



AndelPlastics
Injection moulders & Toolmakers



Maxmag
Moulded Magnets

Moulding Partnerships

**Injection Moulders
and Toolmakers**



Andel Plastics and Maxmag Moulded Magnets specialise in providing innovative solutions in the design and manufacture of high quality, precision engineered tooling and components. Our mission is to be respected as one of the leaders in this field and set a new benchmark for the industry.

We view ourselves as partners with our customers and suppliers. A partner with an intelligent approach to precision engineering, who is willing to research and explore new processes, design and materials.

We put integrity and quality at the heart of all we do and we are committed to delivering engineering excellence through continual improvement.

If we succeed our customers deliver.

Shaping the future of plastics



Established in 1975 Andel remains one of the few manufacturers offering a UK based toolroom inhouse, providing a turn-key manufacturing solution.

From product concept, through the design for manufacture, prototyping, small lot and mass production. Andel has the experience and state of the art factory, to build manufacturing partnerships. We mould tools that we manufacture in-house or are supplied to us, with the addition of post moulding operation services. Ultrasonic Welding, Pad printing, assembly and bespoke packaging. Also offering a Class 7 Cleanroom on site, provides the ability to assemble and package medical and electronic devices. Centrally located in Birmingham.



Maxmag Moulded Magnets has over ninety years' experience in applied magnetics.

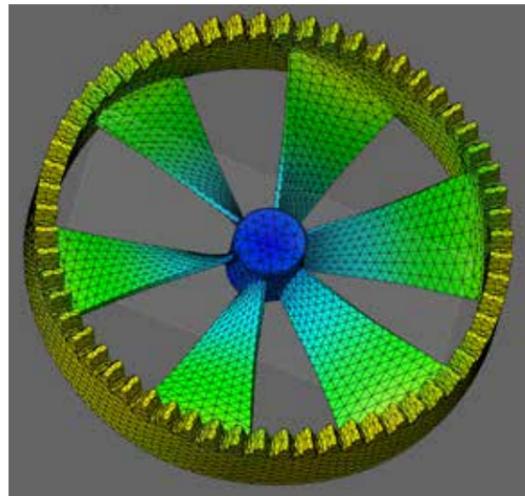
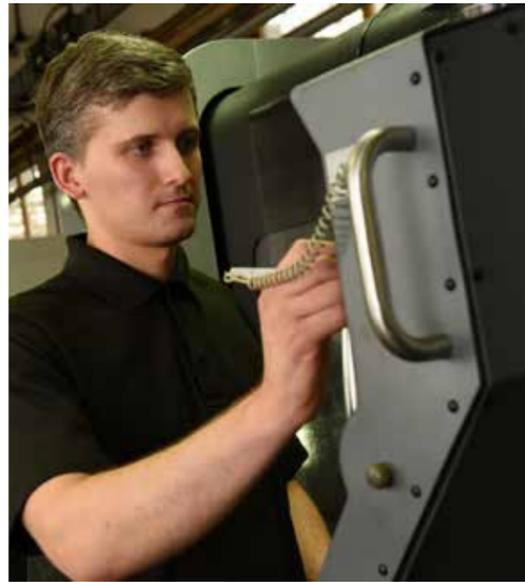
We are pioneers in the technology of injection moulding a fully magnetised component.

This unique ability enables us to manufacture magnets in complex, multi-function shapes, impossible to achieve with conventional ceramic and metal magnets. This versatility enables product design engineers to place magnetic signals precisely.

Allowing them to create and harness magnetic fields using fewer components with faster production times and lower manufacturing costs.

Due to the aggressive nature of the magnetic material, good tool maintenance is key to the lifespan of the tool and quality of the components. Being able to offer this service in-house enhances the lifespan and productivity of a magnet mould tool.





Toolmaking

The quality of an injection moulded component relies upon both good design and accuracy of the injection mould tool. Andel Plastics has built a strong reputation for manufacturing precision engineered tooling cost effectively.

At Andel we like to build relationships with our customers, which means getting involved in a project from the concept stage. Customers have come to us with an initial idea, which can be as straightforward as a sketch or with full CAD models.

We find this approach, of being involved at the early stages of a project provides the best outcome all

round. Ensuring that we understand the mechanical requirements and working environments of a component, means that our design feasibility is carried out with the injection mould tool design in mind. We are able to use our in-house mouldflow analysis system to advise on any potential issues with design before any steel is cut.

Over the last few years Andel Plastics has worked with Universities to research and develop 3D printed tooling in order to be able to provide rapid prototyping options to customers. A gamechanger in our industry.

We also offer a range of standard bolster sets, should the component be suitable, capital investment in tooling would be limited to the inserts and ejector plates. This solution provides reduced toolmaking leadtimes and costs. Should the project then ramp up we can supply the bolster to provide a full toolset, or manufacture multicavity tooling to suit requirements.

Being in the same factory as our moulding facility reduces downtime on production, modifications or maintenance.

That said we manufacture tooling for other moulders as well as mould tools that have been free issued by customers.

We are so confident in the quality of our production tooling, that we provide a ten year no maintenance guarantee for tools we design, manufacture and mould*.

This excludes magnet tooling due to the aggressive nature of the polymer wear parts that have been highlighted during the dfm will be excluded.

- Design for manufacture
- Mouldflow analysis
- Prototype tooling
- 3D printed tooling
- Production and multi cavity tooling
- Insert and overmould tooling
- Modifications and repairs

Injection Moulding

Within our state of the art Birmingham based factory, we offer injection moulding services ranging currently from 50 to 200 tonne. Our customer base is across a wide range of sectors but our flexible approach, means we can offer a bespoke solution to each. Every project is handled to achieve the highest accuracy and quality of component.

We embrace automation collaboratively with our skilled workforce, reducing many of the repetitive processes. Including a 6 axis robot, we have been able to reduce bioburden on medical components, inspect them with a vision system and package them. This type of system maintains quality, cycle times and reduces the possibility of human error.

Our moulding facility with currently 20 machines, uses the Intouch Monitoring Cloud based system, for real time data collection, planning. Keeping traceability of all moulding production.

Running over a 24 hour shift pattern, we have the capacity to offer plastic injection moulding from small lot production to mass volume. Our skilled process technicians have vast experience in a wide range of technical and engineering polymers.

Both within tool design and the moulding facility we have been at the forefront of metal replacement for the last two decades. During the developmental processes, we have confronted and solved many technical issues to ensure that the integrity and stability of a metal component are maintained with a plastic equivalent. We have vast knowledge and experience in overmoulding onto inserts and other plastic components.

Our toolroom is within the factory, to back up and maintain consistent production and tool maintenance. We mould tools manufactured by ourselves and tooling that has been provided to us by our customers. Having, seen an increase in reshoring of moulding services, we offer tool assessment and trials in order to make this transition as smooth as possible.

Andel's customers are from many industry sectors, increasingly we have been approached to supply added value services to ensure manufacture of parts within one factory. During the last decade we have invested in a Class 7 Cleanroom for medical device assembly and packaging. Additionally we offer Ultrasonic welding services and Heat staking of inserts outside of the moulding process. More recently Pad printing has been added to our list of capabilities.

All our processes meet the requirement of ISO9001:2015 and we embrace continuous improvement to ensure that these standards are met and exceeded.





3D Printed Tooling



At Andel Plastics we have invested in researching and developing how Additive Manufacturing – 3D printing – can assist our customers. 3D printed parts have been available for many years and are often invaluable during the design and concept process. However, they are not truly representative of a part that has been injection moulded itself, which limits the testing possibilities.

Initially partnering with both Aston University and the Warwick Manufacturing Group. We developed several R&D projects, to test and evaluate the use of 3D printing to manufacture the prototype injection mould tool itself. During these projects we achieved much more than we were expecting both in the 3D printing of polymer tooling, but also metal 3D printing.

Having proven the technology, Andel purchased their own 3D printer with funding from the Made Smarter programme and are now offering this service to new and existing customers.* This method has enabled customers needing prototypes for testing or market research to greatly reduce capital investment and lead times for moulded products, even when compared with aluminium tooling.

3D printed polymer tooling is not limited to a few prototype parts either. Andel has produced over 1000 shots on a small 4 cavity tool before seeing a degradation in the parts or tool. For the customer, calculations showed it was more cost effective to re-print a set of tooling for the small production runs when required, rather than manufacture production tooling.

The cost effectiveness of the 3D printed tooling also gives the opportunity to test different iterations of a component at the same time. Without the restrictions of trials and tooling modifications that occur within the traditional injection mould tooling method.

Ultrasonic Welding



Ultrasonic Welding is a process whereby high frequency vibrations are locally applied to components via a bespoke welding horn. The conversion of electrical to mechanical energy under pressure, creates a friction that melts the plastic at the meeting points. This causes the polymer chains to bond, so that when cooled it creates a solid state weld between components.

The process of ultrasonic welding is particularly useful when the design of the plastic component is too complex, or tooling too cost prohibitive to be moulded in one shot of an injection mould tool. Or indeed overmoulded. Where this is the case, often components can be designed to be joined together post moulding.

Despite being a secondary operation, it is a cost effective solution that is fully repeatable, whereas gluing cannot be easily monitored. The benefits of ultrasonic welding is clear within the Medical device assembly, as it does not require adhesives and does not create dust etc, it can be safely used without introduction contamination. Thus it is also a suitable method to be used within a cleanroom environment.

The introduction of ultrasonic welding was a customer driven investment, as with the Pad Printing. During a supply chain review, a long standing customer approached us to handle all three processes on their components – the first being the initial moulding. This removed multiple handling and shipping of product to two additional subcontractors. Reducing costs not only within the administration of orders, the subcontract processes, but also the courier charges moving product between locations. Additional benefits being they could reduce stock holding of parts at all three stages to ensure a smooth supply.



Pad Printing

Pad printing also called tampography or tampo printing, is a printing process which transfers a 2D image onto a 3D object. Often allowing printing to a shaped surface rather than flat. The process utilises a silicone pad to pick up the ink image from an etched plate and press down onto the plastic component, transferring the image.

Each different print of size of print requires an engraved or etched plate with the artwork or logo to be manufactured. This can be a nylon plate which offers a more cost effective solution for small lots, or a steel plate for longevity. Artwork is usually supplied by the customer in a vectorised format, however, assistance can be given if required.

During the printing process the component is held in place to ensure repeatability of placement of the print. Andel Plastics can design and 3D print these jigs or fixtures inhouse. CAD of the actual component model is ideal to be able to simplify this part of the process.

Colours can be chosen from a standard chart or matched to RAL and Pantone references, Currently we have a single colour pad printing machine. However, with accurately made jigs it is possible to print a secondary colour in a second operation.

Whilst we print components that we mould in house, we also offer a printing service to other moulders. Should you have any requirements please do get in touch.

Class 7 Cleanroom

Since 1975 Andel Plastics have supplied tooling and moulding to the Medical industry. During 2015 we invested in building a Class 7 Cleanroom within our Tyseley based factory. The purpose to expand our services and build on a relationship with a long term customer.

Adding a cleanroom to our capabilities allowed us to provide our Medical and Veterinary customers with a full manufacturing service.

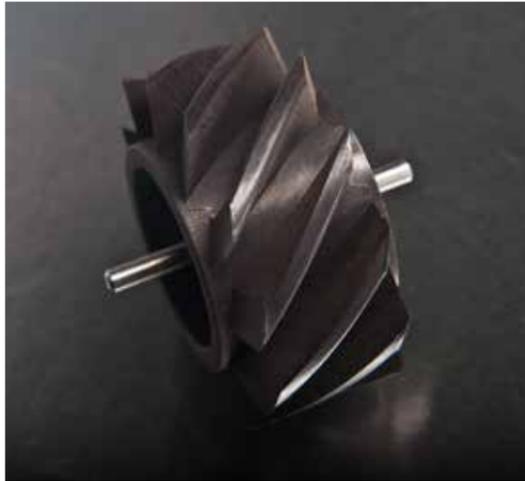
Design for manufacture of the component, toolmaking, moulding, assembly and packaging within the Cleanroom ready for despatch to the sterilisers.

This full services offers confidence and assurance to our customer of a Quality product with all the cost savings offered by reduced handling.

However, we do also undertake contract packaging services, putting together kits of instruments, gauzes etc for Medical and Veterinary procedure packs.

We follow the strictest routine and quality control processes with our ambition to gain the ISO13485 certification.*

Since 2020 we have been working with a customer called Cytoswim Ltd, who are a spin-out from the University of Warwick. Having manufactured the tooling and injection moulding of parts. Their project has led to further developments within our cleanroom in order to fulfil their requirements for a revolutionary new product that is coming to market. We worked with Cytoswim to design and test the bespoke assembly processes. Which demonstrates further our, desire and commitment to build partnerships with our customers.



Maxmag

We manufacture magnets utilising the injection moulding process, a proven method of making components in complex shapes with tight tolerances.

Our expertise in applied magnetics, enables us to create magnets with value added features. This versatility enables design engineers to place magnetic signals precisely, between the interface of mechanical and electronic systems, giving them more freedom when designing a complex solution.

With a flexible approach to manufacturing, we are able to offer sampling, small batch runs all the way through to volume production and postoperative assembly.

Due to the aggressive nature of magnetic material, good tool maintenance is key to the lifespan of the tool and quality of the components. Being able to offer this service in-house enhances the productivity of a magnet mould tool.

Isotropic and Anisotropic Magnets Isotropic magnets have magnetic properties equal in any direction. Whilst Anisotropic magnets have a superior performance in a specified direction or pattern. The majority of our magnets are anisotropic and our technology enables us to maximise the magnetic strength by orientating the material during the moulding process. We can orientate the magnets axially, radially, conically or in pattern combinations.



Multipole Magnets

Most of our existing customers utilise multipole magnets and we can create poles on external or internal surfaces. Poles can be equispaced or configured specifically for a component solution. These types of magnets are often used in drive couplings, small motors and for motion sensing using a reed switches, hall effect or inductive sensors.

We have vast experience in the design and manufacture of injection mould tooling that allows us to mould a magnet, then overmould a polymer shape around it. We are also able to insert mould onto metal spindles and bushes, or existing plastic components, giving enhanced value added solutions.

Materials

We have developed a range of materials providing a variety of magnetic strengths and physical properties.

Consisting of magnetic micro-powders bonded in a polymer matrix, they are designed to maximise specific properties for diverse applications.

By recommending the correct polymer we are able to offer solutions for mechanical strength, high electrical resistance and a range of working temperatures.

We offer expertise in

- Component design
- Prototyping
- Toolmaking
- Injection moulding
- Overmoulding and insert moulding
- Coordinate measuring
- Post operational assembly and machining
- International distribution

Key benefits

- A precision magnet can replace a sub assembly.
- We can mould gearteeth, thread forms, spindles, rib slots, cams and cross holes as part of the magnet.
- We can overmould and assemble magnets onto plastic bushes, metal spindles and other threaded inserts.
- Less need for post assembly
- Less need for post operative machining





Sectors and Quality



Andel Plastics works within many industry sectors, whatever market you are in we aim to make a significant contribution to your business. Our ethos is to be as flexible as possible to understand and work with you to meet your specific requirements.

Since 1975 we have formed strong links with our customers and suppliers to ensure that our reputation is upheld as a reliable and valued supplier and partner.

Our wide range of market sectors stood us in good stead during the Coronavirus pandemic, when we were able to stay open for our customers. Being one of the few toolmakers and moulders who could remain open to supply product safely for our customers and staff. During this time, we manufactured medical devices and PPE components that assisted with the testing equipment and protection and comfort of frontline workers. Most of which was done free of charge. Whereas some markets dropped off, our pet sector and home appliance and DIY sectors saw a surge during the various lockdowns. We are immensely proud that we were able to do this.

The fact that we serve many sectors from small entrepreneurs to multi billion pound businesses, demonstrates our capabilities and flexibilities. We apply the same commitment to each project with a personalised service.

We are certified to the ISO9001 Quality standard and embrace continuous improvement and investment to ensure we stay at the forefront of our industry for the future. Andel and Maxmag believe that in doing this, we assist our customers to do the same.

Net Zero

Net zero and sustainability are at the forefront of our strategic plan. In 2018 Andel invested in 24 hour real time data recording and planning, by investing in a cloud based software provided by intouch monitoring.

This system enables us to ensure maximum usage of equipment with the recent addition of energy monitoring. More recently this was upgraded with match fund by the Made Smarter programme and now includes real time energy monitoring. This addition assists us to highlight areas for investment to reduce energy and waste.

To support our aims In 2023 a solar installation was completed on as much of the factory as possible, to reduce consumption from the national grid.

2024 saw the start of a further collaboration with Warwick Manufacturing Group and other consultants, to commence the process of a net zero project within the whole Andel and Maxmag factory and supply chain.

We hope to share further updates in the coming future.



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Award winning manufacturing



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