

Press release

**Interactive educational robot with functional components made of
THERMOLAST® K TPE compounds
Waldkraiburg, October 2019
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Teaching robot “feels” and “looks” with transparent TPE complying with the DIN EN 71-3 standard for toy safety.

Run Photon run ... with compounds from KRAIBURG TPE

KRAIBURG TPE is supplying thermoplastic elastomers (TPEs) for several functional components of the Photon, an innovative educational robot. Two established THERMOLAST® K compounds are being used for the running surfaces as well as the feelers and eyes of the interactive robot. These compounds include a highly transparent product from the FC/ht series that complies with the DIN EN 71-3 toy standard.

The Photon educational robot launched by Photon Entertainment Sp. z o. o. based in Białystok (Poland) is a teaching robot that helps children expand their logical skills while they play. Photon is steered using a centrally placed castor and it moves on two laterally mounted rear wheels, the running surfaces of which are made of a GP/FG THERMOLAST® K compound. Two transparent feelers at its head serve as antennas and light sensors, respectively. To provide “emotional” feedback, the robot has two eyes that can change color, as do the feelers. The feelers and eyes are made of FC/ht THERMOLAST® K compound.

“We wanted the children to experience the robot not primarily as a technical toy, but rather as an interactive companion that promotes logical thinking and helps them explore the world of robotization and digitalization while they play,” says Michał Grześ, co-founder of Photon Entertainment. “It goes without saying that we paid attention to compliance with the strictest standards during the development process, including EN 71-3, which regulates the migration behavior and physiological harmlessness of toy materials and their flame-resistance.”

KRAIBURG TPE GmbH & Co. KG
Friedrich-Schmidt-Strasse 2
84478 Waldkraiburg
Germany

Phone +49 8638 9810-0
Fax +49 8638 9810-310

info@kraiburg-tpe.com
www.kraiburg-tpe.com

Media contact

Simone Hammerl
Corporate Communications Manager
Phone: +49 8638 9810 568
simone.hammerl@kraiburg-tpe.com

Asia-Pacific
Bridget Ngang
Marketing Manager Asia Pacific
Phone: +603 9545 6301
bridget.ngang@kraiburg-tpe.com

Communications agency

EMG
Siria Nielsen
Phone: +31 164 317 036
snielsen@emg-marcom.com

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It's no accident that the educational robot was invented in the college town of Białystok in eastern Poland. The local technical college has been regarded as a "think tank" for innovative robotics worldwide since 2014, when the University Rover Challenge was held in the USA. That was already the third time that a team from Białystok had won the challenge – with the Hyperion 2 Mars robot, construction of which was directed by Michał Grześ.

Białystok is also the base for Experteam Sp. z o. o., which specializes in innovative plastics applications and is supplying injection moldings for the Photon. "The robot's running surfaces, feelers and eyes are basic functional parts and interactive components, and we were looking for materials for them that would provide both a pleasant touch and the necessary durable robustness for everyday use," explains Paweł Matczuk, New Project Introduction Manager at Experteam. "These applications were the first project that we've implemented together with KRAIBURG TPE. The materials manufacturer provided us with excellent support, starting from selecting suitable thermoplastic elastomers to color-matching the components on site – enabling us to meet the ambitious schedule for launching the robot."

For Photon's feelers and eyes, Experteam chose an FC/ht (Food Contact, highly transparent) compound from the THERMOLAST® K series that has already been tried and tested many times in different end products that come into contact with food and skin. The applications include household items, packaging, razors, toothbrushes and last but not least toys. In addition to satisfying the criteria set by the FDA (CFR 21) and EU Regulation No. 10/2011 for applications with food contact, the compound also meets the strict requirements of DIN EN 71-3 for the safety of toys, which limits the use of ingredients containing heavy metals.

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The selected TPE compound also provides superior flowability and nonslip soft-touch characteristics, combined with a hardness of 80 Shore A. Its excellent transparency supports interaction with the robot, as its feelers and eyes are also designed as communicative light elements that change color depending on the task or “reaction” and require good light scattering.

A black THERMOLAST® K compound from the GP/FG (General Purpose, Low Fogging) series is used for the Photon's running surfaces. The compound's 60 Shore A abrasion resistance ensures that the robot does not leave any marks on sensitive floors. This TPE also provides good flowability and pleasant touch characteristics. In addition, it is UL94 HB-listed. Typical applications are functional elements such as handles, thumbwheels, push buttons, switches, seals and gaskets.

The design of the Photon educational robot is based on its functions being activated step by step – moving toward targets, identifying obstacles, noticing touch contacts, and reacting to light, sounds and language. This means the children can learn about programming while they play. Photon Entertainment also offers the robot as a package with various teaching apps for schools and kindergartens. “We are pleased that we were able to help make this remarkable educational toy a success,” says Michael Pollmann, Director of Sales and Marketing EMEA at KRAIBURG TPE. “The Photon underlines the versatility and potential of our efficient thermoplastic elastomers for challenging innovations in all sorts of different application areas.”

About KRAIBURG TPE

KRAIBURG TPE (www.kraiburg-tpe.com) is a global manufacturer of thermoplastic elastomers. From its beginning in 2001 as subsidiary of the historical KRAIBURG Group founded in 1947, KRAIBURG TPE has pioneered in TPE compounds, today being the competence leader in this industry. With production sites in Germany, the US, and Malaysia the

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company offers a broad range of compounds for applications in the automotive, industrial, consumer, and for the strictly regulated medical sectors. The established THERMOLAST®, COPEC®, HIPEX®, and For Tec E® product lines are processed by injection molding or extrusion and provide numerous processing and product design advantages to manufacturers. KRAIBURG TPE features innovative capabilities as well as true global customer orientation, customized product solutions and reliable service. The company is certified to ISO 50001 at its headquarters in Germany and holds ISO 9001 and ISO 14001 certifications at all global sites. In 2018, KRAIBURG TPE, with over 640 worldwide employees, generated sales of 189 million euros.

About Photon

Photon Entertainment Sp. z o. o., based in Białystok (Poland), develops and distributes interactive robots including programming software and specific apps. The company was founded in 2016 by Marcin Joka and Michał Grześ, who created the Photon robot that helps children develop their logical skills. Photon received the European Business Angels Network Award as Best Early-Stage Central & Eastern European (CEE) Startup at the EBAN Congress in 2018.

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The Photon interactive educational robot with feelers, eyes and running surfaces made of THERMOLAST® K compounds from KRAIBURG TPE.

(Image: © 2019 Photon Entertainment Sp. z o. o.)

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Contact person for specially high-resolution images: Siria Nielsen
(snielsen@emg-pr.com, +31 164 317 036).