

Booklet on the ECCE 8's special session on process and plant safety

“Process Safety Competence – European Strength degrading to Weakness?”

Preface

Two days of lectures and discussions on something which all stakeholders in all areas of chemical and petrochemical industry doubtlessly strive for: a high level of competence in process and plant safety. Representatives from industry, associations, universities, non-governmental organisations and authorities have exchanged their respective opinions and experiences for one of Europe's most important economic sectors. Was such an effort really necessary? The answer at the end of the two days: Yes, it was!

The idea of a special session on process and plant safety (PPS) competence within the 8th European Congress of Chemical Engineering (ECCE 8) from 25th to 29th September 2011 at the ICC Berlin was born six years after having started a respective German initiative (Maintaining and improving competence in safety engineering, Position Paper of the DECHEMA/GVC Research Committee "Safety Engineering in Chemical Plants", March 2004). In 2009 a corresponding Dutch initiative followed (Strategic Approach for Safe Chemical and Energy Industries - Knowledge Infrastructure for Safety and Hazardous Substances for the Netherlands of 2020, Hazardous substances Council). Questions arose like

- Is it assured that the appropriate level of competence in process and plant safety is maintained in Europe for the future?
- Do we have indications for a trend (degradation, standstill or further strengthening of PPS competence) in Europe?
- What can different stakeholders do to maintain or further develop the high level of process and plant safety competence?

More than 50 congress participants joined the special session titled “Process safety competence – European strength degrading to weakness?” on average. What are the major results? In the view of the members of the session's organization committee the generally accepted views – also reflected in the concluding panel discussion – are:

- Most incidents or accidents happen because necessary knowledge or competence was not available at the right time in the right place. Increased automation and its improved reliability would not necessarily support the presence of PPS competence, especially when it is needed in abnormal situations.
- Today's level of safety benefits from extensive basic research in the past decades and from continuous learning from incidents and near misses. Currently the development of process safety relies to a far extent on the initiatives by a very few remaining academic or research institutions, on industry funded expert organizations, relevant associations and on a few leading companies.
- Process and plant safety competence requires specific knowledge and skills beyond what can be expected of graduates having successfully passed a standard curriculum in chemistry or chemical engineering. However – a sound basic knowledge in process and plant safety has to come with every relevant bachelor or master degree. Obviously this is only rarely the case. Furthermore, to achieve student's necessary awareness of safety needs as a first step from knowledge to competence, academic teaching must be complemented by industrial traineeships.

- Therefore, both universities and the individual professors need to be encouraged - or even urged – and enabled to ensure this necessary basic knowledge. A better European or even worldwide understanding on what this knowledge for the relevant bachelor and master degrees comprises would help.
- Industry and industry sponsored associations have practice proven concepts how to develop and maintain the new hired or existing coworkers to/at the required level of PPS competence. This for all levels of responsibility in a company – from operation to board members. As in the past industry continues to offer opportunities to gain practical experiences for students also.
- Another way to keep process and plant safety in the focus of academic education would be to use the steering effect of public research funding programs. Process and plant safety has to keep up with other developments in science and engineering. Since years, research funding programs primarily support topical research areas like climate change, life sciences or security. Other areas like safety remain neglected. One consequence is that the academic research on process and plant safety continues to decrease more than desirable. And with respect to education, there is no doubt that research rather has a positive than a negative influence on the quality of teaching.
- Last, but not least: ensuring a high level of process and plant safety needs adequate competence at different levels of responsibility, relevant societal areas or bodies as there are industry itself, the educational and scientific system, legislation and inspection, test bodies, consultants, non-governmental organisations and industry associations.

The broad agreement on the statements above encourages the bodies having prepared this session on process and plant safety competence to approach stakeholders at both national and European level. Long lasting solutions have to be found to prevent any degradation in process and plant safety competence in Europe. Chemical and petrochemical products are indispensable for the today's world, not to forget the important economic impact of the respective industrial branches. A high level of safety (health and environment protection included) is intrinsically tied to a sustainable economic success. The necessary process and plant safety competence must be available wherever and whenever needed.

To support this goal it was found necessary to compile and to preserve all the presentations given in the ECCE 8's special session on process and plant safety competence in this booklet. On the basis of what was discussed and concluded in this session all stakeholders in process and plant safety are invited to

- continue and strengthen existing initiatives developing systematic approaches to create and maintain process safety competence for design and operation
- benefit from the currently fair or even better process safety performance in Europe giving stakeholders a good degree of freedom to develop these systematic approaches without external pressure
- support the idea of an European university curriculum on process and plant safety for relevant bachelor and master degrees, best preferably with EFCE taking the lead

The organizing committee of the ECCE 8's session on process and plant safety competence will continue with its own activities, but is also prepared to support other initiatives considered helpful to strengthen process and plant safety competence creation in Europe and elsewhere. Let us start now and jointly!

P. Schmelzer, C. Jochum, N. Pfeil, K. Mitropetros

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