

Expertise, Services & Successes



>> Our Technical Groups



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>> Services for the future

As one of the leading research service providers, GWT offers contract research, a variety of R&D, plant and management support as well as products and technologies based on the results of university research to companies and society, including public institutions.

At the foreground of the work with our customers is results oriented commitment to our contractual relationships with respect to performance, deadline and price. Contractually agreed confidentiality represents the basis for cooperation with our customers.

In order to minimise the financial risk of research and development projects, we support and advise our customers when needed in advance of contracts, including the use of available funding instruments.

The temporary use of capable as well as interdisciplinary GWT research teams by our customers enhance their R&D capacity and assist them in their own innovation initiatives using appropriate specialist expertise, without having to reserve or expand their own resources.

This catalogue of services is subject to continual updating. The motivation for expanding our areas of expertise comes from the requests and needs of our customers.

For the most complete description of our services, contact us directly or visit us at www.GWTONline.de.

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>> Technical Group Machine, Process and Production Engineering

Interdisciplinary expertise for modern machines and processes

Expertise

- Solid and fluid mechanics
- Thermodynamics
- Material science
- Power engineering
- Power machines and machine laboratory
- Design, process and processing engineering
- Surface and production measuring technology
- Lightweight engineering and polymer technology
- Production engineering
- Machine tools and control engineering
- Conveying technology, construction machinery and logistics
- Wood and paper technology
- Foods and bio-process technology
- Aerospace engineering
- Textile and clothing technology
- Processing machines and agricultural machinery
- Labour engineering
- Environmental technology

Services

Contract Research

R&D, Plant and Management Support

- Development support
 - Simulation of hydraulic systems
 - Simulation of vibration behaviour
 - Interactive machine simulation
 - Crash testing
- Analyses, assessments, calculations
 - Stress analyses using finite

element and boundary element methods

- Dimensioning and designing machine elements
- Physical materials analysis
- Numerical flow calculation
- Measuring, testing
 - Measurements in low-velocity wind tunnel
- Consulting services
- Project management
- Design
- Technology service

- Virtual Prototyping
- Surface treatment of materials
- Beam cutting, mechanical cutting, eroding, profile grinding
- Prototyping
- Reverse Engineering

Research oriented products, technologies

- Research oriented products
 - Equipment engineering for in-line particle measurement (AELLO)

References

<< 1 Voith Siemens Hydro Power Generation Ltd. Brazil, Finite-Element calculations

For Voith Siemens Hydro Power Generation Ltd., Brazil The FE consulting centre of GWT developed a method for enabling improved calculation of stator and rotor laminations for hydropower generators using standard FEM programs. This allowed large distortions, non-linear material behaviour, friction and pre-stresses to be accounted for. Subsequent experimental studies confirmed the calculated results.

<< 2 Dürr AIS GmbH, Design

A typical contract for the Centre for Mechatronic Drive Systems and Design Engineering (ZEMAK) included rapid 3D design of a lowerator for the process shaft of a RoDip system. The client, Dürr AIS GmbH, required both a limited investment framework and a strictly limited material selection. Since this involved a paint line, the use of materials which could result in coating difficulties was not permitted.

<< 3 DETHLOFF & LANGE GmbH, Process optimisation

An example of the need for special expertise to medium size companies can be found in DETHLOFF & LANGE GmbH. The increasing need for treated wood in outdoor use demands greater efficiency and therefore further development of existing technologies for soaking and drying woods. Light-microscopic studies enabled us to develop proposals for process optimization.

<< 4 In-Line Sensor Systems

In addition to our offering of in-line particle measurement technology (BASF, Infineon, Kinetics, Celerity, University of Karlsruhe, University of Kaiserslautern, Linde, Aventis, Böhrringer) we expanded our services in the area of particle characterisation over the past year. An example from this area is the construction, evaluation and subsequent assessment of a motor vehicle soot particle test stand for Volkswagen /AG.

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<< Grit Debitz Head of the Technical Group Machine, Process and Production Engineering

>> Technical Group Electrical Engineering | Information Technology | Computer Sciences

Cross-disciplinary applications require interdisciplinary knowledge and action



Services

Contract Research

- Analysis, modelling and drafting of circuits, sensors and components
- Drive and automation concepts
- Power supply systems
- Wired and mobile information systems
- Software development and adaptation

R&D, Plant and Management Support

- Development support
 - Simulation and modelling
- Analyses, evaluations, calculations
 - Material analysis
 - Calculation and assessment e.g. of field exposure
- Measuring, testing
 - EMC measurements and tests

- Testing of circuits and components
- Consulting, supervisory and training services
 - Selection, implementation and commissioning support
- Expert assessments
 - Damage assessment, immissions prediction
- Project management

Expertise

- Physical analysis
- Electrical and Information Engineering
- Automation engineering, control and feedback control theory
- Electric drives and machines
- Power engineering
- Electric energy supply and high-voltage engineering
- Power electronics
- Electromagnetic compatibility
- Semiconductor and micro-system technology
- Optoelectronic components and systems
- Information technology and mobile information systems
- High frequency technology
- Acoustics and language communication
- Technical Information Science
- Computer architecture and HPC tools
- Microcomputers
- Computer networks
- Operating systems
- Databases
- Applied Science
- Technical Information Systems

References

<< 1 Health insurance, software development

For the data clearing site of the disease management program „Diabetes in Saxony“ we developed together with experts from the research group Medical Information Sciences a database, infra- and personnel structure for managing over 240,000 patient data records.

<< 2 STMicroelectronics, Development

Modelling of a „Power Bipolar Transistors“ for STMicroelectronics SA France. GWT was contracted because we offer the necessary expertise and special HICUM, TRADICA and DEVICE software in our research department Electronic Components and Integrated Circuits.

<< 3 VacuTec Messtechnik GmbH, Measurements

For an in-house developed product VacuTec Messtechnik GmbH Dresden required comprehensive studies of electromagnetic compatibility. An X-ray dose measuring instrument was used to perform measurements of emission and noise immunity as the basis for the EC Declaration of Conformity and CE Marking for the device.

<< 4 Lawrence Livermore National Laboratory/ University of California, Software support

GWT provided the American research laboratory with support in using a special software (VAMPIR) from the HPC Tools research department for optimising parallel programs on high-performance computers with several thousand processors

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<< Henry Urban Head of the Technical Group
Electrical Engineering | Information Technology |
Computer Sciences



>> Technical Group Transportation | Civil Engineering and Architecture

Innovative solutions for a mobile society

Expertise

Transportation

- Traffic telematics
- City and regional transportation
- Transport Economy

Civil Engineering and Architecture

- Construction materials
- Construction physics
- Bearing capacity analysis
- Urban and industrial engineering
- Road engineering
- Hydro-engineering and technical hydromechanics
- Concrete engineering
- Steel and wood constructions
- Construction phase management
- Building Climatology and Building Systems
- Rural and urban planning
- Community supply and disposal engineering
- Geodesic engineering

Services

Transportation

Contract Research

- Demand analyses
- System and migration concepts
- Specifications
- Development and application of models and algorithms
- Hard- and software development

R&D, Operation and Management Support

- Consulting
 - Specifications and requirement documents
 - Expert monitoring and evaluation of bid invitations
 - Engineering and methodological consulting services
 - Implementation support
 - Market studies

Analyses | Expertises

- Performance capability calculations
- Efficiency Analyses
- Cost-benefit analyses
- Economic and Technological feasibility studies
- Acceptance analyses
- Life-Cycle cost analyses

Service

- Project management

Construction and Architecture

Contract Research

R&D, Plant and Management Support

- Development support, Technology service
 - Modelling experiments for flood prevention
- Measurements, tests
 - Material strength testing

Bearing capacity evaluation

- Determining the specific thermal transition

Analyses

- Construction mechanics analyses

Calculations

- Humidity calculations, moisture retention

Expertises

- Analyses for technical approval

Consulting services

- Optimisation of construction procedures
- Flood prevention
- Watering and drainage
- Developing testing concepts

Project management

- Safety and health protection coordination



<< Helge Lorenz Head of the Technical Group Transportation | Civil Engineering and Architecture

References

<< 1 Consortium intermobil, Project management, Research and Development services

The Technical Group is responsible for overall project coordination of the large scale project „intermobil Region Dresden“. Since 1999 the 13 partners from business and science have been developing and testing solutions for mobility assurance in populous areas as part of the German Ministry of Education and Research (BMBF) lead project. The research initiative represents an overall volume of nearly 30 mil. EURO.

<< 2 pilot projects ALLFA-Ticket in the Oberelbe Public Transport Association

The Oberelbe Public Transport Association together with partners from the lead project intermobil is implementing for the first time in Europe a pilot project for electronic ticketing based on fully automatic presence sensing and a new kind of automatic fare calculation. The Technical Group is significantly involved in the conceptual work and is coordinating especially standardisation of the procedures in the German Transport Association (VDV) core application.

<< 3 Institute for according to concrete Engineering of the TU Dresden, development of textile-reinforced concrete

On behalf of the interdisciplinary special research area „Textile-Reinforced Concrete“ founded in the year 2000 at the Institute for Solid Construction and Textile Engineering of the Technical University of Dresden, GWT assumed the task of verifying the economic benefit and demonstrating various applications with this innovative construction material, including a façade panel and a bridge made of textile-reinforced concrete.

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>> Technical Group Chemistry and Physics | EU-Coordination

Knowledge edge for technological advancement



Services

Contract Research

- Development and optimisation of physical-chemical separation processes based on sorptive processes, selectivity and capacity determination of porous solid materials
- Development and optimisation of procedures for cleaning ground and waste waters
- Special syntheses
- Nanomaterials and particles

R&D, Plant and Management Support

- Development support
 - Catalyst development and testing

- Custom synthesis
- Setting up of special laboratories
- Chemical-physical analysis
- Analyses, evaluations, computations, measurements, tests
- Obtaining complex physical-chemical balance data for designing Technical separating equipment and chemical reactors
- Combination of surface analytic methods for characterising solid body surfaces and surface layers in the nanometre range
- Combination of material and isotope analytic investigations

Consulting services

- Selection, preparation and solicitation of EU projects
- Negotiation assistance
- Contract management
- Project management
 - Administrative, business and technical project management
 - Coordination of projects in the EU realm of research
- Marketing and sales of the GWT competence portfolios

Expertise

- Chemistry
- Physics
- Related technical expertise
 - including information science, life sciences
- Administrative and business expertise
 - Especially with regard to EU research activities
- Linguistic expertise
- Marketing and sales

References

<< 1 EU project PULSERS, project coordination

Since January 2004 GWT has coordinated the international research project PULSERS (Pervasive Ultra-wideband Low Spectral Energy Radio Systems). From within Germany the EU coordinators from GWT have been directing 30 partners in 12 countries, including companies such as Motorola, IBM, Thales and Philips Electronics. The funding volume is 50 mil. EURO, of which 30 mil. Euro was acquired from EU funds. The common objective is the development of new technologies and specifying of generally recognised standards for wireless broadband communication over short distances using ultra-wideband wireless technology.

<< 2 Joint project ENFORCHANGE

This joint project as part of the „Research for Sustainability“ is funded by the Federal Ministry of Education and Research (BMBF). Universities and forestry companies have joined together in the research association to investigate processes of forest development and derive appropriate measures. The goal is the continuous generation of wood as a renewable resource. GWT has assumed responsibility for the technology transfer. The content resulting from the research project is prepared and disseminated for specific target groups.

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<< Dr. Kerstin Grätz
Head of the Technical Group Chemistry and Physics | EU-Coordination



>> Technical Group Biotechnology | Biology | Biochemistry

Research, knowledge and action for the sector
of the future

Expertise

- Biology and genetics
- Biochemistry
- Biophysics
- Molecular cell biology
- Genomics and proteomics
- Biomaterials
- Tissue engineering
- Bio-nanotechnology
- Bio-process technology
- Cellular machines
- Bio-information science
- Biomedical technology
- Biosensors
- Biochip technology

Services

Contract Research

- Development concepts
- Project management
 - molecular bioengineering
 - Biosyntheses
 - Environmental biology
- Investigation methods for bio-compatibility

R&D, Plant and Management Support

- Consulting
 - Assessing bid solicitations
 - Writing project applications
 - Feasibility studies
 - Medical-technical and pharmaceutical quality management (GMP, GLP, GCP)
- Analyses | Expert assessments
 - Specialisation-specific market analyses

- Acceptance analyses
- Cost-benefit analyses
- Bio-compatibility tests
- Service
 - Project management
 - Laboratory, measuring, testing and computing services
 - Biosyntheses
 - Integrated environmental protection

References

<< 1 BIOTECHID GmbH, Imaging diagnostics of localised inflammations

Together with institutes of the Technical University of Dresden, the University of Leipzig and the Rossendorf Research Centre and Biotectid GmbH, a Leipzig bio-technology company, the Biotechnology Technical Group is coordinating an effort to develop a solution for exact detection of localized inflammations, especially chronic inflammations in the early stage, using imaging procedures.

<< 2 Elaboration of technological foundations of power spectroscopic and microscopic analysis of cell adhesion (CellHesion)

A part of the BioMeT platform managed by our Technical Group, involving the Berlin company JPK Instruments and the Biotec Centre of the Technical University of Dresden and the Max-Planck Institute for Molecular Cell Biology and Genetics, with the goal of elaborating fundamental principles for the development of a new generation of devices using scanning power microscopy in combination with light microscopy for use in life sciences oriented nanotechnology.

<< 3 Development of a platform technology for generating DNA findings

In close cooperation with institutes of the Technical University of Dresden, the Dresden firm Biotype AG developed a completely new type of platform technology for generating DNA findings, used among other places in chimerism analysis, in forensics and paternity determination. <<



<< Hans-Jürgen Große
Head of the Technical Group Biotechnology

>> Technical Group Medicine | Medical Services | Occupational Medicine | Medical Technology

Knowledge-based medical expertise for successful health services



Services

Centre for Clinical Studies

Contract Research

- Therapy studies for phases I - IV
- Epidemiological studies
- Prevalence and care studies
- Clinical testing of medicinal products

R&D and management support

- Consulting
 - Planning | Contract design for clinical studies
 - Study design | Test planning creation
 - Application filings
 - Consulting for the clinical testing of medical products
- Analyses | Expert assessments
 - Statistical evaluations
 - Assessing pharmaceutical safety
 - Special analytic-kinetic studies
- Service
 - Patient and subject recruitment

Saxony Centre for Labour and Health (ZAGS)

Contract Research

- Employment research in the new world of work
- Company physician competency centre for supervision and consulting in teaching professions

R&D, Plant and Management Support

- Consulting
 - Occupational medicine and safety consulting
 - Consulting for occupational medicine problem areas
- Analyses | Expert assessments
 - Evaluating workplaces and processes according to occupational medicine criteria
 - Occupational medicine preventive care studies
 - Studies in youth employment protection
 - Assessing ability to work
 - Attitude studies

Medical Services

- Medicine-Service
 - Development and marketing of IT documentation systems
 - Holding medical continuing education events
 - Health-Care-Management

Interdisciplinary station

- Intensive care
- Pre- and post-therapeutic and surgical treatment in oncology

Individual health care services

- Sports medicine fitness studies
- Nutrition consulting and adipositas therapy
- Certifications according to the Driver's License Regulations
- Preventive health care through employee check-ups
- Preventive health program: Stress management, back schools, nutrition consulting

Expertise

Centre for Clinical Studies

- Angiology
- Hematology
- Internal oncology
- Metabolic endocrinology
- Pneumology
- Nephrology
- Neurology
- Gastroenterology
- Clinical psychology
- Anaesthesiology-Intensive care medicine
- Orthopaedics

Saxony Centre for Labour and Health (ZAGS)

- Occupational and social medicine
- Environmental medicine

Interdisciplinary station

- Intensive care
- Special training for oncologic care

References

<< 1 Aventis, outcome study ORIGIN

The goal of this international study project is to demonstrate significant lowering of cardiovascular morbidity and/or mortality in patients with pre-diabetic symptoms or with early Type 2 diabetes through medicinally induced normoglycemic blood levels. 10,000 patients worldwide will be included in this study and be treated over a period of five years. The research area Metabolics | Endocrinology in the GWT Centre for Clinical Studies will incorporate at least 100 patients in the study, thereby representing the largest German centre in this study.

<< 2 Pfizer, health care study DETECT

Heart and circulation diseases are the leading cause of death in Germany. But how often are manifest coronary heart disease, diabetes mellitus and secondary diseases diagnosed in patients? How do physicians in private practice approach this diagnostically and therapeutically? Answers are to come from the health care study „DETECT“ (Diabetes Cardiovascular Risk Evaluation: Targets and Essential Data for Commitment of Treatment) contracted by Pfizer. GWT carried out a screening in 3,000 primary care physicians' offices using over 60,000 patients across Germany to determine the prevalence and risk constellation of diseases. During the course of this health care study the occurrence of critical disease symptoms in over 7,500 patients were followed over a period of 12 months (follow-up studies). The GWT working group Clinical Psychology, headed by Prof. Wittchen, published the first study results in cooperation with Pfizer at the end of 2004.



<< Dr. Dieter Nagel
Head of the Technical Group Medicine

<<



>> Technical Group Special Consulting Services

Management support for business success

Expertise

- Communications science
- General psychology
- Occupational and organisational psychology
- Business administration
- Human resources
- Business management

Services

Contract Research

R&D, Plant and Management Support

- Consulting
 - Communications strategies
 - Business communication
 - Process design|Organisation
 - Analysis, optimisation of work procedures

- Personnel development

- Marketing strategies

- Analysis |Expert assessments

- Communications analyses
- Employee surveys
- Customer surveys
- Opinion surveys
- Market and image analyses

- Service

- Publicity/public relations
- Personnel selection
- Team development measures
- Moderation-|Presentation training
- Personnel searching

References

<< 1 BKW FMB Energie AG, Bern, Human Resources Development

The Swiss company BKW FMB Energie AG actively pursues human resources development as an important key to success and contracted GWT to evaluate suitable candidates for new positions. Specialists from the field of human resources development carried out hiring tests and assessment centers with internal applicants. The resulting pool of management candidates with their exact profile classification is part of how the client implements human resources policy and increases employee motivation.

<< 2 Infineon Technology Dresden, work process analysis

„Task-Oriented Information Exchange“(TIE) is a group procedure for optimising work processes. It can be applied in various industry sectors. The goal is to uncover problems in the work area and to develop solution proposals. GWT has several experienced moderators and in 2004 carried out TIE studies at companies like Infineon Technology Dresden.

<< 3 SMART Niederlassung Dresden, image analysis

In creating an image analysis for the Smart line of automobiles GWT surveyed detailed information on the acceptance and brand potential of the Smart brand in Dresden and environs. Dresden households and customers of the Smart Centre were surveyed using the newest techniques of methodological research.

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<< Grit Debitz Head of the Technical Group
Special Consulting Services

>> Technical Group Saxon Patent Assessment Agency

Protected ideas for economic success



Services

R&D and IP support

- Consulting

- Market studies
- Innovation and technology consulting
- Expert assessments | Reviewing inventions

- Strategy consulting for patent applications

- Coaching for company establishment

- Technology service

- Patent research
- Distribution rights registration

- Distribution marketing for property rights

- Negotiating, writing and monitoring distribution agreements

- Informational and training events

Expertise

Commercial, legal, patent law and management expertise

- Intellectual property assessment, formulation and registration
- Contract law and contract writing
- Project and IP management
- Marketing and sales

Technical expertise

including

- Machine, Process and Production Engineering including surface technologies
- Materials
- Electrical and Information Engineering
- Information and communications technologies
- Life-Science | Biotechnology
- Nanotechnologies
- Medical Technology

References

<< 1 Patent-„distribution“ through sale of a patent – „Middle Ear Prosthesis“

As a result of university research work new components for hearing aids were designed and tested which enable patient-specific adaptation of the device and thus significantly improve the quality of life of hearing impaired persons. After a positive assessment with respect to degree of newness and success probability, the patent was applied for. Within a year the invention was successfully sold to a medical technology company.

<< 2 Marketing support using prototypes as demonstrators – „Piston-Expander Compressor“

A compressor concept was developed which uses the energy gained in expansion to achieve a significantly more favourable energy balance and through clever use of device-internal pressure differences results in a significant reduction in manufacturing and assembly costs. To demonstrate the benefit as well as application variations with an eye towards commercial marketing, the Technical Group created and managed user- and application-specific prototypes for various users.

<< 3 Patent-„Distribution“ through licensing – „Bassoon Bocal“

Flow calculations such as are used in air and aerospace and transferred to the bocal of the bassoon were the basis for its contour modification. This resulted in a drastic reduction in resistance and thereby of the effort required to play the instrument. A Bavarian woodwind instrument maker was the first to acquire the license for this innovation for further development, manufacturing and subsequent marketing.



<< Elke Göring Head of the Technical Group Saxon Patent Assessment Agency

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