Maintaining and improving competence in safety engineering

Position paper
of the DECHEMA/GVC Research Committee "Safety Engineering in Chemical Plants"
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The chemical industry and the related equipment manufacturers are important contributors to Germany's economic strength and employment. To ensure further development of this industry it is important that current and future factories designed, built and operated in Germany continue to operate at high levels of safety. Safe facilities not only protect people and the environment against harm, they are also more efficient, since defects always mean downtime and financial loss. Safety engineering therefore promotes integrated process understanding.

Acceptance of these industries in Germany depends much on how well they can prevent accidents with far reaching effects from fires, explosions or the discharge of hazardous materials into the air or waters. It is therefore of vital importance that planning and operation of these facilities is conducted at the highest levels of safety engineering. The analysis and evaluation of incidents on a European and international level clearly shows that Germany has already reached a high level of safety. This is a competitive advantage, particularly as the public becomes increasingly conscious of safety and environmental protection, and economically rewards extra effort in these areas. This advantage needs to be maintained and further developed.

Like every other technology, process and plant equipment technologies are subject to dynamic developments. Safety engineering must also take this into account. Safety engineering must be an integral component of the chemical and process engineering disciplines in higher education, which can only maintain its current level of sophistication with a combination of research and teaching (see "Teaching Profile Safety Engineering", published by the DECHEMA/GVC Research Committee "Safety Engineering in Chemical Plants"). It is generally accepted that high quality teaching can only exist in conjunction with quality research so that sufficiently qualified college graduates become available to industry. Furthermore, fundamental safety engineering research becomes available for general use, as opposed to research exclusively funded by industry.

The DECHEMA/GVC Research Committee "Safety Engineering in Chemical Plants" is concerned that the requirements put forth are not recognized in an appropriate manner, and that safety engineering is no longer being developed to the degree that its strategic and economic significance merits. Seen as indications for this are:

- lack of public funding for safety engineering research
- institutes and teaching positions which previously were safety engineering oriented are increasingly shifted to other research areas
- limited course content and capacity due to the general decrease in research capacity for safety engineering at the university level
- frequently insufficient basic safety engineering knowledge among graduates, which must then be acquired in additional specialized external seminars, or from within enterprises
- a significant decrease in the number of process engineering and technical chemistry students, and concomitantly in safety engineering
- increasingly limited safety engineering research and development capacity of German industry, which, among other things is a consequence of global competition tightened by a lack of uniform international frameworks.

In order to prevent loss of competency in safety engineering, the DECHEMA/GVC "Safety Engineering in Chemical Plants" research committee suggests:

1. **Use of the DECHEMA/GVC "Safety Engineering in Chemical Plants" research committee in exercising the tasks of a competency alliance made up of**
   - design engineers and operators of chemical plants
   - representatives from research institutes
   - representatives from federal and state authorities.

   This alliance is to

   - indicate training deficits and work towards their mitigation
   - indicate and prioritize key areas of safety engineering research
   - contribute to making existing knowledge, experience and new findings available, and to explain the application thereof, particularly to SMEs.

2. **An initiative for securing financing for necessary research projects in safety engineering**

   It will require bringing together representatives of Ministries which assign and distribute public subsidies, representatives from VCI (German Chemical Industry Association), as well as decision makers from major chemical industry companies.

By making these suggestions the DECHEMA/GVC "Safety Engineering in Chemical Plants" research committee wants to make a contribution to maintaining and improving competence in safety engineering in Germany. In the interest of safeguarding the future, industry and policy makers are called upon to take up the aforementioned suggestions.