



## Research and innovation

**The Capital Group strategy in the area of products and services consists in offering high quality products, which are often designed to individual orders and tailored to customers' needs.**

Therefore, the priority is to invest in people and state-of-the-art technology, which translates into attracting a growing customer base both in Poland and abroad. The R&D activities, innovation and continuous improvement of machinery are factors which drive the success of the organisation and the development of its core operating segments, based on dialogue with the existing and potential customers.

### Extruded Products Segment

The **Research and Development Centre within the Extruded Products Segment** carries out R&D projects aimed at introducing new technologies in production, in order to extend the product offer and improve the quality of products in response to the advanced customer requirements. The research projects include, for example:

- optimisation of the production process of billets made of 6060 alloy, highly suitable for fast profiles extrusion, which will enable the development of a technology of profiles manufacturing from billets of lower alloy components content, with maintained strength parameters;
- development of a technology for manufacturing drawn bars with mechanical properties strictly determined by the customer requirements, which will enable the extension of the assortment of extruded and drawn products from hard alloys;
- a separate group comprises projects for the automotive sector, including mainly work on the systems managing the consequences of car crashes (crash management systems). The aim of the projects is to provide the established car manufacturers of the premium class with profiles manufactured by the EPS, which fulfil the requirements for passive safety systems forming part of a car body structure. At the moment, the Centre and its automotive partners engage in several projects aimed at developing a series of solutions for new car models in premium class, which will enter serial production in the coming years.

### Aluminium Systems Segment

Responding to the market expectations, the **Aluminium Systems Segment** developed and prepared for implementation new products intended for system sales and dedicated to civil engineering, as well as developed and modernised the selected existing solutions. The main development projects included:

- development, testing and production implementation of new curtain wall systems, which apart from the capacity to withstand significant wind loads, high thermal performance and water tightness, will enable compensation of the building structure movements, which is currently one of the main requirements posed to the modern façades on high-rise buildings;
- within the systems development solutions, sliding systems and openable windows were created and successfully tested in 'hurricane' conditions, which will enable their installation in the world regions where such extreme phenomena occur;
- in cooperation with one of the universities of technology, a state-of-the-art structural solution was tested, which will greatly improve the load capacity of mullion and transom curtain wall systems;
- a system for integration of Venetian blinds with mullion and transom curtain wall systems by Aluprof was developed to create one, cohesive external blinds system. After positive completion of the type tests required by EN standards, the products will be introduced into system distribution;
- current development and modification of the selected façade and window-and-door systems, including those fire-resistant ones;

- obtained were further approvals for the selected systems to be sold on the Polish, European and American markets;
- a new system of external glass sliding door with fashionable opening function was developed, which apart from the functional and utility characteristics is distinguished by very high thermal insulation parameters;
- intensive R&D works with regard to external and internal fire-rated systems, including walls, doors and windows of various opening functions, as well as works related to obtaining marketing authorisations for the products in accordance with the European standards and individual national standards.

## Flexible Packaging Segment

Thanks to the long-term process of organic investments, the related engineering progress, and increase of its production capacity, the **Flexible Packaging Segment** has extended its portfolio for new, innovative products and improved its market position.

Following the trends observed on the packaging market, the FPS cooperates with its customers and carries out many projects aimed at the development of thinner, more homogeneous and recyclable laminates. New solutions in flexible packaging are based mainly on the use of polypropylene and polyethylene films in laminates. The currently implemented new PPB<sup>TM</sup> films based on polypropylene are produced in the blown-film extrusion process. They may be used as a mono-film or as a component of homogeneous two-layer laminates, where the second layer is made of BOPP film manufactured at Alupol Films in Oświęcim. The BOPP/PPB laminates reflect very good mechanical and barrier parameters, much better than the BOPP/BOPP laminates. Thanks to these properties, among other things, they may be used in packing many types of food, e.g. instant foods, seasonings, coffee, fresh meat, cold cuts, bread, etc. The laminates comply, at the same time, with the guidelines of the 'European strategy for closed-circuit plastics'. There have also been developed packaging based on coated papers with heat-bonding and barrier properties as well as laminates with HBF9<sup>TM</sup> barrier films.

All the proposed solutions guarantee food safety and may be printed either with the rotogravure or flexographic techniques. Due to the specific properties of the PPB<sup>TM</sup> and HBF9<sup>TM</sup>, the 3-, 4- and 5-layer laminates available on the market, containing aluminium, plastic and paper, may be replaced with 2- or 3-layer laminates of lower basis weight and more homogeneous structure. This means that the laminates require less material than the ones applied so far, which contributes greatly to reducing the quantity of plastics introduced to the market and reduces the impact on natural environment.