

Hydrogen and Fuel Cell Global Technical Regulations

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International standards are designed to facilitate trade between countries by allowing countries to adopt common international standards. Products that conform to these standards are generally meet acceptable levels of safety and performance. This provides the user with the confidence needed to purchase foreign products. International standards are minimums for acceptability and therefore many countries add other requirements to use of products in their country. With the growth in global trade, international standards are increasingly being used as an easy means of assuring the acceptability of products.

Since the early 1950s Europe has been strengthening the European Union whose goal is to provide Europe with a common market for goods and services. The Economic Community of Europe (ECE) has been working toward development of regional requirements for Europe. As a regional organization it is also a part of the UN. Under the UN, there are a number of working parties, which originally focused on Europe, to address various issues. One of these is WP 29, which operates under a series of agreements related to transportation. Recently WP 29 was mandated to address global harmonization of domestic and regional standards.

The first standards for hydrogen and fuel cell vehicles were proposed for on-board hydrogen fuel tanks in 2001. These proposals initiated a process through which global technical regulations (GTRs) on hydrogen fuel cell vehicles will likely be authorized by the members of WP.29 before the end of 2004. Along with authorizing the GTRs, WP 29 will likely decide upon a list of components and systems that will have to have GTRs written about them.

The focus of GTRs will be in the areas of safety and performance. Safety will require a GTR be written for the vehicle as well as its components and systems. There is a question on whether safety requirements will favor U.S. or European safety requirements. Ideally it should satisfy both, but this may be difficult unless both can be shown to have equivalent levels of risk. With regard to performance, the question really turns to that of design philosophy. Are very tight performance requirements written which, if followed, make component and system failure unlikely or are somewhat looser component standards written with the systems designed to mitigate any failures in the system components? It is possible that something between these two extremes may be written. With rapid changes in technical and product information, how much technical content will there be in the GTR? How difficult will it be to change a GTR, including its technical content?

In addition to how global technical regulations are going to be formulated, there is a question of what role standards development organizations will play in this process. One option is that GTRs could be cited by reference in international standards. This would be similar to the U.S. approach for code development where standard is referenced, and then language is added for additional safety and other considerations. A variation on this would be to refer to specific sections of the code and add much more extensive technical language to the code. A third approach would be only to cite tests embedded in international standards and write the GTRs from scratch. Finally, will the standing committees for WP.29 be able to direct ISO and IEC Technical Committees to produce standards on a schedule for use in a needed GTR? It is an open question as to whether GTRs will strengthen or weaken the existing international standards organizations.

After November when the development of GTRs for hydrogen fuel cell vehicles and supporting infrastructure are approved, we will be embarking on a process which will answer many of these questions and raise additional ones.