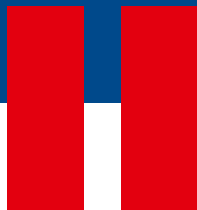


From your ideas to functional
standard products



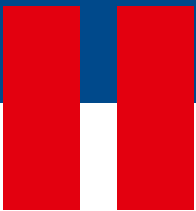
Lüttgens - your specialist for
thermoplastic parts



Our guiding principle: to inspire our customers time and time again.



It's the complexity that makes it interesting



We've been at home in the world of plastics for over 75 years now. Profit from our experience in the most diverse industries – from automotive and electrical to plant and machinery construction. Lüttgens manufactures competitive standard products to bring you long-term success.

As a manufacturer of injection-moulded technical parts and thermoplastic components, we are used to handling difficult challenges. We get together with you to develop suitable solutions, which we then transform into functional products. We understand complex interactions. From the selection of the optimal materials through the product design to the most efficient production method, we connect with your project right down to the very last detail.

If it's conceivable, it's achievable. That's the philosophy we follow with every project, no matter how complex the requirements.

Our speciality: hybrid components

Ever increasing industrial requirements and greater affordability are accelerating the demand for hybrid moulded parts. We believe this upward trend is more than just a temporary phenomenon - it's the future of component development. We at Lüttgens have been committed to hybrid moulding technology for over sixty years and our know-how in this area is constantly growing.

Full Service

Take advantage of our full-service package:

- Quality assurance - all thermoplastic parts are manufactured in Germany or Poland
- Rapid response to changes or improvements
- Time saving because the jigs and fixtures for component assembly are fabricated on site
- Cost saving because the components are converted into finished products
- Precise final assembly
- Fast delivery to any country in the world



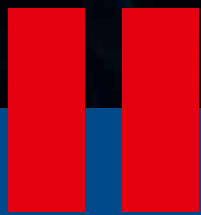
How we work

Concept analysis - 3D simulation - Material selection - Prototype production - Component testing - Quality planning



How prototyping works

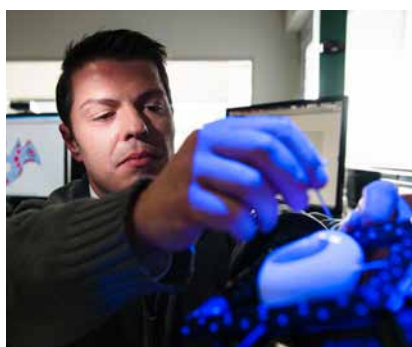
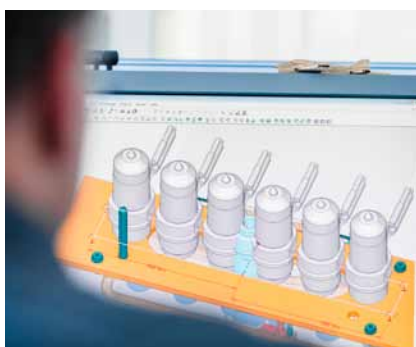
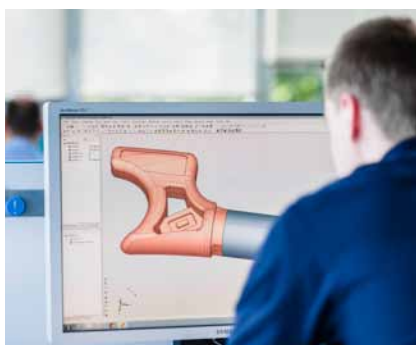
Design - FEM simulation - Mould fill simulation - Prototype (3D printout or using the prototype mould) - Standard mould/automation design - Mould proving - Measurement - Release for series production



The eternal fascination of little parts with a big impact

We do everything in our power to make sure our customers always get the best possible product. Our recipe for success: structured processes with close attention to details, dedicated advice and collaborative partnerships on equal terms.

Professionalism and transparency at all stages of the development process.



Your own personal consultant is at hand to support you throughout the project and ensure optimal continuity and efficiency. We reach binding agreements using a set of specifications describing all supplementary conditions which must be fulfilled by a particular part or a process. You can rest assured that the product which is ultimately developed - and the choice of materials - will come up to your expectations.

Benefits for you:

- Full 3D associativity through all development stages
- Extensive materials expertise
- Wide range of materials to satisfy all requirements
- Cooperation across department boundaries - inefficiencies reduced to a minimum
- Long-standing experience with globally sourced injection moulds and moulding fixtures

Attention to detail helps achieve goals

You tell us what it is you're looking for and we'll help you find the most efficient way to get there. All our departments work hand in hand to this end. Our engineers will provide you with advice and support tailored to the individual product:

- Optimal product design
- Selection of the most suitable production method
- Use of the ideal tool and automation technology

Our 3D analyses serve as a starting point for pre-production checks - often aided by a model - to determine whether the product is fundamentally suitable as a thermoplastic part and whether it meets your needs. Another advantage for you here is that our engineers use this model to test the design concept's potential for optimisation. This speeds up the development process and makes it even more efficient.



Masters at work – precision-built by people and machines

Our experts in the mould-making department lay the foundation for high-quality, repeatable and durable injection moulds and fixtures.

The combination of their long-standing experience and the data models created previously guarantees smooth production processes and a perfect product. We use “run@rate” analyses to verify at an early stage whether the injection moulds and fixtures are suitable for series production.



Decades of experience and craftsmanship make the difference.



Our precision workmanship has crucial benefits for you:

- Reproducibility and rapid response to changes or improvements
- Fast delivery

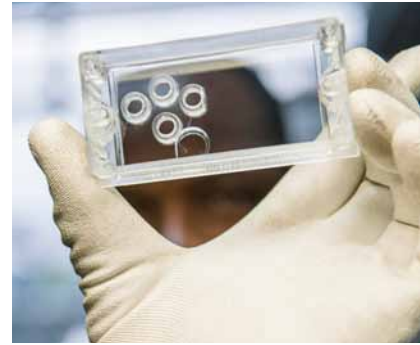
High precision for complex moulded parts

- Manufactured using modern CNC machines
- 6,500 moulds fabricated to date - extensive know-how

Advanced technology for optimal results

All machines used by Lüttgens are in accordance with the latest state of the art:

- 3D CAD/CAM HSC machining centres
- Electrical discharge (EDM) machines
- Wire EDM machines
- Automatic lathes

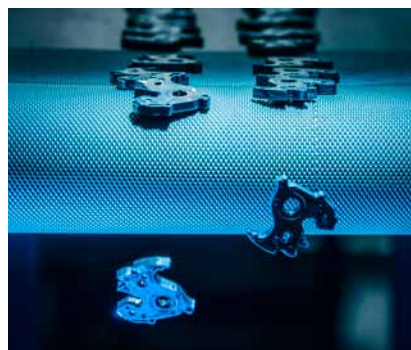


Some people talk non-stop about quality –
we just deliver it

Optimal quality for optimal results. You need to be able to rely on us, which is why we invest continuously in the best available technology.

Thermodynamic processes call for robust, fine-tuned parameters and absolutely repeatable machine cycles. We guarantee this with a high level of automation. All production machinery is linked up to a control centre, so that we can take corrective action instantly if even the most trivial non-conformances occur.

Our openness to new ideas is reflected in more than 6,500 products shipped to date.



Our services for you:

- Series production – efficient and environmentally friendly
- Visual inspection systems
- Component assembly
- Conversion to finished products
- Final assembly

Quality management and assurance

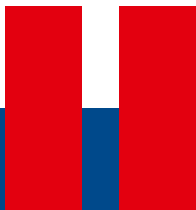
- ISO/TS 16949
- DIN EN ISO 9001
- DIN EN ISO 14001
- DIN EN ISO 50001 (all certifications by TÜV SÜD)

Our technologies and processes:

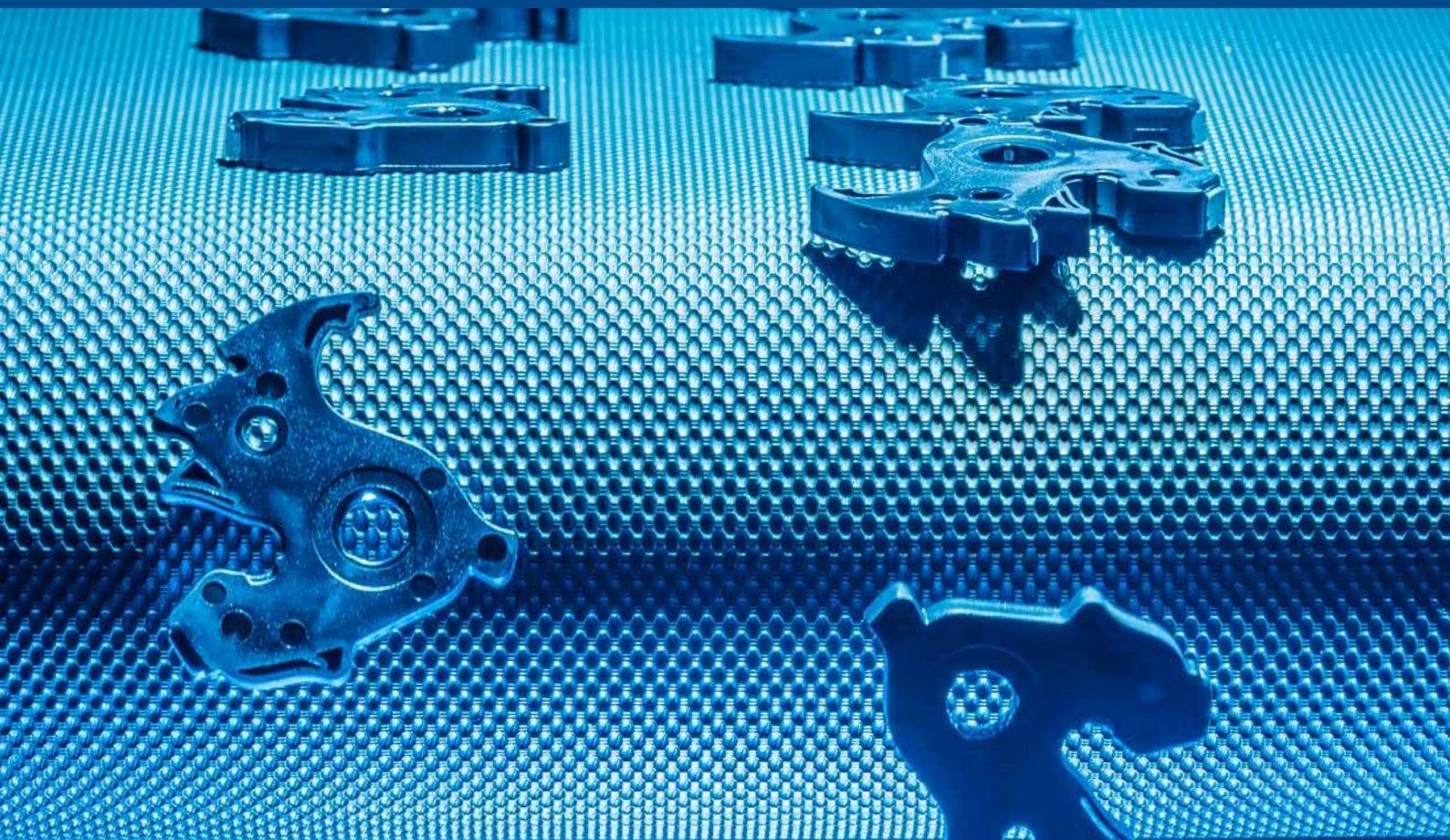
- Injection moulding – 40 injection moulding machines
- Machine clamping forces from 6 kN to 10,000 kN
- Product weights from 0.1 g to 4,000 g
- Special processes: gas injection technology (GIT), two-component injection moulding
- Surface finishing techniques: pad printing, screen printing, hot foil stamping, coating/lacquering, laser marking
- Joining techniques: ultrasonic welding, hot mounting, bonding, assembly

Environmentally aware production/energy management

- Continuous optimisation of the carbon footprint
- Lasting improvement in material and energy efficiency



The right combinations to get you ahead



Detailed materials expertise

There are approximately 200 different types of plastics and 30,000 types of materials. The challenge is finding the right material to meet the requirements for a particular part. Consideration must be given to the material's strength, thermal stability, chemical resistance, look and feel and possible combinations with other materials.



Plastic-metal hybrid technology is the future of component development. It opens up multiple new opportunities for lightweight construction. We leverage synergies that make materials more efficient. As a result of this, we can utilise different material combinations to develop new components. Hybrid engineering facilitates smaller, lighter – and hence more economical – products. At the same time, we set great store by functional integration, where several functional requirements are brought together in one part.



Hybrid parts for the automotive industry

In lightweight automotive construction, for instance, CO2 emissions regulations are forever being tightened up. Our innovative hybrid moulded parts made from a combination of plastic and metal – high functional integration included – comply with these standards in every respect.



We also develop hybrid solutions to meet numerous other requirements, for instance

- electrical insulation,
- structural durability and toughness,
- gas impermeability,
- good tracking resistance and
- low surface resistance

using composite structures comprised of metals and high-strength plastics.

How Lüttgens won the World Cup

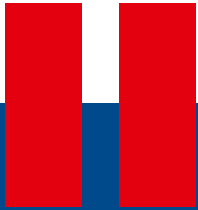
Innovation has a long tradition at Lüttgens. We get together with our customers to develop ideas and transform them into successful products.

The following are just two examples:

Back in 1974, Germany hosted – and won – the football World Cup. The game against Holland began with a penalty for the other side and was packed with excitement for the full ninety minutes. On that memorable day the German team played in boots that were equally remarkable – they were the first ever to feature hybrid studs, made by Lüttgens. The rest is history.



Our hybrid parts have also spearheaded major advances in communications. Another landmark event in the seventies was when we manufactured the first hybrid two-component part for Siemens – the telephone dial.



Smooth processes rely on smooth interaction and cooperation

The quality of our staff is reflected in the quality of all our products and processes – day in, day out.

We are motivated by our claim to develop efficient solutions for new parts – and by the challenges posed by you. We analyse and develop your project with passion and enthusiasm, paying close attention to even the tiniest details, before delivering the best possible product.

Numerous seminars and training courses offer regular opportunities for our staff to deepen their expertise and stay permanently one step ahead of our competitors.

We lay the ground very early for a team that can put Lüttgens' high quality standards into practice. Our trainees spend time in all departments and are taught valuable interdisciplinary skills. The outcome: smooth processes in day-to-day work as the basis for smooth interaction and cooperation.

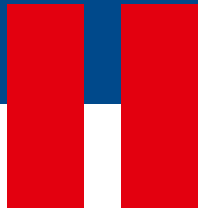
Systematic qualification and perfect team spirit . . .





... backed up by modern planning and management modules.

An excellent reputation across many industries



We serve customers in many different industries including automotive, sanitary, household appliances, building, electrical equipment and plant and machinery construction – in short, in all sectors where particularly exacting specifications apply.

Put your trust in several decades of experience in the manufacture of complex parts and components that are designed to withstand extreme mechanical loads and exhibit very good electrical insulation properties, defined sliding friction coefficients, excellent dimensional stability and high pressure burst strength.

From the very first development steps to the final production stage, the sum of our experience benefits every single project and every single process – for standard products that give you a cutting edge in today's competitive market.



Diversity is our motto – day in, day out.

Trusting, long-term customer relationships form the basis for our rich experience.



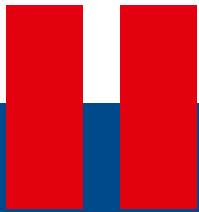
Our range of industries:
automotive, sanitary, household appliances, building,
electrical equipment and plant and machinery construction

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Which challenges do you
have in store for us?

