The evitherm Society plc: a renewed vision and new life for the Virtual Institute for Thermal Metrology

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With the recent election of the new managing staff of the Society after a stop-over lasted more than one year (Vice President for thermal metrology Jean-Rémy Filtz (LNE), Vice President for entreprises Joachim Fischer (PTB), Secretary Vincent Mathot (SciTe B.V.), Treasurer Paul Nesvadba (Rubislaw Consulting plc)), the Virtual Institute for Thermal Metrology, born from the European Project EVITHERM, is anew online.
It is setting up an aggressive programme aimed, as a non-profit private organisation, at supplementing the thermal Community of a tool for increasing the visibility of this Community, from one side toward the funding Institutions, from the other side toward the users of thermal technologies, namely the enterprises and the social services, not limited to Europe by with the ambition to extend its chapters also to other world regions.

With almost two third of the industrial processes and societal priorities depending on thermal processes, often critical for the development of innovation of product and process, and of new sustainable strategies, the thermal field is the one, of the three macro-sectors of science and technology, **mechanical, electromagnetical and thermal**, to suffer most of scarce understanding.

In the view of evitherm, thermal macro-sector includes:

- temperature as its primary quantity of reference;
- properties of materials and substances depending on temperature (most of them);
- most of the fields of chemical-physics (also referred to as physical-chemistry, depending on the actors);
- thermal processes in the industry, the services and the tertiary.

In all these frames, the thermal macro-sector suffers of less outside consideration than the other two macro-sectors with respect to their respective characteristics and importance and of less inside understanding of the advantages to form synergies between the varied expertise necessary to fully exploit the field.

Temperature first of all, probably because, as an intensive quantity, its measurement requires techniques based in the other two macro-sectors, and most phenomena looks generically usable to measure temperature, with too little understanding of the fact that the reasonably good thermometers are a few and each of them should fit the purpose.

The latter lack of understanding is reflecting, in most cases, an insufficient consideration of the peculiarities of thermodynamics, a piece of science whose development suffered, also from its inside, for some times of rationalisation and that was for long time considered as a mere extension of some concepts of mechanics. For this reason, chemical-physics, and probably even more physical-chemistry, suffers of less consideration today than, e.g., analytical chemistry or inorganic and organic chemistry.

The latter fact reflects, in particular, in the field of the studies concerning the experimental work (probably more than the theoretical work) aimed at the (accurate) measurement of thermophysical properties. If one looks behind, a dramatic decrease of activities –and funding– can easily be

observed worldwide, with an increase of the simulation techniques, considered less demanding and equivalent for most purposes.

Finally, all the above limits brings the users needing to setup, improve or to look for new thermal processes to feel less the need than in other activities of a strong link with research and of outsourcing or committing technical studies.

Even when some important activities were conducted (as recently in the EU on new materials, multifunctional, nanostructures or for the space), only very small and sparse portions of the thermal Community has been involved, in particular often missing thermal measurement specialists. One peculiar recent case has been in the EU, the iMERAplus 2007 Call, where thermal metrology was included in more than one sub-programmes, though not as a forehead subject, but none of the proposed projects concerning temperature or thermal measurements was accepted for funding, except one on Boltzmann constant.

Evitherm, is a private Company aiming at providing first, basically by means of one-stop web-based tools, **competent** basic information in the field of thermal measurements, alternative to engine-based generic searches on Internet: this is more important to floor-level users, since for them it may be difficult to appreciate the quality of generic information.

In order to fulfil this goal, evitherm aims at connecting people. Not on national basis, as this is already performed by several Institutions, in all fields of metrology, testing, thermophysical properties, chemical-physical issues; nor on regional basis concerning legal issues or the technical issues connected to them; nor, obviously, on scientific issues like already done by the regional organisations of the relevant CIPM CCs; nor, most obviously, at worldwide level, being this the task of the CIPM CCs themselves.

The above list of needs and all actions already performed by those numerous actors, however, in evitherm vision, does not cover all needs and all needed actions. One reason is just because they are so many, thus it may be necessary to efficiently address the users to the right connections with asset owners.

Another reason is that more and more the funding Institutions require consortia comprising a broad range of expertise. Nothing is more difficult than connecting people who has an insufficient knowledge of their necessary complementarities: they may conclude that they are un-necessary when they instead are, or may be obliged to abandon an idea for lack of detection of the needed complementary expertise.

In Europe, for example, a lot of single (or pools of) experts have born to help people to form comprehensive consortia, and even the European Commission has a web-based search engine for partnership. Similarly happens, probably, in other world regions. However, most of this help is generic from a technical viewpoint, or, in the field of thermal metrology, is too sparse.

In fact, in Europe, a project for thermal metrology has just been considered worth to be funded for these reasons. However, we discovered that the situation was more challenging than in other fields. The experience of the EVITHERM project initially, and of this Society so far, has been that the forehead problem was not simply to provide more compact and usable information, but that of making available, first of all, a sort of **catalytic action**, external to all the many bodies concerned with the aspects of thermal measurements, able to convey a sense of consciousness of a single worldwide thermal Community, and of common and mutual needs; across the broad frames

identified above; across the binomial provider-user; across the very broad range of precision and of depth of the needed knowledge.

Evitherm, in addition to give new impetus to its website, is now planning to implement its action:

- to provide a platform for all actors in thermal measurement, by allowing, more than presently, easy membership for both the measurement institutions at all levels and the users; and, in the case of existing Associations, to attract links also with them. The extend this function worldwide, by forming regional chapters;
- to promote information to and lobbying toward the funding bodies to stress the specific contributions that developments in thermal measurements can provide to innovation and societal progress;
- to act as a source of information for the entire Community about funding opportunities and to intermediate between the parts to help in completing the consortia, namely by linking the research providers and the entreprise;
- to act as a competent and specific partner in assembling project proposals and, when successful, in running the managing duties of the funded projects.