

INNOVATE SPECIALISE INTEGRATE GLOBALISE



CAPABILITIES



WHO WE ARE

Carclo Technical Plastics is a division of Carclo plc, a public company traded on the London Stock Exchange. Carclo specialises in fine tolerance injection moulded components and assemblies for the medical, optics and electronics industries.

CARCLO TECHNICAL PLASTICS MEETS INDUSTRY STANDARDS CERTIFIED TO:

- ISO 9001
- TS 16949
- EN/ISO 13485
- EN 14001

We couple industry standards with a Six Sigma culture employing 5S, Lean Manufacturing, and Six Sigma processes

WHAT WE DO

THE CORE OF CARCLO TECHNICAL PLASTICS' UNIQUE TECHNICAL CAPABILITIES ARE:

- Medical Components — Tool manufacturing, clean-room moulding, and assembly with fully automatic robotic handling, ISO 5, ISO 7, ISO 8, bioburden control, and white room environments.
- Polymer Gear — Wear characteristics and design constraint expertise, tool design, manufacture, and precision moulding and assembly.
- Optical — Design, tool surface generation and moulding and assembly.
- Rapid Tooling — Various options for decreased time to market and development needs.

TECHNICAL SOLUTIONS on a GLOBAL SCALE



A COMPANY WHERE IDEAS TAKE SHAPE



CARCLO TECHNICAL PLASTICS IS THE RESULT
OF STRATEGIC DIRECTION BY CARCLO
TO FORM A WORLD-LEADING SUPPLIER OF
TECHNICAL SOLUTIONS FOR GLOBAL COMPANIES.



The synergy of the company provides the customer base with a menu of varied existing manufacturing technologies that can be matched to global facilities meeting logistical and cost requirements.

The foresight of Carclo has bred an innovative company continuing to develop emerging technologies in the areas of conductive ink applications, innovative surface coatings, and body soluble polymers used in conjunction with its injection moulding and value added operations.



Product Development

- Rapid Prototyping
- Optical Design
- Tool Design
- Design for Manufacture
- Metal Replacement Expertise
- Glass Replacement Expertise
- Mould Flow
- Computer Modeling
- PFMEA
- Material Selection
- DOE
- 3D Imaging/Computer Aided Verification
- Gear Design/Performance

Core Manufacturing Capabilities

- Conventional Injection Moulding
- 2 and 3 Shot Moulding
- Insert Moulding Multi Materials
- Overmoulding
- Automated Assembly
- Work Cell Assembly
- Robotic Handling Systems
- Clean Room Assembly
- Clean Room Moulding: Class 100, Class 7, Class 8 and White Room

Tooling Capabilities

- Tool Capability Study
- Tool Validation
- Multi Cavity Tooling
- Rapid Tooling Systems
- Precision Tolerance Tooling
- Optical Surface Generation
- Prototype Tooling
- Polymer Gear Tooling

Value Added & Decorative Operations

- Optical Testing
- Direct Order Fulfillment
- Glazing
- Sonic Welding
- Contract Manufacturing
- Tool Manufacturing
- Value Add Assembly
- Hot Stamping
- In Mould Decoration
- Pad Printing
- Screen Printing
- Anti-Scratch Optical Coating
- Anti Fog Optical Coating
- Vendor Managed Inventory Programs



Carclo's Mission

Vision

Globally recognised for our technical and total value solutions.

Exceed customer, employee, community, and shareholder expectations within a zero complaint culture.

Customer Offer globally competitive total value solutions by utilising leading edge technologies.

Employee Provide our employees with skills, career development, security, and competitive benefits.

Community Viewed as a reputable, safe, and environmentally conscious employer.

Shareholder Deliver shareholder value through increased sales and profitability.

Quality and Environmental Policy

Our Goal is to achieve zero complaints from our customers, employees, community, and shareholders in every aspect of our business. We will accomplish this by focusing on our customer's needs, maintaining open communication, complying with requirements, reducing waste, preventing pollution, periodically reviewing objectives, and continually improving.

About Carclo

Carclo Technical Plastics' core competencies include injection moulding, assembly, printing, product testing/verification, two-shot moulding and packaging. These activities are supported by a Six Sigma culture, strong project management, thorough engineering disciplines, automation systems and unparalleled customer service.

Technical Solutions on a Global Scale

Carclo's Medical Capabilities



Carclo Technical Plastics is a specialist in the development and manufacture of bespoke injection moulded components and assembled devices for our customers in the medical, pharmaceutical, diagnostics and eyecare industries. Examples of the products we manufacture include:

- Reagent Packs
- Respiratory
- Drug Delivery Devices
- Surgical Disposables
- Point-of-Care Test Cassettes
- Inhalation Devices
- Pipette Tips and Cuvettes
- Ophthalmic Devices
- Ostomy/Urine Bag and Catheter Components



Carclo understands the regulatory requirements of our customers and validates all of its processes in line with international guidelines. All manufacturing facilities are clean and well-organized, operating to industry certifications with classified clean rooms available where required. Carclo is a certified vendor to several global medical organisations.

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Carclo's Optics Capabilities



Carclo has a highly qualified optical design team which focuses on providing the customer with the best possible function/aesthetic design of an optical component in plastic. This capability uses the latest computerized modeling and ray-tracing techniques, testing such as interferometry and Moldflow™ simulated filling analysis and is supported by highly skilled practitioners in tool polishing and long-cycle time moulding.



Carclo Technical Plastics is a specialist in the design, development and manufacture of bespoke injection moulded optical components and assembled devices across all application areas. Example of the products we manufacture include:

- Helmet visors for motorcyclists, military and firefighting personnel
- Optics for managing light output from LEDs
- Magnifiers for the visually-impaired and for education
- Guidance systems for weapons
- Windows and light guides for mobile telecommunications and medical devices
- Optical cuvettes for medical diagnostics
- Plastic lenses for all applications
- Automotive bezels and lighting covers
- Fresnel lens and CCTV domes for security



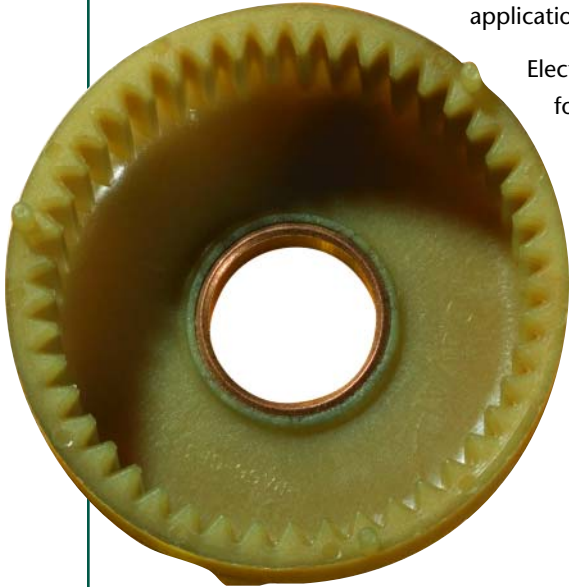
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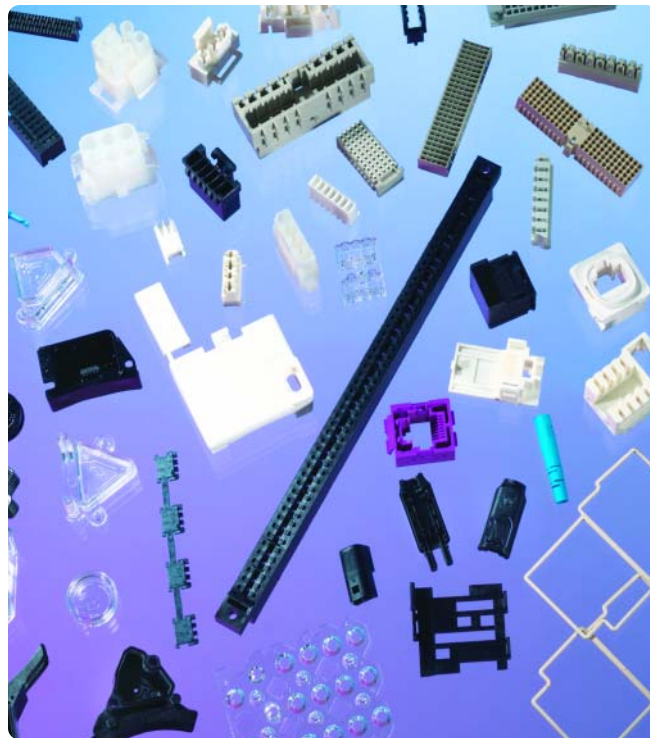
Carclo's Electronics / Consumer Capabilities

Carclo Technical Plastics supplies products and services globally to the electronics and consumer industries incorporating complex tooling, insert moulding of various materials, and added value operations. Products range from electronics connectors, fire and safety applications, packaging, and dispensing equipment.



Electronics and consumer products not only have been a founding cornerstone but also remains a strong segment of our business. Decreasing size of electronic components and decreasing cost for consumer products has propelled Carclo into low cost manufacturing regions and more complex processes but incorporating:

- Interchangeable and Laminated Tooling
- Insert Moulding
- Continuous Strip Applications
- In Mould Decorating
- Hot Stamping
- Screen Printing
- Metal Replacement
- Gear Manufacturing
- Manual and Automated Assembly
- Low Cost Region Manufacturing



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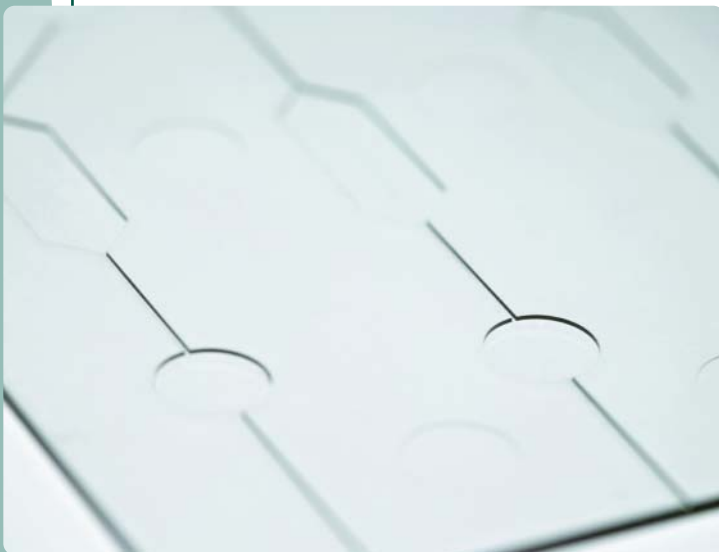
Technical Solutions on a Global Scale

Carclo's Emerging Technologies

Working closely with major material suppliers and leading universities, Carclo's R&D efforts are developing new materials and technologies to meet new industry demand and ensure our customers benefit from the most current and emerging technologies.

In addition, Carclo is investing in early stage research and development towards patenting certain complementary technologies and bringing them to market. Examples include:

- The development of tooling, moulding technologies and surface treatments necessary to produce fine orifices, microfluidic channels and other features on a micro-scale
- The development of inkjet technology for the deposition of conductive metals and other materials
- The development of soluble polymers and moulding technology for use in new generation drug capsules, delivery and mixing applications
- Materials for direct replacement of metal components



Above: Conductive Inkjet Technology

Left: Microfluidic impressions

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Technical Solutions on a Global Scale

Carclo's Value Added Operations

Increasingly, Carclo Technical Plastics' customers are seeking to concentrate on core competencies and work with vendors who can demonstrate an enthusiasm and ability to assume greater responsibility in the process of taking the product to market. Accordingly, Carclo seeks to add value to its customers wherever possible by assuming responsibility for:



- Assembly
- Printing
- Coating
- Finishing
- Final Packaging
- Logistics
- Decoration
- Supply Chain Management
- Incorporating Electronics
- Automation
- Ultrasonic Welding
- UV Bonding
- Specialized Chemistry



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Technical Solutions on a Global Scale

Carclo's Surface Treatment Capabilities

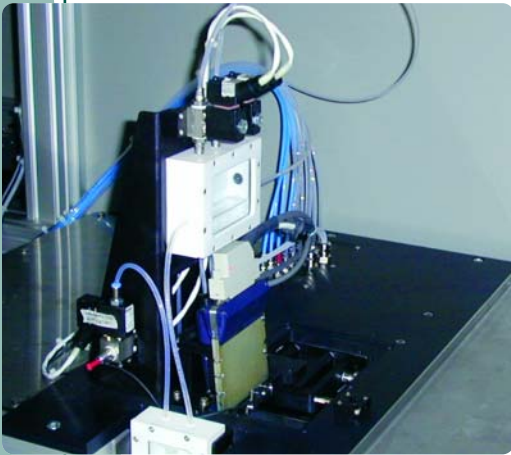
Carclo Technical Plastics is able to apply a range of coatings and treatments to the surface of components in order to impart special properties or decoration. This is performed either in house or in conjunction with external partners.



Above: Flow coating

Left: Siliconisation

Lower Left: Selective coatings



- Anti-scratch and/or anti-fog coatings
- Flow-coating and digital inkjet coating processes
- Hydrophilic/hydrophobic treatments using plasma technology
- Application of advanced chemistry using plasma technology
- Application of silicone for lubrication using spraying technology
- Application of metallic surfaces
- Painting

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Technical Solutions on a Global Scale

Carclo's Global Footprint

Through strategic acquisition and investment in state of the art facilities, Carclo Technical Plastics has a leading global presence. Carclo operates from locations in the United Kingdom and the United States, as well as facilities in the lower cost regions; China, Czech Republic, and India.

Carclo Technical Plastics deploys a common footprint for all of its facilities with facility expansion mirroring customer locations. This makes Carclo Technical Plastics a truly global operation supplying multi-national companies.

United States
600 Depot Street
Latrobe, PA 15650

6009 Enterprise Drive
Export, PA 15632

1141 Grant Road
Tucson, AZ 85705

England
47 Wates Way
Mitcham, Surrey CR4 4HR

London Road
Buckingham MK18 1BH

Scotland
Mossburn Avenue
Harthill Industrial Estate
Harthill
Lanarkshire ML7 5NP

India
Carclo Technical Plastics Pvt. Ltd.
25,26 &27 A,
(Part) KIADB Industrial Area
Doddaballapur, Bangalore – 561 203
Karnataka

China
21 Lian Xi Lu
Huang Du Zhen
Jia Din District
Shanghai 201804

Czech Republic
Turanka 96
627000 Brno

UK – Scotland



Czech Republic



United States



China



UK – England



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Technical Solutions on a Global Scale

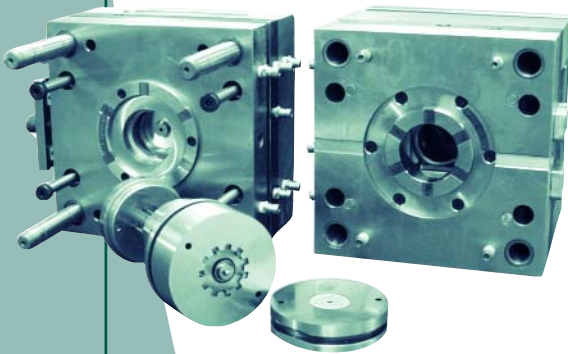
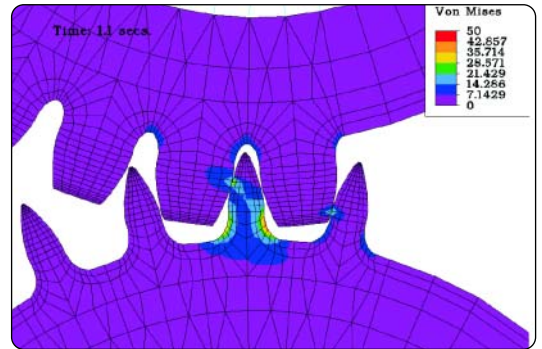
Carclo's RTS Capabilities

Major benefits of the RTS Process:

- To support part requirements from concept through to low/high production
- Provide greater contribution to design/development process
- Reduce total concept to production lead-time
- Optimise costs in design/development supply chain
- Develop production intent parts earlier in design/development process

Carclo Technical Plastics have established our Rapid Technology Systems (RTS) which manages the entire development process, taking concept through tool manufacturing, where we can offer the customer a range of rapid processes including:

- **Design Service**
Working with the customer either with onsite contracted design engineers or support for the customers design teams.
- **SLA – Stereolithography**
A Rapid prototyping process which produces a physical, three dimensional object, a “conceptual model” or “master pattern” with accuracy of $\pm 0.1\%$.
- **SLS – Selective Laser Sintering**
This process fuses together plastic powder by using a laser to trace a 2D slice onto the surface of a bed of powder, given functional prototypes in nylon or glass filled nylon without the need for tooling.
- **Vacuum Casting**
The manufacture of production quality parts is achievable by Vacuum Casting two part polyurethane materials into silicone tooling to replicate from soft 30 shore elastomeric materials, right through the range to replicate polyethenes, polypropylenes, ABS, Polycarbonate, nylon and glass filled nylon.
- **Q-Drive Tooling**
Modular tooling systems for lower volume production (up to 40,000 per annum) and bridge to production capability. Fully hardened cavities give greater life expectancy.
- **Aluminum Tooling**
Aluminum filled epoxy tooling, solution for the short prototype or production requiring an engineering thermoplastics including Carbon and glass filled materials.



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Technical Solutions on a Global Scale

Carclo's Project Management

One of Carclo Technical Plastics' greatest strengths lies within its project management capabilities. Dedicated project teams are assigned with a global project manager to provide the proper resources and communication.

Carclo takes the complexity of global project management off the customer and manages this from product development through production.

- **Strategic Locations**

The world wide design teams of Carclo Technical Plastics are strategically located to enable Carclo to have efficient communication with local customers' engineering staff.

- **Process Management**

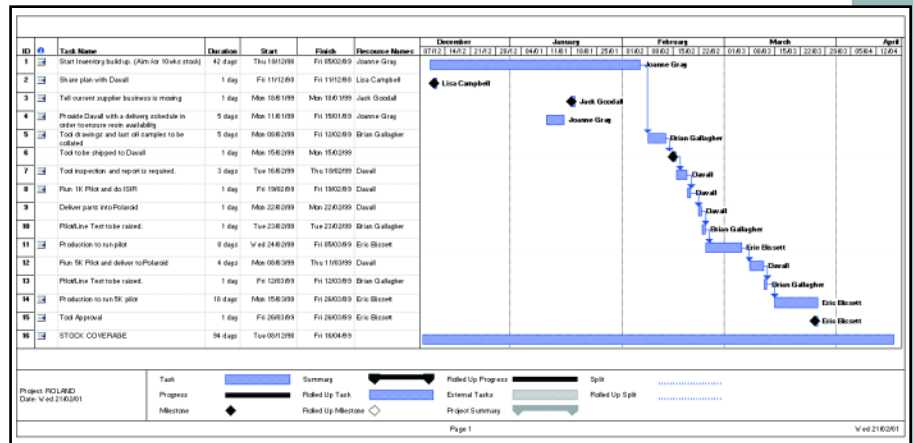
Carclo Technical Plastics manages the entire process, taking concept through tool manufacturing and production.

- **Supply Chain Management**

After validation and approval, Carclo Technical Plastics manages the seamless transfer of the production to the most appropriate geographic facility.

- **Customer Advantages**

The customer receives full advantage of core technical capabilities coupled with geographic manufacturing requirements.



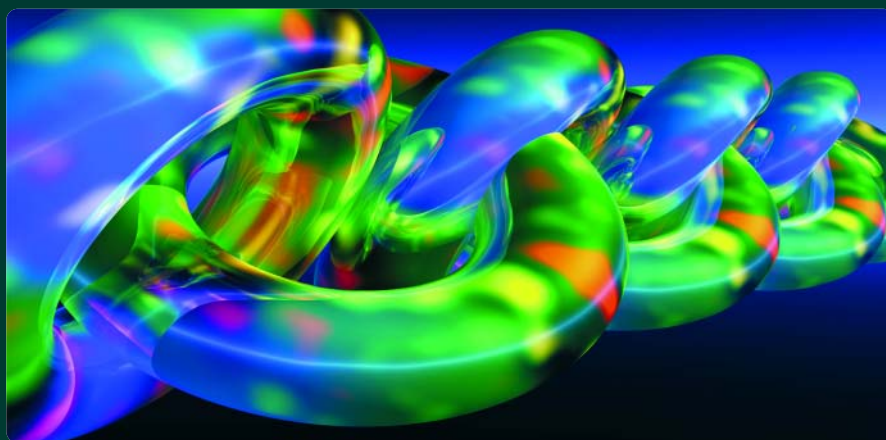
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Technical Solutions on a Global Scale

TECHNICAL DEPTH matched with unparalleled
LOGISTICAL ADVANTAGES

Carclo Technical Plastics' technology transfer programs
create flexibility and commonality with a global footprint.



www.carclo-plc.com