

# Research and development

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The Capital Group strategy in the area of its products and services consists in offering high quality products, which are often designed for individual orders and tailored to customers needs. Therefore, the priority is to invest in people and state-of-the-art technology, which is translated into attracting a growing customer base both in Poland and abroad. The R&D activities, innovation and the continuous improvement of the machinery are factors which drive the success of the organisation and the development of its core business segments, based on a dialogue with the existing and potential customers.

## Modern architectural solutions

Meeting the expectations of the market, Aluprof S.A. representing the Aluminium Systems Segment has been systematically developing new products and modernising the existing solutions. In 2018 particular attention should be paid to the development and practical implementation of glazed aluminium curtain walls with complicated spatial structure, dedicated to a prestigious high-rise building in Warsaw. The satisfaction of very high tightness and thermal requirements was confirmed by tests carried out in accordance with European and US standards. Several new products were developed and sold on a regular basis, including indoor sliding windows, panel doors and a system of glass barriers to be mounted on the outside of windows, not only aluminium ones. In addition, the Company started to distribute an innovative fire-rated external windows system, which, in addition to the fire resistance, is also characterised by high thermal performance. The products meet the latest European requirements. In order to support the expansion of the Segment abroad, new versions of several window and door systems as well as façade systems were developed for the selected markets in Western Europe and the USA. Apart from the development of the Segment core products, new types of system accessories were introduced. They include new window and door hardware systems, with some speciality solutions.

As regards fire protection, a new system of fire doors with thermal insulation intended mainly for outdoor use has been developed and tested. Combined with the previously introduced fire-resistant windows, they will become one fire-rated window and door system with high thermal resistance. A curtain wall system with window blocks fixed in glazing such as to create the effect of a 'floating window' was designed and implemented in a building in the Czech Republic. Moreover, a concept of ventilated façades was developed, enabling the application of various materials for external coating. An innovative system of mullion-and-transom curtain wall fixing, withstanding the load of glazing up to 1,000 kg, was developed, patented and tested. Curtain walls dedicated to selected buildings on the American market have been designed, tested in the USA, and put into production. Some of the existing products have been modernised, including the overlay façade for either steel or aluminium subframe, selected depending on the destination of the building and the external load. Among the documents permitting products trading, the European ETA applicable to the sale of one of the fixed fire-rated partition wall in the EU was obtained, as well as a Polish document for roofing material, also with fire rating. Apart from the marketing of new systems and

modernisation of the existing ones, tests for CE marking have been carried out as well as individual building tests.

### **Profiles for modern and innovative industrial sectors**

Grupa Kęty S.A., with its Extruded Products Segment, is a leading supplier for the industries where particular accuracy and innovativeness of products is required. Therefore, the Company is at the cutting edge of the industries searching for precision and product innovation, i.e. the automotive industry or transport, where in 2018 the Company recorded the most substantial sales increases. Attracting customers from such industries makes it possible for Grupa Kęty to constantly and efficiently expand export sales as well as to develop and improve its products. That is supported by the utmost utilisation of the Company technical facilities, like the in-house Research and Development Centre (RDC), which ensures further upgrading and diversification of the offered products for improvement of their competitiveness on the markets the Company currently delivers to or future ones. The scale of the RDC activities may be demonstrated by ca. 10-20 thousand tests carried out in 2018 for the purpose of current production and the pending R&D projects. The following works are worth particular attention:

- continuous extension of sections assortment intended for crumple zone control and bodywork structures in the automotive industry, fulfilling high requirements of the established manufacturers in that industry, which comprises both launching the manufacturing of new products fulfilling the requirements of the implemented material classes, as well as developing manufacturing technologies for products in higher material classes, or product certification at the subsequent OEM recipients;
- launch of sections production for the automotive industry, fulfilling higher-than-standard requirements with regard to the furnishing of the 35 MN press with latest generation system for the extruded products water cooling at the run-out;
- production processes optimisation, consisting in laboratory testing of new parameters (e.g. thermal treatment), which results in the improvement of production performance and reduces energy consumption by the process. The works are performed in cooperation with renowned scientific and research institutions, such as the Light Metals Institute in Skawina or the AGH University of Science and Technology in Kraków. Moreover, cooperation with regard to advisory services and exchange of experience has been started with Hydro Aluminium – one of the world leaders on the aluminium market.

### **Environmentally-friendly laminates**

Alupol Packaging has been promoting ecological laminates, fit for recycling, with low basis weight incorporating high-barrier HBF9TM and BOPP films. The HBF9TM films are produced by way of blow-moulding of multilayer plastic films, thanks to which products of complicated structures and specific barrier properties may be obtained. Based on the possibility of using high-barrier plastic raw materials and combining them with polyolefins in the production process, films characterised with low permeability of gases, moisture and fragrances as well as very good sealing, mechanical and optical properties

are obtained. Laminates produced with the application of such films can be used in packaging refrigerated food and in the process of thinning laminates used to pack products with extended shelf life.

Due to the specific properties of the films manufactured by the Company, the 3-, 4- and 5-layer laminates available on the market, containing aluminium, plastic and paper, can be replaced with 2- and 3-layer laminates with a lower basis weight. Thus, the technology is less material-consuming than the one applied so far. In addition, lower basis weight of laminates results in a reduced quantity of packaging introduced on the market and significantly contributes to environmental protection.

Alupol Films, launched in 2016, has been manufacturing a wide range of BOPP polypropylene films. Within two years, the company developed and implemented technologies for the production of a variety of BOPP films, including transparent, white, matte and metallised ones with various properties. To meet the market demand, films with various friction factors, low seal temperature and excellent optical properties have been developed. In connection with Alupol Films fast development, a decision was made in 2017 on the construction of a new plant in Oświęcim. Currently the construction project is highly advanced. Commissioning of the plant will result in another major growth of production capacity in the Flexible Packaging Segment.