PRESENTATIONS ABSTRACTS

Megatrends and Fire Safety

The megatrends IoT and e-mobility currently transform our world. The exponential growth of products used in IoT and e-mobility represent an increased fire hazard. Fire safety regulations and tests have to be adapted to these new challenges.
Electrical products used in IoT may have too low fire safety levels. Adjusted fire safety requirements and products monitoring should be introduced.
The existing car interiors requirements do not address the fire safety needs of modern road vehicles. For E-vehicles, fire tests for the rechargeable energy storage system, as well as for battery runaway including smoke formation inside cabin are important steps that improve fire safety. Enclosures, plugs and sockets in charging stations must meet different flammability tests in the USA and Europe. Here, a global solution to harmonize fire safety requirements is needed.

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3D Printed Fire-Retardant Materials: Opportunities and Challenges

There is a dynamic relationship between the evolution of flame retardancy and the progress in polymer processing methods. Opportunities offered by 3D printing include the potential for tailored and localized flame retardancy and effective solutions for fire retardant (FR) dispersion issues. This technology also enables the development of specific FR solutions and promotes sustainability by minimizing FR material waste. However, it should be noted that at the same time challenges are presented by 3D printing. These include the alteration of FR properties due to variations in printing parameters, the influence of printer types on FR characteristics, and the necessity of precise FR selection.

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Testing Challenges in Fire Safety

From process to end of life, use of materials and products evolve. Impact of new usages and new technologies increases also the complexity. In terms of fire safety, this creates new challenges. To be able to address these challenges, test methods evolve to performance-based criteria and are adapted to cover the risk.

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Fire Safety and EV

In 2020, data extracted from in 48 countries (3,3 Billion of people) showed that it was declared more than 4 million of fires leading to 20700 fatalities and 71410 severe injuries: 74 death and 195 people with severe burns per day. It was also pointed out that 32% of those 4 million of blazes were structure fires and 24% of them are residential fires. As regulation is changing slowly and bearing in mind 13 to 25% of those fires are related to electrical failures, our ecosystem has a strong responsibility being proactive proposing fire safety solutions.

It is also identified a change in our habits. The world is more and more “electric” especially considering the ambition of reaching the Net Zero emissions by 2050. Electrification became key replacing technologies or processes that use fossil fuels by electrically powered equivalents and electricity generation needs to shift to low-carbon sources such as renewables:

- More than 500 GW of renewables generation capacity are set to be added in 2023, a new record.
- More than USD 1 billion a day is being spent on solar deployment
- The share of electricity in energy demand will need to increase by 4% per year to get on track with the Net Zero by 2050 Scenario. It is hard to imagine but 20% of increase means the current energy consumption of Europe and US…

Finally, manufacturing capacity for key components of a clean energy system, including solar PV modules EV batteries and electrical grids is expanding fast.

At Nexans, we took the commitment to Electrify the Future switching everywhere possible from traditional solutions to fire safety cables and/or fire safety electrical systems.

We identified at the early stage that new usages when combined with a low refurbishment ratio of buildings, high densification of towns, increase of the demography, increase of the electricity demand, climate changes will increase the fire risks drastically. One example is the development of a specific solution dedicated to supply power to our Electric Vehicles.

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The importance of fire safety in E&E-Products for the All Electric Society

Phoenix Contact is producing around 100.000 different products, which are the backbone of core Industries such as Energy, Infrastructure, building technology, process automation, E-mobility and for the all Electric Society now and in the future. There products are necessary and important for example for power distribution and the whole data industry. Due to this importance to the industry and society, the requirement especially for fire safety are very high and have a big impact on the selection of plastic materials. The requirements consist of product standards, Industrial development such as miniaturization of the components and special costumer needs.

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