Schaeffler Technologies AG & Co. KG Industriestr. 3 product.safety@schaeffler.com www.schaeffler.de

## REPORT FROM PRODUCT SAFETY DAY

## 1/2015

Summary and results of expert workshops from the industry environment of "Passenger Transportation and Machinery/Plant Engineering." Held by Schaeffler Technologies AG & Co. KG on January 27, 2015.

# PURPOSE

### Contents

1.	М	otivation for the "Product Safety Day" Initiative
2.	Сс	opperation Agreement
2.2	1.	Cooperation
2.2	2.	Membership
2.3	3.	Structure
2.4	4.	Working Structure of the Members
3.	Sc	chedule of the First Product Safety Day at Schaeffler5
3.	1.	Schedule of the First Product Safety Day
3.2	2.	Workshop Method
3.3	3.	Participant Acceptance
3.4	4.	Compliance
4.	W	orking Results
4.	1.	Defining Terms in Product Safety7
4.2	2.	When Is a Product Safe Enough ("Stranded Vehicle")?
4.3	3.	The 10 Fundamental FMEA Questions11
4.4	4.	Regional Pitfalls in Product Safety11
4.	5.	Key Elements of Corporate Product Safety Structure
5.		Summary14
6.		Impressions from the Product Safety Day15
7.		Initialing
8.		Appendix:

### PURPOSE

### 1. Motivation for the "Product Safety Day" Initiative

It is not only indisputably evident, but also quite understandable, that many consumers hope to attain high standards of comfort and living with products that are both high in quality and reasonably priced.

Industrialized society has responded to this with an enormous acceleration in commodity flows and a significant increase in product complexity.

While legislators all over the world strive to protect their citizens through relevant product guidelines, entrepreneurs are faced with a convoluted challenge in light of the rising flood of statutory regulations around the world and especially the vastly different implementation interpretations by authorized bodies.



The risks that result for consumers due to disappointed expectations – and also for manufacturers because of insufficiently implemented demands – can be read about almost every day in press releases on product recalls.

Figure 1: Rise in notifications related to product safety in Europe (source: RAPEX 2015)

The traditional distribution of roles among manufacturers, suppliers, and sub-suppliers has long since become a complicated woven network of roles and responsibilities among the various business partners. Today's competitor may end up being tomorrow's supplier or even customer – and the customer for one project may also be the suppliers' sub-supplier in the same project!

### **PURPOSE**

It is essential for the original equipment manufacturer and other manufacturers to be in close contact with those who are developing these regulations so that product safety rules and their interpretation are clearly understood and can be both effectively and efficiently implemented.

As the united efforts of all involved in this process will serve consumer safety and thereby lead to satisfied customers, a regular exchange on a "Product Safety Day" within the framework of a network of companies is intended to make a valuable contribution towards improving decision-making confidence for manufacturers of industrial and consumer products.

"Product Safety" topics are discussed on many industrial committees for the purpose of preventing or limiting product liability cases. A holistic approach to improvement through corresponding measures is made more difficult by the lack of an organizational network for linking participants in this area.

In a cooperation agreement for the "Product Safety Day" network, the participating companies – together with the Federal Ministry for Economic Affairs and Energy – describe the guidelines within which a holistic approach to improving decision-making confidence for issues related to product safety can be made possible.

The "Product Safety" network serves to gain a better understanding of changing consumer and service recipient needs and to increase faith in the solutions offered by the industry through enabling it to make informed decisions with confidence.

Bernd Kraemer Vice President Product Safety Corporate Quality Schaeffler Technologies AG & Co. KG

## COLLABORATION

### 2. Cooperation Agreement

The undersigning members of the "Product Safety" company network have the goal of contributing towards ongoing product safety improvement in the interest of consumers. The members are conscientious companies with a strong portfolio of technical and electrical or electronic products, particularly in the areas of passenger transport and machinery / plant engineering.

The signatories want to contribute both as drivers and multipliers towards developing an understanding of professional product safety. The common understanding lies in identifying sustainable processes, methods, and tools for enhancing one's own decision-making confidence and for the wellbeing of the customers and users of their products. New insights, such as recommended actions, are openly communicated – even outside this company network – in terms of achieving the objectives of this product safety initiative.

The signatories cooperate with each other on the understanding that a clear commitment to high product safety standards will support the sustained economic performance of companies.

Within an environment of complex product requirements, the goal is to increase the signatories' confidence in decision-making. This is accomplished by the following:

- **4** Determining potential areas for improvement.
- Communicating thought-provoking ideas and advanced information to interest groups and public institutions.
- Outlining possible actions for efficient product safety.



Figure 2: Logo for the first Product Safety Day of the Product Safety Network

#### 2.1. COOPERATION

The "Product Safety Network" is a forum involving companies, governmental organizations, and nongovernmental organizations on the topic of "Product Safety." Cooperation takes place in a transparent fashion and in observance of applicable law.

#### 2.2. MEMBERSHIP

The members of this "Product Safety Network" have a distinctive development or production site in Germany and carry out significant global business activities. In order to ease functionality, the number of members is to be limited to around 20. In the event of repeated, unsubstantiated failure to participate, the simple successor rule applies according to which runner-up party was the first to express interest. Interest is expressed to the contact person of the company organizing the current Product Safety Day or of a company that was already the organizer of a Product Safety Day. Should the number of interested parties eventually become far more than 20, the establishment of a second product safety network is recommended.

The same process of expressing interest is required for participating in workshop analyses and determining further steps (see sub items 5 and 6 in section 2.4).

#### 2.3. STRUCTURE

- **4** The members of the "Product Safety Network" commit to maintaining the working structure.
- A representative of the Federal Ministry for Economic Affairs and Energy (BMWi) attends meetings of the "Product Safety Network".

#### 2.4. WORKING STRUCTURE OF THE MEMBERS

- 1) The members of the "Product Safety Network" are also obligated to uphold its goals.
- 2) The "Product Safety Network" organizes itself semiannually through the "Product Safety Day." Each member will conduct a Product Safety Day. The organizing member is responsible for organization, execution, and appointing the keeper of the minutes on the respective event date.
- 3) The organizer is the sole bearer of the costs for organization and execution. Each participating member bears its own costs that are incurred in connection with participating in the respective event.
- 4) The members initiate all necessary administrative processes so that the event can be carried out successfully.
- 5) The organizer summarizes the results of the respective event and passes them on as per agreement by using the template according to Appendix 2.
- 6) The participants only initial the results and actions in the minutes for which there is a shared understanding.

### AGENDA

### 3. Schedule of the First Product Safety Day at Schaeffler

To launch the network, a planning committee was formed with specialist representatives from 7 companies<sup>1</sup> and a representative from BMWi<sup>2</sup>. Inquiries with regard to cooperation<sup>3</sup> may be addressed to the organizer of the respective Product Safety Day at any time.

The objective for the first Product Safety Day was to find out through as wide a range of topics as possible the necessary focus areas for future, constructive work on this topic on the part of operationally active experts from the companies participating in the Product Safety Day.

Due to the global orientation of the participating companies and the international participants, "English" was chosen as the conference language.

### 3.1. SCHEDULE OF THE FIRST PRODUCT SAFETY DAY



Figure 3: Schedule of the first Product Safety Day

<sup>&</sup>lt;sup>1</sup> Bosch, Continental, GKN Automotive, Johnson Controls, Knorr-Bremse, Schaeffler, ZF,

<sup>&</sup>lt;sup>2</sup> Federal Ministry of Economic Affairs and Energy

<sup>&</sup>lt;sup>3</sup> In accordance with the collaboration agreement (section 2)

### 3.2. WORKSHOP METHOD

To enable a creative and open approach to defining the problem, the so-called "Knowledge Café" method was used in the workshops. This method of knowledge management makes the free exchange of implicit specialist knowledge possible among the participants. Thanks to the greater common understanding achieved in this way, solution approaches were able to be developed using this method for devising the right topics for the next "Product Safety Day."

#### **3.3. PARTICIPANT ACCEPTANCE**

An anonymous survey was carried out during the event in order to give an indication of how the subject matter and method had been received by the participants. The results show that there is interest in having groups of experts discuss this topic, thereby justifying future events.



Figure 4: Results of the participant survey

#### 3.4. COMPLIANCE

The mandatory observance of compliance rules was pointed out to all interested participants ahead of time in the invitation letter. Specific instructions, on how compliance would be handled during the event, were appended to the event documentation.

### 4. Working Results

#### 4.1. DEFINING TERMS IN PRODUCT SAFETY

The participants developed two different interpretations for this sub-item:

a) Use of imprecise safety-relevant terms.

The use of unclear terms involving ambiguity or clearly wrong wording in internal and/or external corporate communications – such as within the framework of business relationships – in the form of agreements, technical reports, notifications, other business information, etc. may under certain circumstances lead to misstatements that are unintended and yet open to challenges. For example, the "clarity" of referring to a safety level by using the term "acceptable" is not comparable to an "accepted" safety level.

Another example that was discussed is the use of the term "error" in areas where Chinese is spoken. According to the experiences of the participants, the use of such a term is interpreted as an "admission of guilt" in cases where a "deviation with danger to life and limb" is discovered. In light of this, manufacturers are advised against listing potential system deviations in a so-called "Error Memory." The choice of a less damning term, such as "System Information Memory," can ensure that not every deviation discovered in self-diagnostics is viewed as an "error" in the sense of "the cause of an accident."

The legally binding statements that result from the use of any given term will need to be checked carefully on an individual basis.

The discussion resulted in the recommendation to develop a glossary of terms relevant for product safety. In addition to the need for such a glossary to be valid across regions, it is also necessary for it to convey clear legal certainty.

b) Term definition as a communications tool.

In different industrial fields (e.g. chemical industry, electrical industry, etc.) and various safety disciplines (e.g. functional safety, electrical safety, etc.), there are approaches to safety instructions and risk descriptions that enable the addressee to behave accordingly by clearly depicting the risk or that provide the addressee with corresponding safety instructions describing how



the safety hazard needs to be handled (Figure 5).

Figure 5: Warning symbols acc. to 92/58/EEC



Figure 6: Legally binding warning symbols

In both processes, it is necessary for the addressee to be in a position to clearly interpret the corresponding depiction of each risk.

The economic operator<sup>4</sup> who communicates the risk depiction described above or formulates instructions concerning how to properly deal with corresponding risks must provide the addressee with exculpatory legal certainty as a basis for the latter's actions. This implies a transfer of liability from the

economic operator to the one addressed by the warning instructions. In various areas of public life, this "liability transfer" from the economic operator to the consumer is an accepted concept on the market – insofar as the warning labels clearly and unambiguously depict the existing risk (Figures 5 and 6). This kind of risk communication for transferring the responsibility for action could certainly make positive contributions in other technical economic areas as well:

If quality is understood as a perpetual process for completely satisfying the customer while at the same time ensuring that the product is free from defects, then this effort is part of a "zero defect strategy." Such a zero defect strategy can be helped immensely if the commissioning customer clearly and quickly communicates the hazards and risks to the supplier responsible for development. While in principle, the use of known methods from requirements management do make the cascading of system functions to component functions possible, they only provide indirect information concerning the potential error effects that may be caused by deviations in the component functions. The function of the commissioning customer normally entails system integration competency as well. As the "marketer" of the final product, the customer needs to know what failure effects result from partial or complete failure of its system when carrying out the hazard and risk analysis. Thus, it would be conceivable for communication between the commissioning economic operator and the executing economic operator to use relevant hazard and risk information to clearly inform about the consequences of product deviations, thereby allowing the supplier to conduct risk management that is adequate and above all rapid (Figure 7).

When determining further steps in the round of workshop analysis, it was decided to explore the topic of "Defining Terms in Product Safety" in greater depth on the next Product Safety Day.

<sup>&</sup>lt;sup>4</sup> Economic operator: manufacturer, importer, dealer, or authorized representative (definition according to Article 2 no. 18 of ordinance (EU) no. 305/201)

Safety Phrase Per legal regulation!			0	Ser.
	OEM	Supplier	Sub-supplier	Responsibility
Function: Part causes stranded vehicle condition!	Information to supplier	Information to sub- supplier	Information in regard to function	Ensure design robustness
Consequence: Stranded vehicle condition causes recall!	Information to supplier	Information to sup- supplier	Management of design and manufacturing controls	Ensure traceability concept

Figure 7: Hazard and risk communication

#### 4.2. WHEN IS A PRODUCT SAFE ENOUGH ("STRANDED VEHICLE")?

The example of a "stranded vehicle" – one that "breaks down" in traffic due to technical failure or a human-caused technical defect, thereby creating a potentially dangerous situation for the people in the vehicle or other road users – was given to the participants as a basis for discussion of "When Is a Product Safe Enough?".

Against the backdrop of efforts to achieve "safe conditions" with respect to functional safety for vehicle breakdowns – while, at the same time, such an occurrence is regarded by the OEM as a potential reason for a recall – it is better to speak of "safer conditions" or "less critical conditions."

In the workshops, the participants recognized the necessity of support by legislators for answering the question in the workshop title. On the one hand, it is hardly desirable to have legislators impede or slow down the introduction of innovative processes through tedious regulations; on the other, however, there is the desire for greater decision-making confidence through global harmonization of legal regulations.

In the workshops, the "safe product" was regarded as a result of "technological possibilities" and "social acceptance." Without a doubt, all progress achieved from a "zero defect strategy" is linked to the exploitation of the "technological possibilities." In contrast, "failure control by the user" is one of the requirements for the "social acceptance" of product safety limits (Figure 8).



Figure 8: Combined model for "Failure Prevention" ⇔ "Failure Control"

Such "failure control by the user" is already being demanded today by market participants through the principle of "determining guilt" for traffic situations that are not fully clear (e.g. the rule that the driver on the right has the right of way if a traffic light stops working). It may well be a lot easier for the road user to follow warning and safety signs formulated with appropriate clarity that make automated driving possible, for example. The legally binding nature of "failure control by the user" has to be guaranteed by legislators.

It is a completely different situation if the end consumer does not accept the technological innovation. In such cases, the "deal safe area" depicted in Figure 8 is not available to the economic operator, which has to design its product according to today's known rules of product safety.

Again, it is only possible for legislators to resolve this conflict situation by legally requiring individual consumers to follow certain safety measures (e.g. seat belt requirement) in the interest of the general public.

In the course of reviewing the workshop analysis, it was decided to explore the topic of "When Is a Product Safe Enough?" in greater depth on the next Product Safety Day, in particular by examining the area of tension between "technological possibilities" and "social acceptance."

#### 4.3. THE 10 FUNDAMENTAL FMEA<sup>5</sup> QUESTIONS

No "10 fundamental FMEA questions" were found yet for ensuring product safety conformity. The participants focused on two main points: Along with the known possibilities for risk management using documented action tracking within FMEA, considerable attention was also given to discussions on FMEA as a risk information tool and as a risk assessment tool.

Within a company, FMEA makes risk communication possible, from design FMEA in development to process FMEA in production. The benefits of this quick and robust communication possibility within a company are often limited by the choice of highly complex methodological approaches.

Another kind of risk communication with the aid of FMEA between companies is hindered by the fact that different company competencies result in risk information being handled in different ways and thus in rather inefficient risk management among the economic operators involved.

In the second main topic, the potential of FMEA as a tool for differentiating between a "hazard" and a "risk" was examined. This approach helps in distinguishing between a "robust" and a "safeguarded" design, thereby ensuring clear communication with Production with respect to "special characteristics<sup>6</sup>."

In the final analysis, it was decided to put the subject of FMEA back on the list of topics for future events. Clarifying the topics of "Defining Terms in Product Safety" and "When Is a Product Safe Enough?" are regarded as a necessary prerequisite for revisiting the topic of FMEA.

#### 4.4. REGIONAL PITFALLS IN PRODUCT SAFETY

The participants focused on regional interpretation differences with regard to product safety terms in use on the one hand and on the particular challenge of evaluating product safety and user acceptance of safety concepts as determined by cultural differences on the other. All agreed to leave these two topics on the list of topics for later discussion. Here as well, the prior-ranking clarification of the topics of "Defining Terms in Product Safety" and "When Is a Product Safe Enough?" are regarded as a necessary prerequisite for revisiting the topic of "Regional Pitfalls in Product Safety."

<sup>&</sup>lt;sup>5</sup> FMEA: failure modes and effects analysis

<sup>&</sup>lt;sup>6</sup> Special characteristics: product or process characteristics that require special attention in production.



#### 4.5. KEY ELEMENTS OF CORPORATE PRODUCT SAFETY STRUCTURE

Figure 9: "Product Safety" in the product life cycle

Discussed in this workshop were the questions of what measures need to be taken during the product life cycle with respect to safeguarding product safety and what tasks need to be carried out by which function holders.

The workshop results showed that all roles, functions, and necessary measures for maintaining product safety are both known and present in the participating companies.

Assuming that the existing structures and processes are effective, the potential for improvement is evident for the efficiency of the in-house coordination of roles and functions for safeguarding the necessary measures.

In particular, there is to be an emphasis on a better understanding of the roles and tasks. This can be accomplished by...

- Putting organizational function limitations in place to avoid redundancy.
- **4** Coordinating term definitions for describing the roles and tasks of a product safety representative.

Already in 2012, the VW Group launched an initiative with its suppliers demanding the implementation of a "product safety representative." In the context of this initiative, both the role as well as the requirements and organizational connection of the product safety representative within the company are described.

This initiative was expressly welcomed by the participants. The recommendation from the group of participants involved in the workshop analysis with respect to this role of the product safety representative is to support the development of a generic role and task description for such a product safety representative (PSR) with validity for both the Automotive and Industrial areas.

The organizational function assignments into different "roles" will need to be decided depending on the specific needs of the companies only. This will avoid cases of redundancy that could even have counter-productive effects under certain circumstances, and the organization required for handling the assigned tasks can be developed based on need.

These organizational function assignments to the best fit roles are the result of numerous functions related to product safety (see Figure 9) that need to be safeguarded in the course of the product life cycle.

Depending on the product portfolio and the legal area of the respective economic operator's business activities, functions such as Homologation Engineer, CE Representative, Functional Safety Manager, Safety Engineer, etc. are conceivable. Depending on the size of the company or the work involved, however, many of these functions may already be covered by existing functions in Quality, Application Technology, Testing, or other specialist divisions.

The development of generic PSR training modules would be welcomed by the participants.

In addition to designated specialist knowledge and corresponding organizational connection in the company, the personal integrity and "standing" of a PSR also play a significant role. The group of participants involved in the workshop analysis was therefore united in regarding it as unnecessary for PSR certification programs to be offered externally.

The product safety network provides an opportunity for cooperation in PSR development programs that may be set up by the VDA, VDMA, or ZVEI.

#### 5. SUMMARY

Participant feedback showed that there is a need of exchange on the topic of "Product Safety" among experts.

The commitment to continuous orientation underscores the desire for continuity with respect to what the event has to offer. The coming events will take place in the following companies in the order listed:

- Continental AG,
- ↓ Johnson Controls GmbH & Co. KG,
- GKN Automotive

Case-related cooperation is welcomed with other product safety networks, such as the German/Chinese Product Safety Work Group (supported by BMWi and AQSIQ<sup>7</sup>) and its "Automotive" subgroup (supported by BMWi, AQSIQ, and VDA).

"Cross-functional" cooperation, both between Automotive and Industrial divisions as well as among the different safety disciplines, such as "Functional Safety" and "Product Safety" is viewed as "added value" for finding solutions.

Topic limitation – mutually decided by the participating partners according to the majority principle – and the agreement to publish the results have proven valuable. The latter is the responsibility of the company that organizes the respective Product Safety Day and is initialed by the company representatives who contribute substantially to this results interpretation.

As the initial organizer, Schaeffler has added an internal Product Safety Follow-Up Day to this first Product Safety Day in order to discuss new insights from the expert meeting within the company and, where necessary, to take appropriate steps to implement them.

The associated "sensitizing effect" on the organizing company's own employees concerning the subject of product safety is positively noted as a welcome side effect.

<sup>&</sup>lt;sup>7</sup> AQSIQ: General Administration of Quality Supervision, Inspection, and Quarantine – the Chinese agency for Quality and Product Safety

# IMPRESSIONS

### 6. IMPRESSIONS FROM THE PRODUCT SAFETY DAY



### 7. INITIALING

The results presented in this report essentially reflect our impressions from the first Product Safety Day on January 27, 2015 in Herzogenaurach.

Address:	Contact:	Email:	Paraphe:
Schaeffler Technologies GmbH & Co. KG Industriestr. 1-3	Walter Süß, Global Quality	Walter.Suess@schaeffler.com	48
91074 Herzogenaurach, Germany	Bernd Kraemer, Global Product Safety	Bernd.Kraemer@schaeffler.com	BW
Continental Vahrenwalder Straße 9, 30165 Hannover, Germany	Dr. Kai-Niklas Krueger, Global Product Integrity	kai-niklas.krueger@conti.de	Ka
GKN Driveline Carl-Legien-Str. 10, 63073 Offenbach, Germany	Martin Herter, Global Customer Quality	Martin.Herter@gkndriveline.com	M
Johnson Controls GmbH Industriestraße 20-30 51399 Burscheid, Germany	Christoph Kraemer, Product Safety Europe & Advanced Quality	Christoph.Kraemer@jci.com	Che
Robert Bosch GmbH Postfach 13 55 74003 Heilbronn, Germany	Stefan Kriso, Center of Competence Functional Safety	Stefan.Kriso@de.bosch.com	la
ZF Friedrichshafen AG 88038 Friedrichshafen, Germany	Jörg Bailer, Corporate Quality Management	Joerg.Bailer@zf.com	Jah
Knorr-Bremse GmbH Moosacher Str. 80, 80809 Munich, Germany	Romuald Edmond Kana, Global KB Truck Product Safety	Romuald.Kana@knorr-bremse.com	Halfon Karreto

### **APPENDIX**

#### 8. APPENDIX:

Greeting from German Federal Minister Sigmar Gabriel, MdB, BMWi



Europa vorbildli	Product Safety Day	Federal Ministry for Economic Affairs and Energy
Produktsicherhei	Greeting words	I
Deutschland sch	Product safety is however only successful if the rules are observed by all the economic operators involved. If this is not possible on a voluntary basis, the member states of the EU must ensure that "black sheep" are excluded from the	
Aber hoheitliche	market under the key word "market surveillance".	
die Unternehmer	This is the only way to ensure safe products, and enable fair competition between companies. The market surveillance in German is exemplary in Europe.	
annehmen und d	We are campaigning for all European states to take product safety and market surveillance as seriously as we have done in Germany over the course of many years	
Diese Grundidee	But government control is only the second best solution. Product safety requires that or take sole responsibility for the safety and quality of their own products and also put thi practice.	companies s into
Produktsicherhei	With the "Product Safety Network" you are taking up this basic idea of the European d	omestic
angewiesen, wol	market in an exemplary manner. We are all dependent on such entrepreneurial comm we want to remain at the top with the quality of German products all over the world.	itment if
Spitze stehen.		
Nur mit Ihrer Un	powered by:	SCHAEFFLE
und zugleich unse	r hohes Qualitätsniveau halten. Hierfür soll als sichtbares Zeichen uns	er "Made
in Germany" ste	Product Safety Day Greeting words	Federal Ministry for Economic Affairs and Energy
In diesem Sinne Produkteicharba	We will only be able to improve product safety and at the same time maintain our high level of quality with your support. Our "Made in Germany" label is a visible sign for this.	
Produkteicherhe	With this in mind. I would like to wish you every success for the new Product	
und Qualität.	Safety Network. Today's first Product Safety Day is a clear sign of your commitment. It is the start of our joint efforts to ensure increased safety and quality.	
Ihr	Yours,	
(5.52)	line Red l	
1.	9 9	
Vigue	Sigmar Gabriel	
6		
V		
		SCHAEFFLE
Sigmar Gabriel		