

# LES ENGRÈNAGES LYONNAISE

## IGC 2014 a venue where gearing and cutting-edge find common ground

Jack McGuinn, Senior Editor

**Soon upon setting down in this beautiful, former (43 B.C.) Roman Colony that is now the City of Lyon, I was careening to my hotel, Mach I-plastered to the back seat of a sleek, shiny-black Mercedes taxi, when I realized I was staring at — zut alors? — cornfields!** Acres upon acres of them. As if the plane had been diabolically diverted to — Iowa? I'm in Dubuque? Not Lyon? Mon Dieu!

What was this — inverted culture shock? (In fact, no; I'll be frank: I, your intrepid "foreign correspondent" — and here it is — who has never before slipped the protective bosom of his Homeland's shores — would never associate cornfields with France. Why? you may ask. French movies are reason enough for me. Pick one: *The 400 Blows*; *The Artist*; *Diabolique*; *Breathless* — not one single cornrow in sight. So I'm copping to personal ignorance here — fin — end of story.

Moving on, things were much more as anticipated at the International Gear Conference 2014, a three-days-of-gears affair convened near the final days

August (26—28) in Lyon, Villeurbanne, France (and this seems as good a place as any to dispense with the full moniker and to roll out my unofficial — since none other exists — conference acronym — *IGC 2014*). Approximately 270 attendees from at least 27 countries witnessed proceedings that showcased (at latest count) 120 presentations of technical work addressing, in some capacity, just about every aspect of gearing known to God, man, woman and child. Equally impressive was the representation of leading manufacturing entities, universities and research facilities on hand in support and sponsorship of the conference presenters.

Making IGC 2014 financially feasible were the sponsorships of KiSSsoft, SKF, Romax, Safran, Eurocopter, CETIM and Carnot Institute I@L. Conspicuous by their absence: no U.S. commercial sponsorship; no sign of AGMA, either (but they attended the two-day, conference-organized ISO technical meetings that immediately followed the conference).

And isn't that *always* the way with these rodeos? Show up. *Who cares?* *Don't show up?* Attention *will* be paid. But

the Americans get a pass on this one. There was no U.S. involvement of any kind — excepting presenters — according to INSA Lyon Professor Philippe Velex, distinguished chairman of IGC 2014 because, he said:

"We didn't ask them."

Velex did not elaborate, but in later remarks said that "We did not contact any because a) we were not that sure that the conference was going to be a success with a large international audience; and b) we already had a number of European sponsors and no room left for additional booths. He also stated that U.S. sponsorships would be solicited for the next conference, tentatively slated for 2018. So there is *plenty* of time to work that out.

Meanwhile, he would certainly be loath to admit it, but Professor Velex was in just about every conceivable way *the* face and voice of the IGC 2014 — from delivering the conference opening remarks; to chaperoning several bus-loads of presenters and attendees to Paul Bocuse's phantasmagoric L'Abbaye De Collonges — truly a culinary Bread & Circus extravaganza that had eyes popping and jaws agape — when they weren't busy chewing; to conferring the Best Paper Award; to delivering the conference's closing comments. (I must add here that at some point the Professor's unflappable demeanor through all of this somehow recalled for me an image of that certain Frenchman with the taciturn yet wry-and-edgy personality that a duelist back in the day would have found appealing when in need of a second to watch his back — quite literally — while his life and family fortune (or simply a gambling debt) were on the line. (Ed's Note: *We cannot speak for the Professor, but doubt he is currently available for such extracurricular activity.*)

For the record, however, Velex wanted to make one thing crystal clear: "It really was teamwork with significant contributions from the members of the organiz-



Dr. Ulrich Kissling (left) making a point with an unidentified gear industry colleague at IGC 2014 (photo IGC).

ing committee and other colleagues from the lab.”

Returning to the question, one eager to elaborate on the U.S no-show issue was Dr. Stephen P. Radzevich, principal engineer-gear transmission, Apex Tool Group, LLC—and a presenter as well—at IGC 2014: “Yes, I was surprised with that. No U.S. sponsor participation indicates a lack of interest by the U.S. gear industry in the latest achievements in the field of gear research, design, production, inspection, etc.”

The other shoe dropping, rhetorically at least, was Dr. Alex Kapelevich of AKGears LLC (also a presenter) left wondering—whither AGMA?

“I don’t know why AGMA has not sponsored this conference. It usually is a sponsor of the VDI/TUM conferences in Munich.”

But this very enthusiastic 2014 gathering was certainly not lacking for collectively elite, *academic* sponsorship—and leadership—of the highest international order. And on a state level as well, with the French-based institutions that comprise the country’s historical bedrock



The “Class” of IGC 2014—Presenters and Attendees (photo IGC).

of scholarship, learning and engineering research: INSA Lyon; The National Center for Scientific Research; LaMCoS; The Technical Centre for Mechanical Industry (CETIM); Ingenierie@Lyon; and ECAM Lyon.

Asked to comment on the general quality of the papers presented, Kapelevich said IGC 2014 was a “typical, engineering university-organized conference, similar to the VDI/TUM conferences in Munich (but smaller), and many other such gear conferences outside of the U.S. There were more profes-

sors and PhD students than engineers, like me.

“As a result, many qualification papers were presented. Some of them did not look very practical to me, though I’ve found a few presented papers quite interesting.”

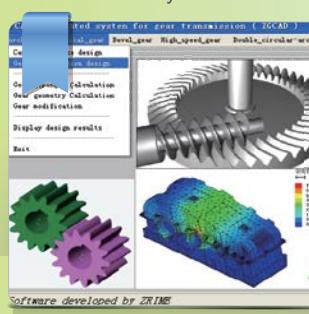
Responding to the same question, Radzevich also gave mixed reviews, first acknowledging what he termed the “newest accomplishments in the field of gearing” while lamenting the dearth of presentations addressing what for him are obviously critical—and under-researched—gearing subjects.

## ZRIME *Pioneering China Gear Manufacturing*



Located in Zhengzhou, the capital of Henan Province, Zhengzhou Research Institute of Mechanical Engineering (ZRIME) has undergone 50 years of development. The company was restructured from a former research institute under the Ministry of Mechanical Industry into a large-scale science & technology enterprise administrated by the central government of China. As one of the first high-tech enterprises in Henan Province and the pilot enterprise of scientific and technological renovation in Henan Province, ZRIME are authorized to grant the doctor's degree in field of machinery design and the master's degree in machinery design and engineering mechanics.

ZRIME are also authorized by the State for the planning and the administration of gear transmission technology in mechanical industry of China.



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"The papers presented reflect the newest accomplishments in the field of gearing—that is, in gear theory; gear design and manufacture; gear inspection; testing; and so forth," he said. "These papers should be recognized as the best available (for now).

"In the meantime, most of the efforts need to be focused on high-power-density gearing (HPD), high-RPM gearing, and low-tooth-count (LTC) gearing. As for the immediate future, HPD, high-RPM, and LTC gearing will get wider application in the industry."

While certainly not a consensus, put these two responses together, check out the Abstracts (<http://int-gear-conf14.sciencesconf.org>) when they become available, and it is clear that those attending this conference hoping to return home armed with solutions on how to make gears better, faster, and cheaper stood as much chance of that happening as McDonald's does of opening a franchise in Paris. (*They what!?* Never mind).

IGC 2014, after all, was a venue for gear brains—young and not-so-young—to present their—and “what if” may be putting it too glibly—doctoral theses and commercially supported work to an international audience eager to hear something new. This was not a Gear Expo Fall Technical Conference—this was a Gear Expo Fall Technical Conference on Absinthe. “Green Fairy” references notwithstanding, the attendees at this three-day think tank seemed to soak it up. The gear theory, that is. More than one was heard to comment that it was refreshing to hear new ideas and design approaches, to be privy to some down-the-road thinking that they’re not challenged with very often. Make no mistake—much of

what was heard and seen in Lyon may never translate to the factory floor; many of the papers presented here might never again see publication. But many attendees seemed grateful that at least the presenters had their “day in court” before their peers, if you will—an opportunity to put their work out there—maybe for the first time—and to see what becomes of it.

And along of course with the funding it takes to stage such an event as IGC 2014, those grateful attendees should also tip their chapeaux to the cited consortium of French academic institutions that was so helpful in providing a nurturing and welcoming environment that aided considerably in making IGC 2014 a success. And those who came away dissatisfied with the proceedings—or the general direction of the content of the presentations, at any rate—should remember this: the plain truth is that the program notes were quite clear as to what IGC 2014 was about, and it certainly wasn’t “back-to-basics”:

*"The main objective of this conference is to provide a forum for the most recent advances addressing the challenges in modern, mechanical transmissions."*

A last word on “success.” As made clear throughout this account, the majority of work presented at IGC 2014 dealt with “the future” of gearing—whatever that might be. Who can say from where the next watershed, significant Aha! moment in a very mature

**Prof. Dr. Bernd-Robert Höhn, center, delivered the first of the conference's plenary presentations—on high-ratio transmissions (photo IGC).**



industry will come? From which sector? Machinery? Materials? Design? Something not yet imagined?

What matters is that collegial gatherings like IGC 2014 serve a very important need in our slim but—as we well appreciate—critical niche in the planet’s transmission of power. Is it not even remotely possible that there were papers presented here—initially dismissed here in Lyon—whose relevance may not yet be appreciated for years to come? I am not an engineer—an engineer of words, maybe—but I do know a bit about wonderful things being wrought—not in steel—before their “time.” One example: do some research on the life of Vincent Willem Van Gogh.

So to all of the dedicated people responsible for the realization of IGC 2014—and IGC 2018, n'est-ce pas?—we, as should the entire international gear community, bid them:

*Bien joué! Bon travail! ☺*



A panoramic view of the City of Lyon (photo Jack McGuinn).