TOYOTA Motorsport GmbH (TMG) is a unique high-performance development, testing and manufacturing facility located in Cologne, Germany.

High performance, precision and diversity are core principles at TMG and our technical specialists have in-depth engineering experience across various sectors.

TMG has honed its competences in top-level competition, from our world championship-winning rally cars to revolutionary Le Mans prototypes and record-breaking electric vehicles via the pinnacle of motorsport, Formula 1.

Whatever the requirements and however extensive the project, TMG can create a tailor-made solution to deliver prototype development, specialist testing or enhancement of existing components.

TOYOTA Motorsport GmbH (TMG) is constructed to the highest standards with no compromise on quality or functionality, the spacious 30,000m² facility and its highly-skilled staff of around 250 offer a remarkable range of machines, facilities and expertise.

TMG has developed into a one-stop shop for specialised services focusing not only on automotive clients but also those from other sectors where precision and performance are essential.

TMG’s range of services encompasses the complete development cycle, with seamless interaction between systems and facilities to ensure speed, efficiency and, most importantly, quality.

Our complete range of processes and systems is far too lengthy to list in detail but one look at the highlights and it is clear that TMG truly is the home of high performance, with everything under one roof.
TMG’s state-of-the-art car development facilities are the perfect environment for our skilled engineers to innovate in order to deliver high performance.
CAR DESIGN COMBINES CALCULATION, DESIGN AND EXPERIMENTATION TO DELIVER HIGH PERFORMANCE ACCORDING TO YOUR SPECIFICATIONS.

With a highly-skilled team of designers and the facilities to back them up, we have all the necessary tools to realise your targets, whether in complete vehicle design or specialised part development.

TMG’s car design department uses Catia V5 technology and offers part designs for almost any application, utilising our extensive experience in high-performance development while integrating our established time and cost-saving procedures.

Our calculation group will confirm structural efficiency through material and geometry optimisation while experimentation on our component testing rigs verifies calculations or proves prototype parts and systems, validating the achievement of performance targets and ensuring effective development.

Supporting the design and development process, our material specialists ensure you select the best solution for your performance and pricing specifications.

We have in-depth knowledge of high-performance composite design, including structural items and impact absorption structures, with specialised calculation engineers to ensure appropriate strength and weight while various static or dynamic load cases can be tested in controlled ambient conditions.

TMG is at the cutting edge of gearbox technology, including driveshafts and differentials, and offers a full range of developments supported by specific tests.

We also offer a variety of specialist component solutions from carbon and metallic suspension elements to steering or brake systems development, supported by a full range of calculation techniques, including topology optimisation and on-site testing.

Hydraulic system development is another area of expertise, with thorough simulation tools and the testing of servo valves and pumps, as well as other systems and components.

Additionally, integration with engine and component testing allows unified development of fuel systems and water or oil coolers, encompassing lay-out, design and experimentation.
VIRTUAL DEVELOPMENT TOOLS

DETAILED UNDERSTANDING OF HOW A COMPONENT OR FULL VEHICLE PERFORMS IS ESSENTIAL IN DEVELOPMENT WHICH IS WHERE OUR CFD AND CALCULATION SPECIALISTS CAN HELP.

At TMG we offer supercomputing power and incredibly detailed analysis, both in the field of computational fluid dynamics (CFD) and calculation.

Our CFD experts use powerful software to experimentally improve flow efficiency and performance, with up to 80 million hexahedral cells making up a complete vehicle model. This delivers a full understanding of flow dynamics no matter what object requires testing and this process integrates perfectly with our wind tunnel, chassis calculation and simulator technology to create an efficient development cycle.

All you need is CAD geometry of your development item and TMG’s experienced engineers can create a model and begin CFD analysis.

With a typical full-car model of 60 million hexahedral cells, calculation, including automatic generation of post-processing movies, can be performed within 24 hours and three cases of this size can run simultaneously.

An automatic post process suite streamlines the development process and eliminates the need for complex, time-consuming manual analysis, delivering a bespoke selection of analytical charts and illustrations exactly matching your requirements.

Also in the virtual domain, TMG’s chassis calculation experts will deliver a full structural calculation service to optimise parts – from cars and boats to domestic appliances – for efficiency and weight reduction.

Our extensive software suite features Tosca, Genesis, ANSA, Abaqus, Nastran, LSDyna (crash applications), LMS Virtual.Lab, LMS Imagine.Lab, AMESim and Matlab, working on a high-capacity hardware cluster.

That enables our experts to run multi-body simulations with rigid and flexible models, with particular attention paid to modelling details and ensuring a clear correlation between simulation results and actual measurements.

In addition to standard chassis calculation procedures, TMG also offers a specialised carbon composite service, building on our experience in top-level motorsport.

By establishing the optimum carbon fibre lay-up situation, you can reduce weight without endangering your ideal stiffness levels while dedicated composite design software ensures complete production accuracy and repeatability.
SIMULATION AND EVALUATION

TAKE ADVANTAGE OF THIS HIGHLY-ACCURATE VIRTUAL DRIVING SIMULATOR FOR DRIVER-IN-THE-LOOP ENGINEERING DEVELOPMENT OR FOR DRIVER ACCLIMATISATION PROGRAMMES.

The simulator is a dedicated engineering tool developed exclusively by TMG, featuring the latest technology to accurately reproduce the driving experience in a virtual environment.

With extremely detailed models of a variety of circuits as well as various vehicles, TMG’s simulator is a next-generation tool for car development where completely consistent and repeatable track conditions promote reliable evaluation that is directly relevant to your development programme.

The accuracy of every track is assured thanks to an exhaustive development process featuring driver input and focusing on every detail, from the kerb angles and track surfaces to background scenery and other visible features.

A six-degrees-of-freedom electric motion platform simulates driving sensations and an electric feedback motor creates realistic steering torque while TMG’s vehicle model translates wind tunnel kinematic data to simulate the effect of aerodynamic or mechanical changes.

An accurate tyre model includes thermal effects, as well as a choice of weather, to cover all scenarios and provide full flexibility for repeated tests in identical conditions.

Developments can be evaluated on a range of circuits which have been surveyed using the latest laser-mapping technology with an unprecedented degree of accuracy.

In addition to its engineering function, the simulator is also a valuable tool for driver development. Programmes are available to familiarise drivers with different cars or circuits in a safe and predictable environment, while an interactive pit crew aids the practice of pit stop procedures.

Realistic conditions also offer a valuable opportunity for drivers and engineers to develop efficient communication and working practices in a controlled and flexible environment away from track pressures.

TRACK LIST:

- Albert Park Circuit
- Autodromo Nazionale Monza
- Bahrain International Circuit
- Circuit de Catalunya
- Circuito de Jerez
- Circuit de la Sarthe (Le Mans)
- Circuit de Monaco
- Circuit de Spa-Francorchamps
- Fuji Speedway
- Hockenheim
- Hungaroring
- Interlagos
- Marina Bay Circuit
- Nürburgring Nordschleife
- Sepang International Circuit
- Silverstone Circuit
- Simulated Vehicle Dynamics Area
- Suzuka Circuit
- Valencia Street Circuit
SPACE AND KNOWLEDGE

TMG’s CHASSIS WORKSHOP CAN MANAGE EVERYTHING FROM CONVERSION PROJECTS TO PROTOTYPE OR RACING CAR BUILDS, SUPPORTED BY TOP-LEVEL EXPERTS.

Large, clean-environment chassis workshop facilities, featuring five independent work bays, combine with fully-fitted clean rooms for hydraulic and gearbox preparation to provide the ideal environment for precision work.

TMG’s history as a constructor of rally and prototype racing cars, as well as our long-standing road car tuning business, has created a team of highly-skilled technicians, who on average have more than 17 years of experience each at the cutting edge of automotive technology.

The chassis workshop plays an integral part in our full-car development process as the place where innovation is turned into reality, after comprehensive design, development and production elsewhere in TMG.

With comprehensive facilities and large capacity, we are perfectly suited to build any kind of low-production-volume vehicle, from touring or rally cars right up to prototype vehicles.

By integrating car build into the development process, which all takes place under one roof, we can ensure efficiency and ease of handling for the best possible results when your car hits the road or race track.

Our 760m² workshop and 600m² of separate working space were built from new in 2000 and conform to the highest standards of cleanliness and preparation while private bays can be screened off to guarantee confidentiality.

Facilities include lifting machinery, a flat bed for validation and direct HGV access.

A dedicated team of technicians bring knowledge from various road car and motorsport disciplines to deliver the experience necessary to get the most out of any project.

Our facilities and personnel are perfect for feasibility studies to transform prototype projects into designs suitable for repeat production or road-to-racing conversions.

Additionally, why not take advantage of our expertise to train your own technicians in the specialised skills required for running and maintaining high-performance or prototype machinery?
TMG has an unparalleled range of R&D facilities covering everything from full-car testing to individual component analysis, all delivering incredibly detailed and accurate results.
THE ULTIMATE AERO EXPERIMENT

OUR TWO WIND TUNNELS ARE BASED ON CLASS LEADING TECHNOLOGY AND OFFER UNIQUE INTERACTION WITH TMG’S OTHER SERVICES FOR SPEED, ACCURACY AND MAXIMUM EFFECT.

Both our wind tunnels (WT1 and WT2) use a continuous steel belt rolling road with a maximum speed of 70m/s. Both wind tunnels are capable of up to 60% model testing whilst WT1 is also equipped for full-size cars.

Accuracy is the focus of TMG’s wind tunnel services and our highly-advanced models include up to 512 pressure measurement channels, accurate to 7Pa, and laser technology to ensure correct positioning to 0.05mm accuracy. Even tyre deformation and exhaust gases can be simulated.

Both tunnels also benefit from particle image velocimetry (PIV) analysis to visualise flow structures in X, Y and Z planes within the wind tunnel.

Our ‘wheels on’ approach offers representative suspension kinematics, active suspension pre-load with integrated pushrods and automatic steering.

At TMG we are dedicated to efficiency and true-to-life accuracy, so High Speed Data Acquisition (HSDA) and Continuous Motion Systems (CMS) are available on both tunnels.

In CMS mode, a user-defined programme of ride height, yaw, roll, steer and individual pre-load changes provides continuous motion on a predefined trajectory while the HSDA system is continuously acquiring data at high frequency. This allows realistic road or track analysis, reducing tunnel time by as much as 70% and increasing the amount of useful data from each individual test compared to standard motion and acquisition systems.

A secure exclusive data analysis tool enables fast and reliable interpretation of results for efficient development. TMG’s system synergies allow wind tunnel data to be streamed to the CFD and driving simulator departments.
A UNIQUE TESTING FACILITY

WITH A HUGE CHOICE OF TEST RIGS PERMITTING OVER 200 DIFFERENT TESTS, WE WILL DEVELOP AN INDIVIDUAL COMPONENT TESTING SOLUTION JUST FOR YOU.

Welcome to the most extensive and advanced high-performance component testing laboratory on the open market.

The purpose-built 2,600m² advanced component testing area within TMG offers a comprehensive range of in-house calibration, customised component rigs, single axis test rigs, geometric measurement, centre of gravity and inertia verification, vibration testing and much more.

As well as complete vehicle testing solutions, TMG also offers multiple examples of various single component rigs, allowing simultaneous testing to streamline development.

With rare commercially-available items such as a transmission test system, seven post rig, a four-corner full car road simulator, a transmission lubrication test system and rotary damper rigs, TMG has it all.

Every square metre of our extensive advanced component testing facility is accessible by overhead crane while a modular lay-out and multiple access points allow for complete confidentiality, no matter which services you require.

But it is not simply the choice of machines and processes which sets TMG out as a class leader; our highly-skilled technicians come from a variety of industrial sectors and are adaptable to meet whatever challenge they face.

TRANSMISSION TEST SYSTEMS

TMG offers two rare and powerful testing rigs designed specifically for transmission durability, reliability and performance investigations.

The transmission test system is a high-dynamic and high-performance rig which permits real-time simulation of road or track conditions. Three electric motors drive the gearbox for dynamic response to replicate engine stresses. Two hydraulic rear axle road simulators apply suspension loads.

The system is perfect for development of road-ready clutch, launch and seamless gear shift solutions while inner and outer suspension (uprights and hubs) can be analysed for performance and reliability.

TMG’s transmission lubrication test system provides a comprehensive analysis of internal lubricant flow.

The test rig can be mounted and exposed to accurate pitch and roll motions while a drive motor delivers rotational input, recreating the drive normally produced by the engine.

By fully understanding lubricant flow in road/track conditions, lubrication of all internal gearbox components can be optimised for performance and total reliability. The system is also perfect for component tests to optimise items such as spray bars, oil pumps or oil coolers.
FULL-CAR ROAD SIMULATOR

The industry-leading MTS 32960DF full car road simulator creates a real-time simulation including a replay of all forces and moments. Its six degrees of freedom at vehicle spindle gives control over vertical, lateral and longitudinal translation, brake/drive torque, camber moment and steer moment while the 29 channels are accurate to 0.001mm and an additional four actuators can simulate downforce.

This comprehensive test solution simulates multi-axial inputs to a vehicle to replicate its true stress state at any given moment and includes ±44° steering simulation and heat application for unparalleled realism.

The full car road simulator is the ultimate complete car and component test rig, for front and rear axle fatigue testing, full car stiffness tests and analysis of suspension sub systems.

Main Configuration Specifications

- Floating body (up to 29 channels) for accurate full vehicle stress distribution analysis of non-maneuvering events
- Fixed body (up to 15 channels) for single axle suspension tests including braking and cornering simulation
- Semi-floating body (up to 14 channels) for single axle suspension and partial vehicle body tests including brake simulation

SEVEN-POST RIG

Our seven-post rig adapts to most vehicles and is a valuable development and proving tool for original equipment manufacturers and high-performance car developers.

Our baseline configuration, featuring one frontal downforce actuator and two at the rear, is ideal for optimising the vertical dynamics of cars generating large amounts of downforce. For vehicles without significant downforce our four-post configuration, with no downforce actuators, is the best solution.

Easily establish the ratio between vertical force and pushrod force or check your ride height control systems in our alternative downforce mode, which sees downforce actuators at the front and rear mounted in the vehicle’s centre line.

Accurate stiffness measurements, friction investigations and pushrod-to-vertical load ratio checks can be achieved using static body configuration, where a chassis is clamped securely to the floor while wheels are moved independently by the corner posts.

The versatile and robust seven-post rig also carries out full component fatigue or proof testing of dampers, torsion bars, springs and wishbones, as well as complete car suspension friction measurements and inertier mass optimisation.

COMPONENT TESTING

For an overview of the additional test facilities which exemplify TMG’s commitment to flexibility, performance and accuracy, check out the summary below. For comprehensive details of all the specialist testing solutions under one roof please contact us directly.

- Multiple suspension component rigs
- Steering system test rigs
- Static brake test rig
- Component testing machines, analysing force, torque and temperature
- Centre of gravity rig, also for accurate three-directional inertia tests
- High-performance shaker with climatic conditions for fatigue testing
- Load frames for damper, side intrusion panel, material and suspension testing
- High-frequency material test rig
- Uni-axial damper test system including rotary damper capability
- Stress test rig for carbon composite parts
- Driveshaft test rig for pre-stress or rate drifts
- Three-dimensional coordinate measurement system
- Geometric optical measurement, with TMG-developed post processing tools such as for complete car stiffness maps
- Scanning of surfaces, such as static tyre deformations under load
- FIA homologation facilities for all static chassis homologation tests
- In-house calibration for force, torque, displacement, angle, acceleration, electrical dimensions and temperature
- On-site machine shop for simple adaptations and jig modifications
With various distinct types of dynamometer and a unique range of testing systems, TMG is the key to unlock the performance potential of your engine.
THE POWER BEHIND YOUR PROJECT

THE FLEXIBLE APPROACH AND COMPREHENSIVE RANGE OF SOLUTIONS IN ENGINE DESIGN CAN BE TAILORED EXACTLY TO YOUR PROJECT.

Bring the benefit of experience to your engine development by utilising TMG's expert engineers, who have worked in a variety of different sectors within the automotive industry.

With the support of our engine calculation department, utilising the power of computational fluid dynamics (CFD) and the finite element method (FEM), you can achieve marked improvements.

Our integrated development cycle focuses on more than simply power and efficiency; drivability, dynamic response and fuel economy as well as gear shift refinement are specialties.

The TMG engine design service looks at every detail of your project, including materials, coatings, surface textures, fuel spray velocity, calibration, emissions and much more.

Heat and friction analysis is carried out to the highest possible standards, with high-performance solutions developed quickly and reliably thanks to a culture of rapid problem solving.

All developments can be analysed thoroughly in TMG’s extensive engine and comprehensive testing suite, where detailed processes verify a complete range of specific performance parameters.

Utilising bespoke testing systems, we are able to analyse engine behaviour in precise detail, allowing continuous improvement and refinement.

Our materials department can assist the process through advanced material development while microscopic analysis accurately determines the cause of any failure, allowing immediate remedial work.

Completing our comprehensive engine design and development portfolio, the 1,100m² engine workshop features 21 assembly and five disassembly workbenches, manned by highly-skilled technicians.
TMG’s distinct varieties of dynamometer can meet all your performance testing needs, from high-power internal combustion engines to smaller electric or hybrid units, so whatever engine you are working with, TMG has a testing solution.

The TMG experts have experience of various sectors within the engine development and analysis industry while TMG-modified software gives greater flexibility to our clients.

Our complex car model allows virtual simulation and hardware-in-the-loop system is customisable to suit virtually any vehicle, ensuring entirely repeatable tests linked directly to your specific requirements.

With various dynos available, all accurate to less than 1%, plus certification to utilise aviation fuel, TMG has the capacity and flexibility to meet the engine or motor analysis requirements of most industries.

We have the capability to test hybrid or electric motor systems, with single-component and full powertrain test benches dedicated to hybrid development.

The extremely accurate single-cylinder dyno is designed for minute analysis of single cylinders from high-performance engines or complete small capacity engines of around 100PS. With no neighbouring cylinders, there is less outside influence on results while a greater variety of tests can be carried out.

Our multi-function high-dynamic dyno accurately simulates road or track driving conditions based on a defined plan, with up to 22,000rpm engine speed, 3,000rpm wheel speed and 800kW engine power. Among its various uses, the dynamic dyno is also ideal for exhaust reliability studies and launch development.

The standard dynos monitor behaviour at constant speed for endurance and performance analysis as well as engine calibration. It is the perfect way to confirm engine characteristics at constant speeds.

An additional 320km/h, two-axle rolling road dyno allows in situ testing of a complete car, with 550kW power per axle and a maximum axle load of 2,600kg. Suitable for manual and automatic transmissions, this specialist test rig allows evaluation of drivability, reliability and fuel consumption.

Fully conditioned air, water, lubricants and fuel promote reliable test performance and you can be sure of complete confidentiality during your time at TMG, with private workshops and offices available to allow discreet development.

- Endurance testing
- Playback of specific scenarios
- Powertrain development
- Gear shift control development
- Drivability tuning
- Fast-in-cylinder sampling
- Exhaust gas analysis
- Fuel efficiency tuning
- Calibration and mapping
- Lubricant endurance testing
- ECU development
- Pressure indication
- Heat and friction analysis

UNDERSTANDING ENGINE PERFORMANCE

OUR SUITE OF ENGINE DYNAMOMETERS HAS A PROGRAMME FOR EVERY PROJECT, FROM ROAD CAR TO HIGH-PERFORMANCE AND HYBRID ENGINE ANALYSIS.
ANALYSIS
IN DETAIL

UNIQUE ENGINE COMPONENT TESTING RIGS
PUT EVERY ELEMENT OF YOUR ENGINE AND COMPONENTS TO THE TEST, SO CHALLENGE US TO DELIVER THE ANALYSIS YOU NEED.

Many of our specialist test rigs have been developed in-house and can be adapted exactly to your requirements for in-depth analysis of fuel systems, radiator core performance, pneumatic and steel valve spring behaviour or clutch and launch systems.

Our cam rig for air and valve spring measurement can run up to 22,000rpm engine speed with an 110kW electric motor. A 76-channel measurement system, six-channel laser system and high-speed camera provide full valve motion analysis.

The adjustable radiator wind tunnel runs at realistic air speeds up to a maximum of 12m/s for lifelike analysis of radiator core performance.

A port development flow bench - a very rare example - provides low pressure exhaust measurement and valve shape optimisation, complete with Particle Image Velocimetry (PIV) analysis.

A unique fuel system testing facility incorporates the most comprehensive analyses available, including a fuel pump test rig, fuel rail calibration rig and single injector test and development rig.

Heat rejection and friction analysis is a particular speciality while the latest technology is utilised to provide incredibly detailed data on individual components.

High-speed cameras and lasers deliver incredible accuracy, as does the military-grade thermal camera on our 10,000rpm clutch development rig, which requires a specific permit from the authorities.

Additionally, we offer Horiba exhaust gas analysers, Malvern laser system for fuel spray characterisation, fast flame ionisation detection and rapid in-cylinder sampling.
To break the mould and set new standards for the industry requires imagination and pioneering spirit, exactly the qualities which make the TMG’s EV Technology Development Centre a sector leader.
PIONEERING ELECTRIC VEHICLE DEVELOPMENT

TMG HAS PROVEN ITS EV TECHNOLOGY IN THE TOUGhest ENVIronMENTS, SETTING NEW STANDARDS USING OUR IN-HOUSE DEVELOPED ELECTRIC POWERTRAIN.

EV development began in 2007 for Formula 1 projects and since that time, through the use of cutting-edge technology, TMG has emerged as a leader in the EV field both for motorsport and road vehicles.

Thanks to electric records at world-renowned motorsport venues such as the Nürburgring Nordschleife and Pikes Peak International Hill Climb, TMG’s EV technology has established itself as the performance leader in this sector.

TMG’s key competences cover the whole spectrum of EV technology, ranging from complete electric powertrain design and integration to individual components such as battery management, vehicle control and energy management systems.

Strong relationships with class-leading partners allow TMG to offer proprietary component development for high-performance batteries and motor/inverter technology.

In addition to development of the powertrain itself, TMG also offers infrastructure integration and innovative charging technology plus the technologies required to utilise renewable energy for mobility and transportation.

This holistic approach, which also encompasses vehicle-to-x communication and energy transfer, ensures a complete solution for road or track EV developments.

TMG’s EV Technology Development Centre has a team of experienced professionals and also provides the latest hardware in a constantly-evolving field. The facilities are ideal for bespoke technology development, prototypes and pre-development projects.

As a European hub for EV technology and beyond, TMG is the partner of choice for TOYOTA companies and third parties, thanks to its core aptitudes and unique vision.
TOYOTA MOTORSPORT GmbH — THE HOME OF HIGH PERFORMANCE

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EV MOTORSPORT

RECORD-BREAKING EV TECHNOLOGY

TMG HAS REWRITTEN THE RECORD BOOKS FOR EV MOTORSPORT THANKS TO THE TMG EV P002 RACE CAR, WHICH SHOWCASES OUR HIGH-PERFORMANCE ELECTRIC POWERTRAIN.

In setting a new electric record at the Nürburgring Nordschleife of 7mins 22.329secs, the TMG EV P002 established itself as one of the fastest road-legal cars ever around this demanding circuit. Class victory and a new electric record of 10mins 15.380secs at the Pikes Peak International Hill Climb is further evidence of this car’s performance prowess.

The TMG EV P002 is powered by two axial flux electric motors and delivers 350kW of power, achieving a top speed of 255km/h and 900Nm of maximum torque from its single-reduction gearing.

Lithium ceramic battery technology delivers industry-leading performance from a 42kWh capacity while TMG’s own inverter technology is deployed.

In addition to the vehicle itself, the record achievements confirmed the potential of TMG’s off-grid DC quick charger, a powerful, versatile and mobile charging station mounted for ease of movement in a van.

Recharging of this unit can be done from any standard power supply and takes seven hours, after which the charger is completely mobile and ready to charge a race car in just 90 minutes or to provide a range-extending boost in only a few minutes.

The DC quick charger is an efficient, fast and high-power solution to charge EVs on-event independently of a direct power source, making it ideal for use on race tracks, during testing or at exhibitions. No specific or costly installation is required.
TMG is a leading rapid manufacturing centre and, with precise quality control systems, you can be certain the finished product exceeds your expectations.
Whether for the medical, automotive, architectural or consumer sector, with 10 stereolithography machines (SLA 5080 and SLA 7000 units) and two large-frame laser sinter machines (P700 and P960 units), TMG can meet your demands.

This flexible and adaptable technique allows even the most complex objects to be produced as single structures whether for use as finished parts or wind tunnel models, using advanced materials such as nanotool.

TMG’s rapid manufacturing systems have been refined in the high-pressure world of motorsport, where as many as 2,000 unique parts a month were required, but our skilled technicians come from a variety of backgrounds and have the knowledge to take on any project.

Using their expertise and TMG’s state-of-the-art technology, the rapid manufacturing department can produce highly-detailed items for any industry, no matter whether you need small numbers of prototypes or larger production quantities.

There is simply no faster or more economical way to accurately produce precision items to your exact specifications, but the real advantage of TMG’s technology is its flexibility.

No matter where you are in the world, production can begin on your item at TMG within just a few hours - simply deliver a suitably-detailed 3D CAD model or STL file and we will quickly turn your innovation into reality.

And you can be sure of a smooth and trouble-free process thanks to our modified machines, which allow round-the-clock supervision and instant reaction to any problems. Utilising video and internet technology, we can make your production faster and more reliable than ever before.

SPEED IS OF THE ESSENCE

WITH ONE OF THE LARGEST CONCENTRATIONS OF RAPID MANUFACTURING MACHINES UNDER ONE ROOF, TMG IS A CENTRE OF EXCELLENCE FOR THIS CUTTING-EDGE TECHNOLOGY.
TOYOTA MOTORSPORT GmbH — THE HOME OF HIGH PERFORMANCE

COMPOSITES MANUFACTURING

LIGHTWEIGHT BUT HIGH VALUE

TMG’S VERSATILE COMPOSITES DEPARTMENT COMBINES EXPERIENCE AND HIGH-QUALITY HARDWARE TO CREATE BESPOKE SOLUTIONS PRECISELY TO YOUR REQUIREMENTS.

Two large autoclaves (with 420 x 160cm curing platforms) and one smaller unit (with 200 x 80cm platform) provide the capacity to prepare anything from small parts right up to items the size of a complete car.

We offer a full choice of materials to suit the precise needs of your project, from Kevlar to glass, carbon or hybrid fibres, with a filtered, clean-air, positive-pressure lay-up area eliminating the risk of contamination.

Our advanced pre-impregnated (pre-preg) process, utilising Kevlar, glass, carbon or hybrid fibres, is the optimal choice when you need maximum strength combined with minimum weight.

TMG’s aim is to provide a range of options to meet your precise requirements, so for a cost-effective yet ultra-reliable product, we also offer a wet carbon fibre lay-up service.

To meet the extreme demands of prototype development, TMG has refined the carbon production process for high structural integrity and tight tolerances and this technology is now available to enhance projects of all sizes from all sectors.

Safety critical items can be produced in complete confidence thanks to our thorough on-site testing procedures and high-standard quality control systems, while long experience of prototype development has enhanced our problem-solving capacity.

To complement this top-quality composite service, TMG also provides pattern, tool and final product machining which is supported by any programming requirements to provide a comprehensive answer for every composite question.
PRECISION MILLING AND TURNING

OUR CNC AND FABRICATION DEPARTMENTS HAVE THE IDEAL CAPACITY AND EXPERTISE FOR DETAILED MILLING WORK AND TO CATER FOR HIGH-PERFORMANCE FABRICATION NEEDS.

The CNC department has a varied selection of 15 five-axis milling machines, two CNC turning machines and one turn-mill centre ready to bring speed, precision and efficiency to your project.

From incredibly accurate units capable of machining over an area of up to 1m² to an accuracy of 4 microns, to large machines for heavy-duty tasks, TMG has a variety of solutions available.

Our 3,200m² CNC area has the flexibility to meet requirements big or small and specialises in extremely complex high-performance items, with all parts meeting the strictest quality and reliability checks.

Automated machinery gives us the option of uninterrupted full-capacity production around the clock seven days a week while full connectivity means one machine can control all others to bring efficiency and reliability.

That streamlined technology also brings significant speed advantages, with a machining strategy normally defined and ready for production within 30 minutes of 3D CAD model delivery.

Quality control at TMG is a matter of great pride, nowhere more so than in the CNC department where the highest standards are used to ensure all approved parts meet our clients’ expectations.

Three-dimensional measurement machines examine each item down to a single micron, leaving nothing to chance for performance or safety critical parts.

FABRICATING SUCCESS

From road cars to World Rally cars and motorsport prototypes, TMG’s fabrication specialists have a wealth of experience in completing demanding and bespoke projects. TMG’s skilled fabricators are familiar with a variety of materials, including special materials such as Inconel. In addition, a stringent quality control procedure, combined with experience gained at the top level of motorsport, ensures all projects are completed to the highest standards.

Facilities include large angle-forming presses, a welding dome with an Argon environment to reduce the risk of oxidisation and tube end forming machines.

A large Kuka laser robot provides laser cutting for two-dimensional and three-dimensional components while complex shapes can be formed from sheet metal thanks to the Aida 150 tool press.
TMG is passionate about motorsport, whether top-level works projects or exciting and accessible entry-level vehicles.
SPEED, SAFETY AND STUNNING LOOKS

THE TMG GT86 CS-V3 IS A WINNER AT THE NÜRBURGRING AND, AS AN AFFORDABLE, RACE-READY AND EASY-TO-MAINTAIN CAR, IT IS IDEAL FOR PRIVATE COMPETITORS.

The exciting rear-wheel-drive, 200hp car has been developed specifically for the V3 class of the Nürburgring-based VLN series and has achieved homologation from the Deutsche Motor Sport Bund.

A race-ready GT86 CS-V3 is instantly competitive in a production-based class and represents impressive value for money.

With a 200hp, four-cylinder boxer engine delivering maximum torque of 205Nm, the GT86 CS-V3 can hold its own against other production-based competitors while the highly-praised handling characteristics of the road car are retained and improved.

TMG has stiffened the chassis and optimised weight distribution for motorsport while installing racing exhaust, and brakes. Adjustable Öhlins motorsport suspension offers a range of set-up options to fine-tune the car’s behaviour for any circuit or conditions.

The result is an eye-catching and competitive race car built to TMG’s high standards which delivers a fun and easily-accessible racing experience.

Safety is of course a top priority and with a certified roll cage and racing seat with six-point harness, drivers can feel comfortable and secure. Electronic fire extinguisher system and electronic main switch system enhance the car’s safety features.

As well as a race-ready standard race car, TMG offers a list of optional extras, available upon order or as after-sales items exclusively for the GT86 CS-V3.

Limited-slip differential (4:1 ratio) and rear lower strut bar, plus racing engine and differential oil cooler kits, all enhance the car’s sporty handling and proven performance.

A data logger, dashboard race display, radio integration kit and XL driver’s seat are offered to upgrade the overall racing experience, while DMSB vehicle certification (Wagenpass) can be pre-ordered to allow immediate racing upon delivery.
RALLY FUN FOR ALL

THE TMG YARIS R1A IS AN ENTRY-LEVEL RALLY CAR WHICH ENABLES DRIVERS OF ALL AGES AND ABILITIES TO EXPERIENCE THE THRILL OF MOTORSPORT.

TMG has developed the Yaris R1A specifically to provide an affordable, exciting entry into rallying for competitors young and old.

As a first step into rallying, the car provides the reassurance of manufacturer quality and safety, while long-term participants can tap into the memory of TOYOTA Team Europe, run by TMG during the 1980s and 1990s.

During that time, TMG won three manufacturers’ and four drivers’ world championships and the Yaris R1A is our first step back into the world of rallying since those heady days.

The FIA’s R1A regulations permit only limited performance modifications to the standard 1.33l petrol-engined, three-door Yaris. Front wheel drive delivers 99PS and a maximum torque of 125Nm, combining with a shorter final drive to deliver a fun rallying experience.

This nimble small car is agile around twisty stages but can reach 175km/h top speed, making it the ideal car to learn the rigours of rallying.

TMG’s upgrade kit includes racing exhaust and catalytic converter system, motorsport suspension with adapted springs and adjustable ride height.

In addition, comprehensive safety equipment features bolt-in roll cage, guards for sump, fuel tank and fuel lines, fire extinguishers, rally seats and safety harness plus power cut-off switch.

The Yaris R1A has already proved itself on the big stage, with a successful outing as a course car in the 2012 ADAC Rallye Deutschland, a round of the FIA World Rally Championship.

Although developed as a rally car, the TMG Yaris R1A is also suitable for other forms of automotive recreation such as slalom, driving schools or experience days.

The car is offered as a self-installation package, with donor car and upgrade kit to be assembled by the buyer in order to ensure the most cost-efficient package.
The Home of High Performance is just a short journey away, with TMG’s prime location at the heart of Europe.

Cologne lies at a crossroads in Europe, with three major highways passing through the city, connecting to the main routes in Belgium, France, Holland and beyond to bring cities like Brussels (200km), Amsterdam (270km), Paris (500km) and Zurich (580km) within easy reach.

Even a journey across, or under, the Channel from Great Britain to TMG is straightforward, with regular ferry or Eurotunnel crossings from Calais just 400km away.

Cologne Bonn airport, the sixth largest passenger hub in Germany and its second biggest air freight terminal, is less than 25km from TMG while Düsseldorf airport and Frankfurt are 50km and 200km respectively within easy reach.

For those who prefer the train, modern high-speed rail links connect Düsseldorf within 30 minutes, Dusseldorf International Airport within 35 minutes, and all major European cities.

BY PLANE, TRAIN OR AUTOMOBILE: TMG IS AT THE HEART OF EUROPE

WHAT MORE CAN WE SAY? CONTACT US NOW FOR MORE INFORMATION

With so many services and offers available, it’s only right to ask: what’s stopping you? Contact us to discuss how to extract the full potential of your project or product and take the stress out of translating complexities. Expect to understand exactly what we can offer.

As a multi-national company we have representatives in every major European language and several more besides, so get in touch by phone (+49 2234 1823 0), email contact@toyota-motorsport.com or visit www.toyota-motorsport.com to find out more.