Research and development

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. R&D activities, innovation and continuous improvement of machinery based on dialogue with the existing and potential customers are the factors which drive the success of the organisation and development.



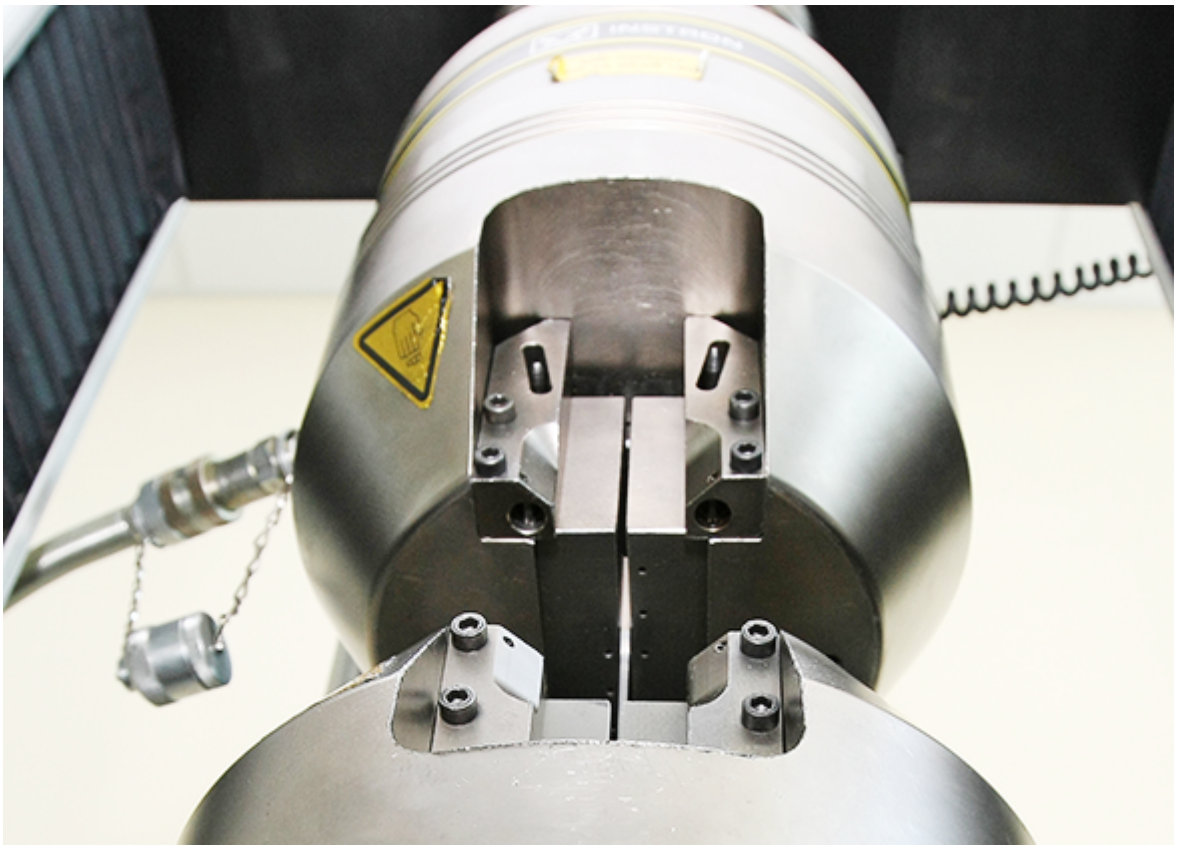
Extruded Products Segment

The Research and Development Centre operating within the 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:

- the Crash Management Systems Project (systems to manage the consequences of car crashes), which is aimed at obtaining certificates from the established automotive manufacturers for the production of profiles by the EPS in the technology developed by the R&D Centre [CBR]. Cooperation has been established with the manufacturers of Crash Management Systems, i.e. passive safety systems forming part of a car body structure. At the moment the CBR with its automotive partners engages 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. The task of the CBR is to select the adequate aluminium alloys and extrusion parameters, and to carry out a detailed control of

the extruded profiles by way of carrying out series of tests,
- development of a technology for manufacturing extruded products on the new 36 MN indirect press as well as manufacturing products from the new EN-AW 2219 alloy. The project enables production of rods of much larger diameters than before and extension of the product offer for the innovative sectors of industry.



Works continue on obtaining certificates/production permits or higher material classes in reference to automotive segment profiles. The work covers both development of new alloys and selection of the appropriate engineering parameters at each stage of the production process.

An important part of the CBR operation is internal staff training in the research capacity of the CBR in the context of automotive customers specifications and assessment of the possibility of carrying out tests to manufacture new product assortments. The CBR opens an opportunity for the future engineers to gain professional practice and first live experience in industry.

Aluminium Systems Segment

Responding to the market expectations, the Aluminium Systems Segment developed new products intended for system sales dedicated to civil engineering and prepared for their implementation. Moreover, some of the existing solutions have been extended and modernised.

Special attention needs to be paid to a new product group – curtain window systems. There had been developed and implemented several types of the system, which were first applied on the USA market, in New York. Owing to the prefabrication of complete segments, the solutions ensure high accuracy and repeatability of characteristics, and, in consequence, high assembly speed in civil engineering structures. Moreover, the systems ensure high thermal performance, mainly due to the assembly method, which guarantees proper window operation and stability even in the case of significant relative displacement of the building structure. The systems were successfully tested in the USA, fulfilling high building requirements and American standards.



To react to the high requirements of further structures located in the USA and other foreign markets, systems of curtain windows and walls have been developed to transfer wind load on a very high, unprecedented level.

Two new systems of curtain walls with openable windows ensuring compensation of the building structure movement have been designed and implemented. The systems were tested and applied in a high-rise building in Poland.

As regards façade solutions, worth mentioning is the new overlapping structural system and modernisation of the mullion and transom curtain wall systems in order to improve functionality and extend the scope of glazing, in response to the high requirements of the thermal standard.



In 2019 further intensive development work was carried out in the area of fire-rated windows, doors and walls, mainly in EI30 and EI60 class, with the simultaneous maintenance of high thermal performance. A series of classifications and documents were obtained to permit the use of the group of products in many European countries, in accordance with the harmonised EN standards and additional local regulations.

Owing to a great diversity and frequent changes in domestic requirements, the research and development work on fire-rated systems will continue in the subsequent years.

Flexible Packaging Segment

The engineering advancement and extension of the Flexible Packaging Segment portfolio with new and innovative products improves the Segment position among the major European manufacturers of packaging. That is possible owing to a long-term process of organic development and, consequently, increasing the production capacity,

production costs optimisation and implementation of new technical solutions.

Current cooperation with our customers contributes to the performance of many projects aimed at developing thinner, more homogeneous laminates, with less printing than applied so far. The activities are aimed at a reduction of the quantity of plastics entered on the market and, on the other hand, easier packaging recycling.

In accordance with the packaging market trends, in 2019 Alupol Packaging developed innovative PPBTM polypropylene films manufactured by way of extrusion and blow-moulding. Laminates based on the PPBTM and BOPP (Biaxially Oriented Polypropylene) films manufactured at Alupol Films are characterised with homogeneous structure and are, thus, easy to recycle. They also reflect very good mechanical properties, much better than BOPP/BOPP laminates, and ensure achievement of optimal parameters to guarantee food safety. Therefore, they may be used in packing many types of food, e.g. instant foods, seasoning, 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.