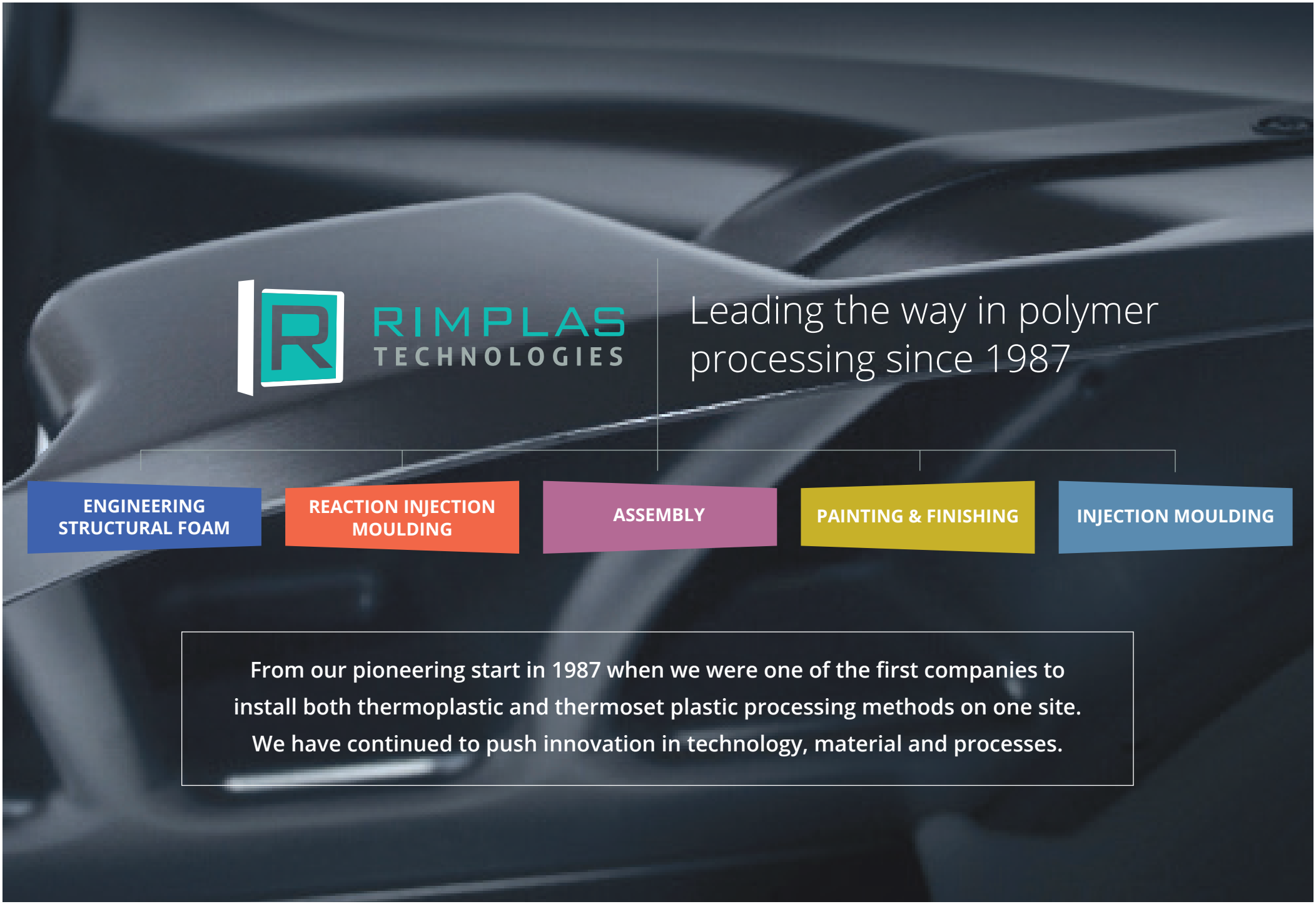
RIMPLAS
TECHNOLOGIES


# Excellence in Polymer Processing


RIMPLAS
TECHNOLOGIES
Leading the way in polymer processing since 1987
ENGINEERING STRUCTURAL FOAM
REACTION INJECTION MOULDING
ASSEMBLY
PAINTING & FINISHING
INJECTION MOULDING
From our pioneering start in 1987 when we were one of the first companies to install both thermoplastic and thermoset plastic processing methods on one site. We have continued to push innovation in technology, material and processes.

## We are a highly innovative plastic moulding company which has continued to make considerable financial investment in technology, equipment, material, processes and people.

A customer focus approach has been key to the introduction of injection moulding and secondary finishing processes. We work with customers on a broad range of components and products from initial concept, 3D CAD models, through to full production. Our expertise and knowledge is always available  for our potential and existing customers.

### ISO 9001 Quality Management System - key driver throughout

This internationally recognised accreditation is firmly embedded in all that we do. We look to continually improve and streamline operations, reduce costs and build a resilient sustainable business that benefits our customers throughout the world.

### A strong environmental ethos

As with our quality management accreditation, we take our environmental responsibility as seriously. We continually strive to recycle wherever possible and reduce waste. In addition, we work closely with paint manufacturers to help them to develop the performance water-based coatings that are needed in our industry.

**We are only to happy to share our knowledge and expertise of all our processes so please don't hesitate to contact us if you have any questions.**

# Engineering Structural Foam (ESF)

With Engineering Structural Foam (ESF), you can produce plastic parts that incorporate complex curves, bosses, ribs, or gussets from a single moulding, which can help drive costs down. It is also possible to create moulded plastic parts and components with thicker wall sections whilst maintaining a lightweight and more durable honeycombed / closed cell structure.

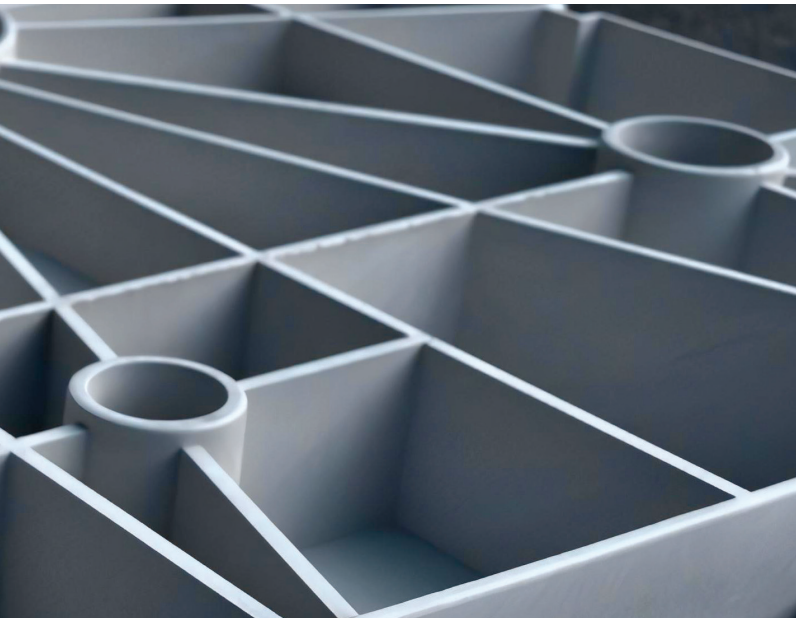
Engineering Structural Foam (ESF) is increasingly used for applications where wood, concrete, metal fibre glass and solid plastics are traditionally used for industries such as aerospace and automotive, where increased strength, weight reduction and design flexibility are required.

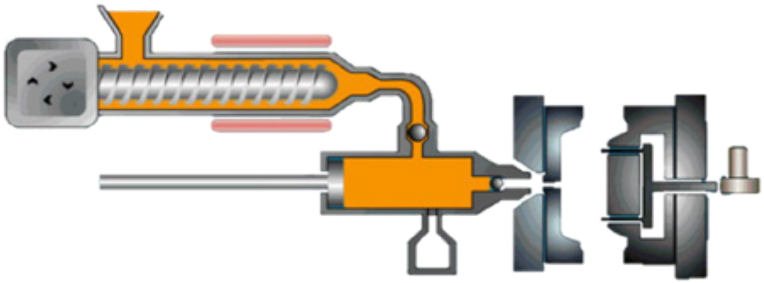
## Discover the many benefits Engineering Structural Foam (ESF) can provide

Among the many benefits Engineering Structural Foam (ESF) moulding offers is its environmental credentials. Using recycled polymers, the foam moulding process use less energy and raw material than other processes, and once the component has come to the end of its useful life, it can easily be recycled, and because the process uses a gas to create a closed cell structure, less material is used to create the parts with a greater wall thickness.

## You should contact Rimplas to discuss Engineering Structural Foam (ESF) if:

- You regularly buy in large volumes of large moulded parts;
- Your designers are looking to incorporate complex curves, bosses, or product-specific features into a plastic component;
- You are looking to increase the strength of an existing component;
- Plastic moulding weight reduction is a key driving factor;
- You are looking to combine multiple injected moulded parts into one moulded part;
- You would like to replace an aluminium machined part or a pressure die-casting component, into a lower-cost plastic part;
- Your parts are weight or load bearing;
- Your plastic parts are prone to impact loading;
- You need larger injection moulded parts with a lower tooling cost.





# Pushing the boundries with Engineering Structural Foam (ESF)

### What is Engineering Structural Foam?

Although similar to conventional injection moulding, ESF offers Design Engineers considerably more potential. By introducing a chemical blowing agent into the thermoplastic polymer melt, an extremely rigid part with solid outer skin is produced with an immensely strong and stable honeycomb core.

### Outstanding strength to weight ratio

ESF has a superior weight to strength ration 7 times greater than steel and 13 times the rigidity of zinc, making it an outstanding high performance solution where strength and weight are key product drivers.

### Stronger, lighter—an innovative alternative to injection moulding

In the continuing search to achieve greater strength and weight advantages in such industries as aerospace and auto motive, ESF is increasingly used because of its greater design flexibility and potential. ESF is also find favour in the design of hi-tech product components, such as electronics and medical equipment due to it superior strength and weight performance.

### Are dramatic section changes possible?

ESF beats conventional injection moulding hands down as it allows for complex curves, bosses and product specific features to be introduced into structural components. Sink is also drastically reduced on “A” surfaces—even with substantial ribs and bosses on the “B” surface.

### Can costs be reduced?

With the ability to introduce additional and more complex features within the mould, component inventory and component costs can be substantially reduced, as can deign complexity and part count.

### Are very thick wall sections possible?

ESF does not suffer from the same internal stresses as injection moulded components, meaning thicker wall sections can be designed which are more durable and lighter in structure.

### How large is large?

Large components can be manufactured up to 10kg and in excess of one metre square.

# Reaction Injection Moulding (RIM)

RIMPLAS Technologies manufactures high-quality mouldings using both System 60 and System 110 polyurethane thermoset moulding processes. To meet today's stringent manufacturing requirements, we have continuously invested in the most up-to-date plant and machinery to give us one of the most modern polyurethane moulding shops in Europe. Our expertise in providing design and technical support to existing and prospective clients enables new projects to be taken from initial concept to final production in weeks rather than months.

## System 60 - RIM (Reaction Injection Moulding) Polyurethane System 60 (PU)

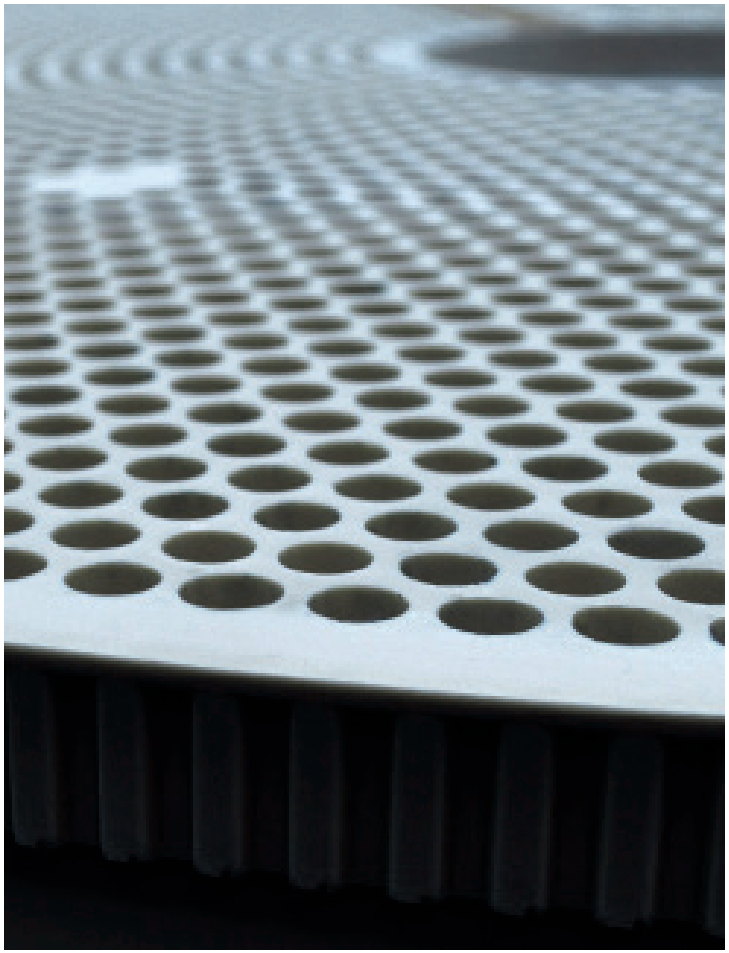
System 60 is a foamed integral skinned rigid polyurethane ideal for use in a wide variety of areas where small and medium volumes of mouldings are required.

This versatile material is ideal for engineers and designers alike, as it gives maximum mechanical and styling flexibility, enabling professionally finished products to be manufactured economically.

Rapid toolmaking timescales coupled with low investment costs makes System 60 the first choice for applications in many industries including medical, electronics, computing, automotive and building.

## Performance advantages

- **Practically unlimited scope for styling and engineering design;**
- **Very low tooling costs in comparison with other systems;**
- **Chemically resistant with dimensional stability along with thermal, electrical and sound insulation properties;**
- **Flame retardant to meet UL 94 V0 specification;**
- **Environmentally friendly CFC-free material;**
- **Allows for severe changes in wall section from 5 to 100mm locally;**
- **Apertures can be moulded against line of draw by using loose inserts;**
- **Construction elements can be moulded integrally to make assembly operations easier.**

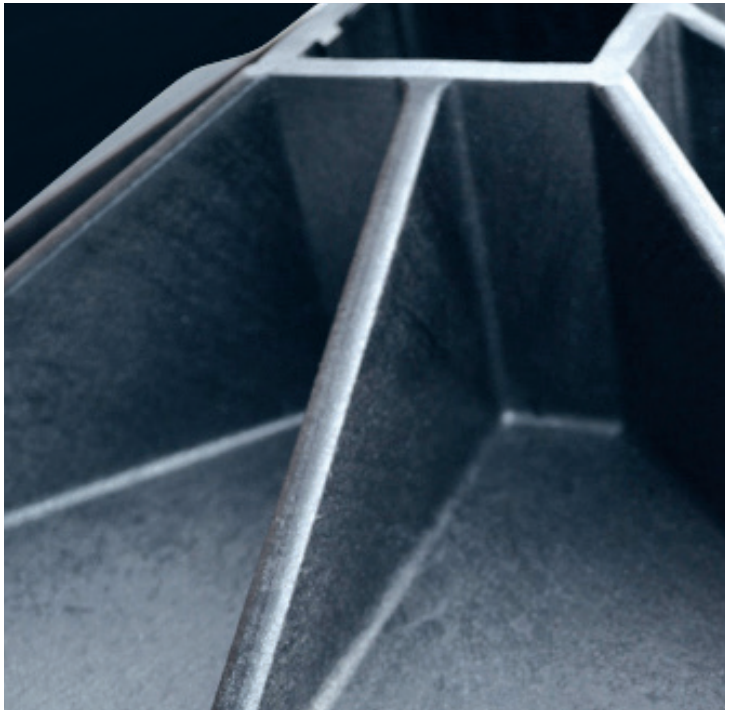


## System 110 - RIM (Reaction Injection Moulding) Polyurethane System 110 (PU)

System 110 is an advanced Reaction Injection Moulding system (RIM), specifically developed for the manufacture of mouldings where low/medium volumes are required.

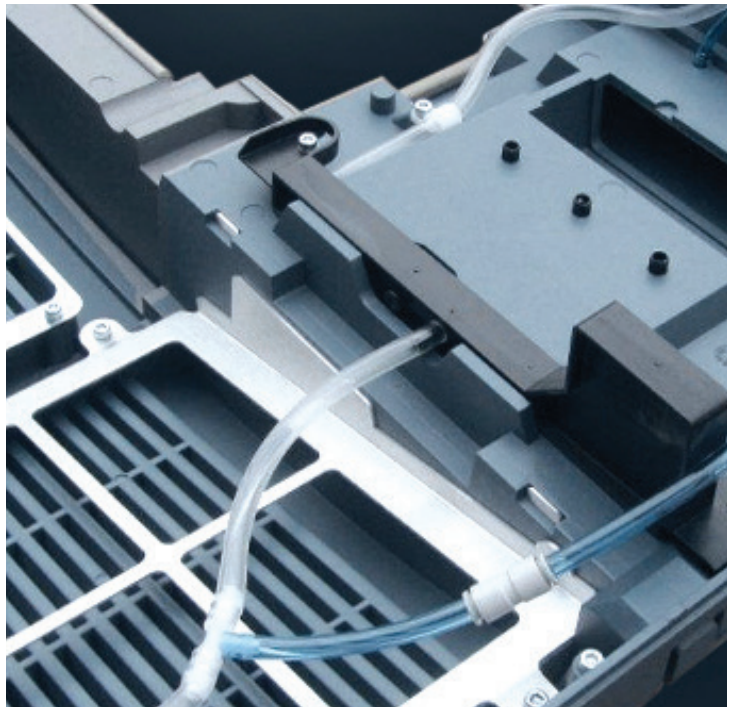
System 110 compares favourably with ABS, Noryl and other structural foams in terms of physical character and mechanical performance, coupled with considerable savings on tooling costs, makes the system a competitive alternative to other materials.

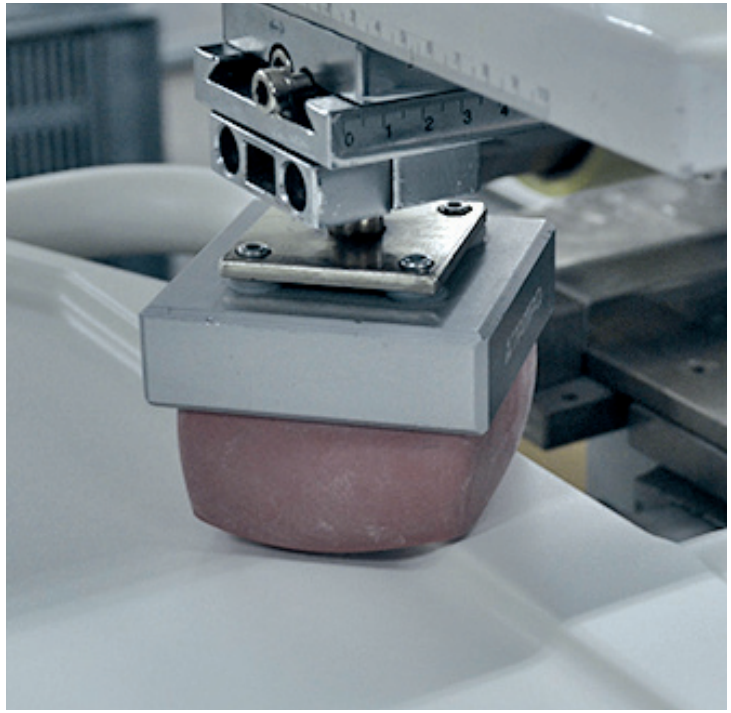
System 110 is ideal for moulding applications in a wide variety of products and development areas, including medical, audio, consumer and industrial electronics products.



## Performance advantages

- **Practically unlimited scope for styling and engineering design;**
- **Very low tooling costs using aluminium tools;**
- **Chemically resistant with dimensional stability;**
- **Flame retardant to meet UL 94 V0 specification;**
- **Environmentally friendly CFC-free material;**
- **Nominal wall sections of 3 to 12mm depending on application;**
- **Apertures can be moulded against line of draw by using loose inserts;**
- **Construction elements can be moulded integrally to make assembly operations easier;**
- **Can be used with over moulded metal components to add strength and simplify assembly operations.**





# Painting and Finishing Plastic Parts

RIMPLAS is committed to successful project completion by working with customers to reduce development and production time. We are able to do this because of the unrivalled technical ability of our team of skilled people.

## Perfecting the process

We have perfected the process of painting onto plastic substrates over the past 30+ years which enables us to produce consistent finishes across the whole spectrum of paint types and polymer substrates. In addition, silk Screen Printing and Tampo pad print are available. We can offer RFI and EMI shielding using wet spray-based coatings. This in-house capability enables us to optimise workflow ensuring high standards, consistency of finish and reducing the potential transit damage. Shorter lead-times are a bonus.

RIMPLAS Technologies has developed from a plastics processing company to a more flexible and broad-based manufacturer. We undertake complex operations and produce finished assembled products boxed and ready for market.

If required, we also undertake full responsibility for the management of the upstream supply chain and supply in kit or fully assembled form. We can provide cost-effective solutions by flexible planning and optimisation of moulding cycle time which ensures parts availability for assembly operations.

# Conventional Injection Moulding

Injection moulding is generally used for higher volume production where a lower component price justifies a higher tooling investment. However, in some situations, injection moulding is the only process to use and Rimplas Technologies has the production flexibility to allow smaller cost-effective runs and larger components to be produced. Injection moulding can require greater attention to design detailing and an understanding of the process but the experienced staff at Rimplas Technologies can provide a full management service, covering material choice, tooling design and initial concept design through to production.

## Important features:

- Very fast cycle times coupled with very accurate high definition parts;
- No requirement for secondary finishing;
- The possibility for self coloured, textured parts straight from the tool;
- Aluminium tooling can be utilised along with multi cavity tools and changeable inserts to reduce costs;
- Components can be manufactured with thinner wall sections to reduce weight and cost;
- Snap details and in some instances integral hinges can be incorporated to aid assembly;
- Parts can be RFI shielded after moulding;
- UL94V0 flame retardancy is possible but may depend on the component wall thickness;
- Recycled materials can be utilised;
- Rimplas moulding machines range from 60 tonnes to 800 tonnes.

CASE STUDY

# Engineering Structural Foam (ESF) for **BRANDON MEDICAL**

**A recent development project has showcased the exceptional versatility of ESF within the medical industry with Brandon Medical, an award winning UK-based technology company with 65 years of healthcare experience. Following advances in lighting technology, the company's attention was refocused onto an existing product, which was currently being manufactured in spun aluminium.**

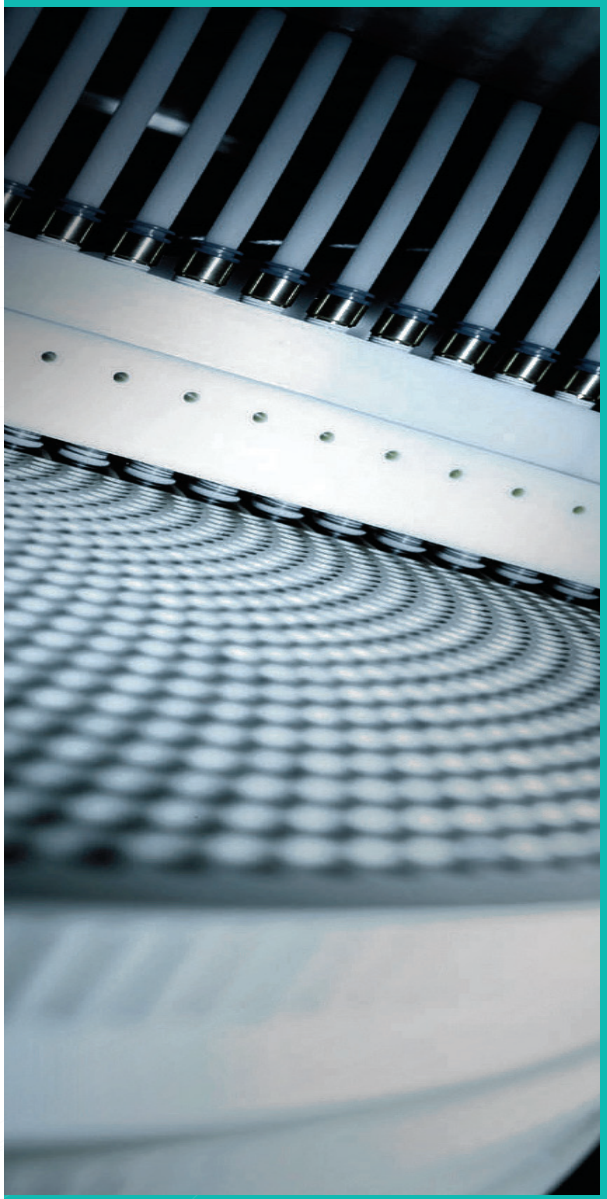
Primary research highlighted that the product required updating to tale advantage of developments in lighting technology. A complete product redesign was required, with the brief to maximise all opportunities in order to improve the user experience, form and function, using the most cost-effective and advanced manufacturing processes available.

Issues with the original product included high weight content, poor heat dissipation. Infection control, processing time and difficulties in assembly. After careful consideration and feasibility studies, engineering structural foam (ESF) was selected as the preferred option for manufacture.

Using engineering structural foam (ESF) provided several key benefits, including a reduction in weight, reduction in heat transfer, elimination of joint and split lines, along with the introduction of anti-microbial additives, as well as a reduction in the component count to improve the assembly process, user experience and reduced costs.

> The incredible strength and versatility of Engineering Structural Foam (ESF) moulding allowed us to create a lower-cost product with superior design features.
>
> **Peter North, Senior Design Engineer—Brandon Medical Limited**

CASE STUDY



# System 60 PU (RIM) - Compound Samples Storage System for **SPT LABTECH**

**The very early prototype Carousels were machined from slabs of aluminium in sections which were then bolted together. Whilst suitable for proof of principle work it could not meet the design brief and presented several other design/practical issues. It was also not cost effective as projected volumes would have not been viable via this route.**

Polyurethane Reaction Injection Moulding (RIM) was suggested as an alternative process as it overcame many of the previous issues. PU (Polyurethane) was selected as the most appropriate material due to its inherent stability.

The tool design came with a high-risk element & only by working closely with Rimplas Technologies on the tooling design, and subsequent post mould process, we have a cost effective, stable, and consistent method of manufacture.

The investment in tooling was repaid when the first instrument was sold.

> The tool design came with a high risk element & only by working closely with Rimplas Technologies on the tooling design, & subsequent post mould process, we have a cost effective, stable & consistent method of manufacture.
>
> **Shaun Jacobs - Manufacturing Engineering Manager**

RIMPLAS
TECHNOLOGIES

1 Wollaston Way, Basildon, Essex, SS13 1DJ
+44 (0)1268 729679 | +44 (0)1268 729031 | sales@rimplas.co.uk

**www.rimplas.co.uk**