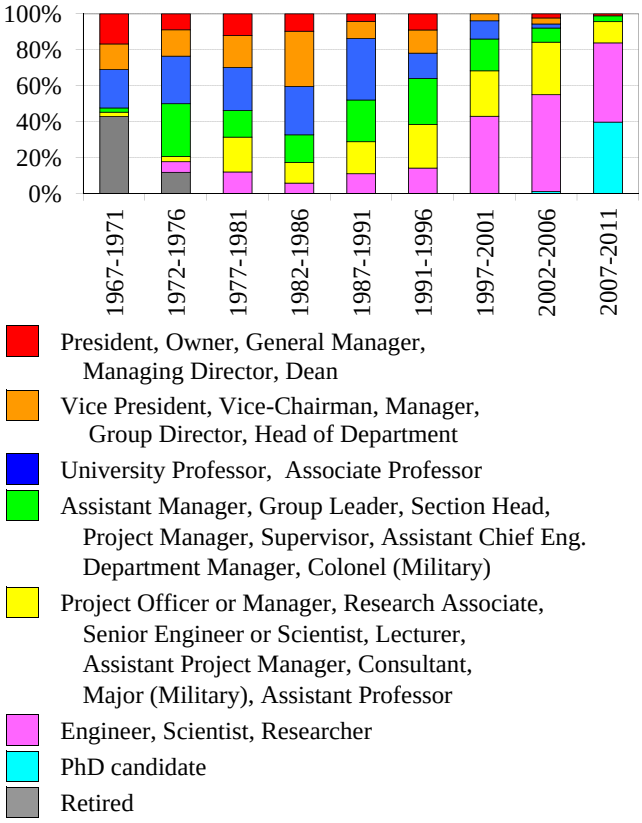


by Mario Carbonaro
DC 1968, VKI Honorary Professor
Former VKI Director
and
Claus Sieverding,
DC 1966, VKI-AA President

In view of the renewal of the Accreditation of VKI as a higher educational institute the VKI did send a few months ago to the VKI Alumni a detailed questionnaire requesting information about their careers, of the impact of the DC year on their careers and recommendations to improve the DC course. The questionnaire was sent to all Alumni whose E-mail addresses are contained in the VKI mailing listing, i.e. ∼750 out of a total of ∼1450 Alumni. Out of the 750 Alumni 400 filled in the questionnaire and returned it to VKI. The most important results will be published in the next Newsletters. At present we limit ourselves to the presentation of two graphs referring to the careers of the Alumni. To enlarge the basis for the statistics we searched also the VKI mailing list for information from those 320 Alumni who did not respond to the questionnaires. The information contained in the mailing list is up-dated whenever VKI is informed about any changes of their coordinates by the Alumni.

The first graph presents the position of the Alumni in their organization/company in function of the year of their graduation. In view of a clear presentation on one side and for more representative data the number

of Alumni was averaged over a period of 5 years. The graph starts with the Alumni graduated in the time span 1967–1971, because the number of active Alumni from the first 10 years is too small to obtain significant statistic values. The graph contains information from 617 Alumni with an average of ∼70 Alumni per 5-year period. The number of different positions is too high to quote all. For this reason, positions which are believed of equal or similar importance are grouped together into a few categories: PhD's, Engineers and Scientists, University Professors and three other categories which can be roughly labeled as lower, medium and high level Managers.

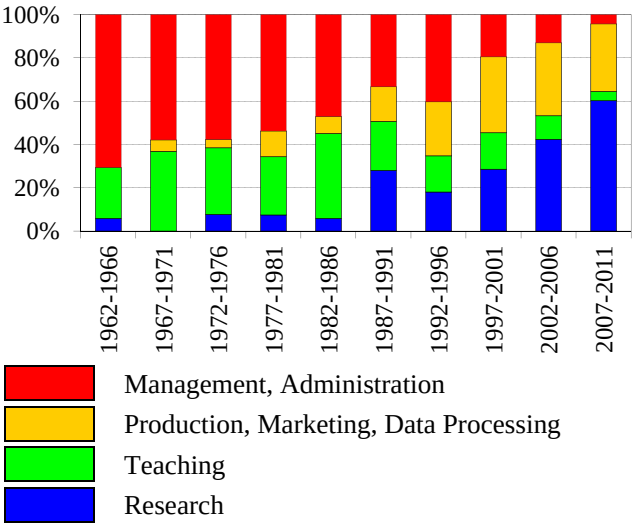


Present Titles (Positions) of VKI Alumni

In the most recent graduation period 2007-2011, the PhD candidates are still present with a share of nearly 40%, preceded slightly by the group of Engineers and Scientists with 44%. In the previous graduation period the share of the PhD candidates has dwindled naturally to nearly nothing (1%) while the share of Engineers and Scientists has grown to 53% and a significant number of PhD's have already moved into some sort of managerial position. The number of low and medium level Managers declines after a maximum growth of up to 50% for the graduation period 1991-1996 which implies that they move gradually into the highest managerial positions.

The category of University Professors (Full and Associate Professors) deserves special attention. At present 98 Alumni are University Professors. For the graduation period 1997-2001 the share of Professors is already 10% and reaches a maximum of 34% for the period 1987-91, and is in the range 22 to 27% for all previous periods.

The graph presenting the job function is simpler. We distinguish four categories: research, teaching, production/marketing and management/administration. Research decreases rapidly from an initial 60% to a few percent for the Alumni graduated prior to 1987. A similar trend is observed for Alumni in the domain of production and marketing. It is more or less constant with a share of 31-35% for 15 years and decreases then rapidly while the management increases to values of 60-70% for the oldest Alumni. The share of teaching which at present includes also Assistant Professors increases to the range of 30-40%.



Current Job Function / Type of Activity of VKI Alumni

Quoting John Wendt commenting on these statistics: "It is always impressive to see how many VKI graduates really excel, at least when expressed in terms of a professional title."

Obituaries

Paul Colin

It is with great sadness that I announce the passing on 31 August 2013 of Professor Paul Colin, former Associate Director of the von Karman Institute. I owe my full career at the VKI to him, as he proposed that I stay in his department after my DC year (1967-68), then enrolled me as research associate, and afterwards proposed to the Board of Directors my accession to the faculty. I always greatly appreciated, as all persons who have known him, his excellent engineering approaches, as well as his great human qualities and real gentlemanly behaviour.

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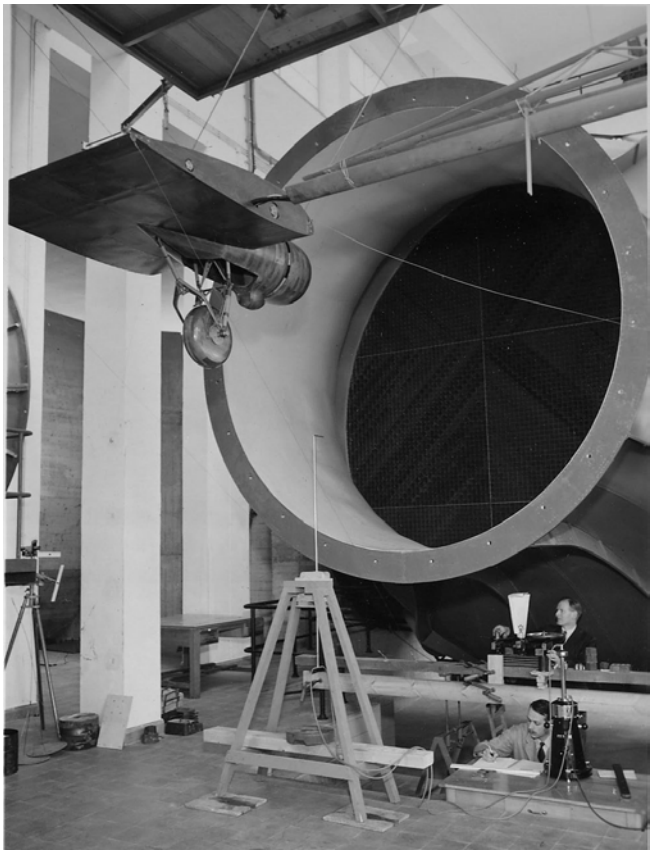

Tests of the DC-3 landing gear in the L1-A wind tunnel, in 1952. Paul Colin records data, and technical engineer Collard weights the landing gear pitching moment.

Paul Colin was born on 15 July, 1925 in Antoing, a small town in the southern part of Belgium, near the French border. At the beginning of WWII he found refuge in the UK, as did many other Belgians, including the Belgian Government. In the UK he continued his studies and enrolled in the Royal Air Force. I remember he told me once "When I had completed my instruction as a RAF bomber pilot and was ready to fly over the continent the war just finished". After the war he remained in the UK, where he received in 1948 his B.Sc. in Mechanical Engineering at the University of London, complemented by a one-year postgraduate in Aeronautical Engineering. He was registered as "Chartered Engineer (CEng)" by the Royal Aeronautical Society, and afterwards also became a Fellow of the Royal Aeronautical Society (FRAeS), which is the highest grade attainable and is only bestowed upon those RAeS members who made outstanding contributions, attained a position of high responsibility or had a long experience of high quality in the profession of aeronautics.

In 1949 he returned to Belgium and obtained the degree of "Ingénieur Civil des Construction Aéronautiques". In February 1951 he was enrolled as engineer by the Belgian Administration of Civil Aeronautics, which had in Rhode-Saint-Genèse its "Aerotechnical Laboratory". Paul Colin's early work concerned the calibration of the 3-m diameter low speed wind tunnel (then named the "Escher Wyss", now the L1-A) and its six-components mechanical balance (Technical Note Number 1 of the Aerotechnical Lab, 1952), as well as tests on the DC-3 landing gear and on wind effects on the Atomium spheres, the symbol of the 1958 World's Fair in Brussels. He was further promoted as "Ingénieur Principal Chef de Service" in 1958.

In 1956 the Aerotechnical Lab became the "Training Centre for Experimental Aerodynamics" (TCEA) at the initiative of Professor Theodore von Karman (the TCEA was renamed von Karman Institute in 1963, at the death of its founder). In 1956 Paul Colin was nominated Associate Director of the TCEA, a position which he held until the end of 1972, when having been promoted to the higher position in the Administration of Aeronautics, as "Ingénieur en Chef et Directeur", he had to return to the Administration. However, his appointment as part-time Professor at the VKI was retained, and he continued to come to the VKI for one or two days a week to give lectures, supervise students, and collaborate to the general administration of the VKI, actively promoting and supporting the Institute. In this respect, he has been a member of the VKI General Assembly since September 1973 up to now, and member of the VKI Board of Directors from October 1974 to November 1996. He also has been a member of the AGARD Fluid Dynamics Panel and of the editorial board of the Journal of Industrial Aerodynamics.



Professors Freddy Haus and Paul Colin at the Graduation Ceremony in June 1968.

During the period from 1951 to 1972, he has been working on several subjects, as aircraft performance, ground effect vehicles, high lift devices, V/STOL aerodynamics, jet flows, vehicle (ships and trains) aerodynamics, internal flows and pressure losses, industrial aerodynamics, wind effects on buildings, heating and ventilation systems. During the last four years of his professional career (1986-1990) at the Civil Aeronautics Administration, he was sent as Belgian delegate to the International Civil Aviation Organization (ICAO), in

Canada, with diplomatic status. Both he and his wife Maggy greatly appreciated all aspects of their Canadian experience.

He retired in 1990, at the age of 65, and spent with Maggy his last 23 years in their nice home with a large garden in La Hulpe, a small town close to Brussels. However, he continued to participate to the VKI General Assembly meetings, except in these last years, when he was feeling more and more tired.

He leaves his wife Maggy, their three daughters, Cécile, Sylvie, and Anne, as well as four grand children.



Paul Colin and his wife Maggy at the occasion of his 80th birthday.

Prepared by ***Mario Carbonaro***

George M. Levin

George M. Levin, 72, died June 17, 2013. He was a graduate of the 1968 Diploma Course; his project work was in the field of hypersonic aerodynamics employing the VKI Longshot wind tunnel. George is survived by his wife, Patricia, of Fairfax, VA; two daughters; three stepchildren; and five grandchildren.



George Levin at the first reunion of VKI alumni living in North America, September, 2001.

He began his 35-year NASA career in 1962 at the Goddard Space Flight Center. He worked on the Nimbus weather satellite program, on the planetary exploration program – including the Pioneer Venus Project – and from 1972 to 1981 he managed the development of the Hubble Space Telescope's first five scientific instruments. In 1981 George moved to NASA Headquarters where he managed the development of seventeen successful flight demonstrations launched on both the Space Shuttle and Delta II rockets. In 1991 he assumed responsibility for managing NASA's Orbital Debris Program and led the U.S. Delegation to the Interagency Space Debris Coordination Committee. He was a member of the U.S. Delegation to the Scientific and Technical Subcommittee of the U.N. Committee on the Peaceful Uses of Outer Space.

George was the recipient of numerous awards, including both NASA's Exceptional Service Medal and the Silver Snoopy, awarded to no more than 1% of eligible NASA employees. In 1987 he was selected by the White House to be a Presidential Exchange Executive. In 1999 he was elected to membership in the International Academy of Astronautics.

In 1997, George retired from NASA and spent the next 10 years at the National Academies as Director of the Aeronautics and Space Engineering Board.

Prepared by ***John Wendt***

Hugues Richard

The class of 1997-1998 of the Diploma Course has lost a dear colleague and friend, Hugues Richard. A sudden and terrible sickness took him away on March 10, 2013, at the age of 41. Hugues first came to VKI to perform his training period in Spring 1996 while studying in Belfort. In October 1997 he joined VKI in the EA department and was awarded the VKI Diploma in June 1998. He then spent one extra year in the TU department. He received his PhD degree in the field of "Rotor blade tip vortex dynamic in forward flight" in 2005 from the Université of Aix-Marseille 2 while working for the DLR (Göttingen, Germany).



Hugues Richard (3rd left) and Falk Klinge (2nd right, DC 2000-2001) during a full scale test campaign.

He was a brilliant scientist, deeply involved in his field of research, and a professional engineer recognized

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within the Fluid Dynamics community. He was generous with his time and was always available when we needed help or when we simply needed to talk. Hugues' coffee break in the lab, late at night, seven days a week, is one of those dear memories of times spent together. The coffee had a terrible taste, but nothing would have prevented his friends joining him and sharing these moments together. Whenever possible, Hugues used work opportunities to renew contacts with his former DC colleagues, for example to contribute to a book on Particle Image Velocimetry that has since become an important reference in the field. In that sense, Hugues was VKI-Alumni-minded long before the European Alumni branch was created. He was the kind of person we could rely on.

But most importantly, he was a close friend to lots of his teammates with many shared memories outside work. These include holidays spent with him by the seaside, skiing, or simply meeting him at home. Each time he was asking us about our work and was always interested in everything we, or our families, were doing.



Hugues Richard with his legendary smart smile

The announcement of his death has been a shock for all who knew him. Both science and friendship have lost a great man. Our kind thoughts go out to his family. Hugues, our friend, we all miss you a lot!

*Prepared by **Stanislas CALLOT, Laurent ZIMMER, Christophe SCHRAM & Thomas COTON**, with the kind contribution of **Markus RAFFEL** (DLR).*