mwgENG

- MECHANICAL ENGINEERING, UTILITY VEHICLES SECTOR
- SPECIAL-PURPOSE MACHINE CONSTRUCTION
- PLANT AND TANK CONSTRUCTION

mwgENG, founded in 2005, offers engineering services in the fields of machine and plant construction. We have many years of experience, especially in the field of construction machines, agricultural and forestry machines. This stems from our previous activities in the utility vehicle sector with special emphasis on construction machines. This experience is also based on our cooperation with the TOP TEN COMPANIES in the German Mechanical Engineering sector. In addition to this, we have a great deal of know- how in production engineering, welding technology, material technology and other areas.

Our UNIQUE SELLING POINTS are quality, reliability in meeting customer deadlines and a wealth of experience in the above-mentioned fields. We additionally strive for close customer proximity as well as a high degree of flexibility, as ensured by cooperation with our partner companies and flexible working hours.

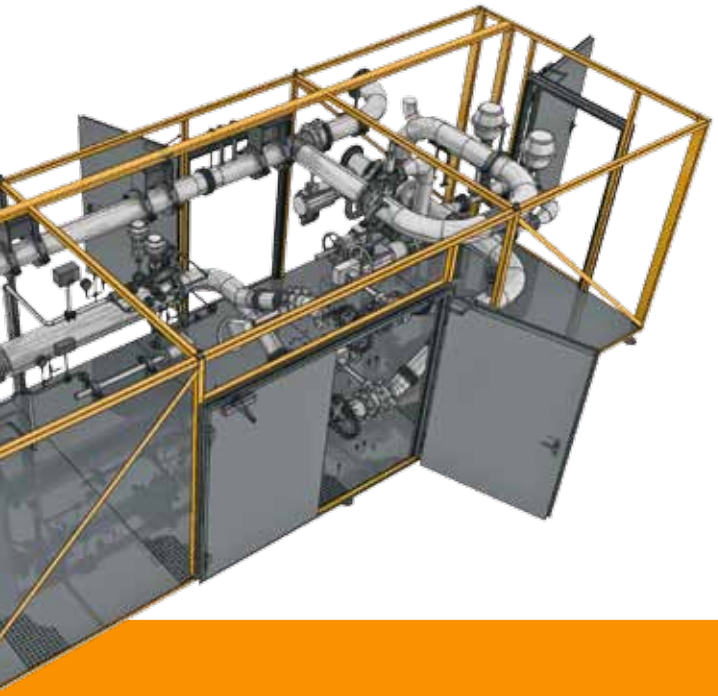
All of our activities are aimed at providing our customers with the best possible benefits,
with the objective of realising a long- lasting and successful business relationship.

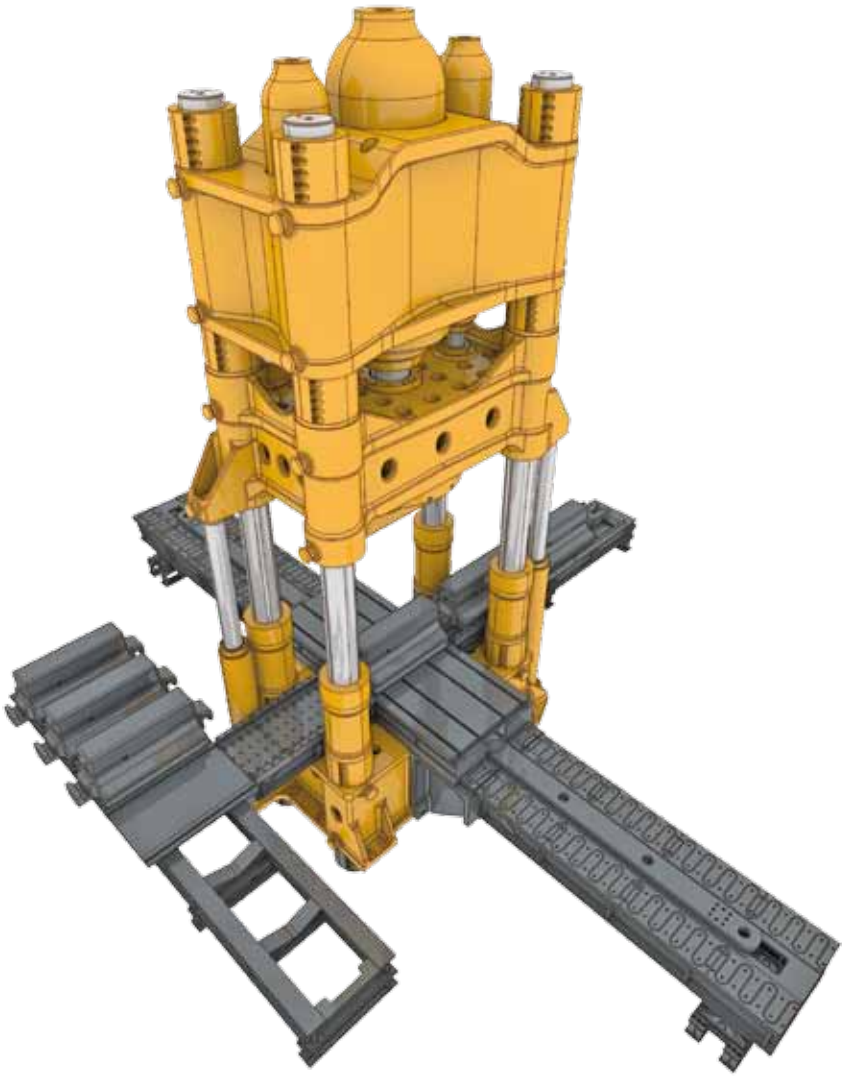
CORE AREAS OF MECHANICAL ENGINEERING:

- CONSTRUCTION MACHINES, AGRICULTURAL AND FORESTRY MACHINES
- SPECIAL- PURPOSE MACHINES, TOOLS AND EQUIPMENT

PLANT AND TANK CONSTRUCTION:

- APPARATUS, TANK AND PIPELINE CONSTRUCTION, ESPECIALLY FOR THE BEVERAGE, CHEMICAL AND PHARMACEUTICAL INDUSTRIES

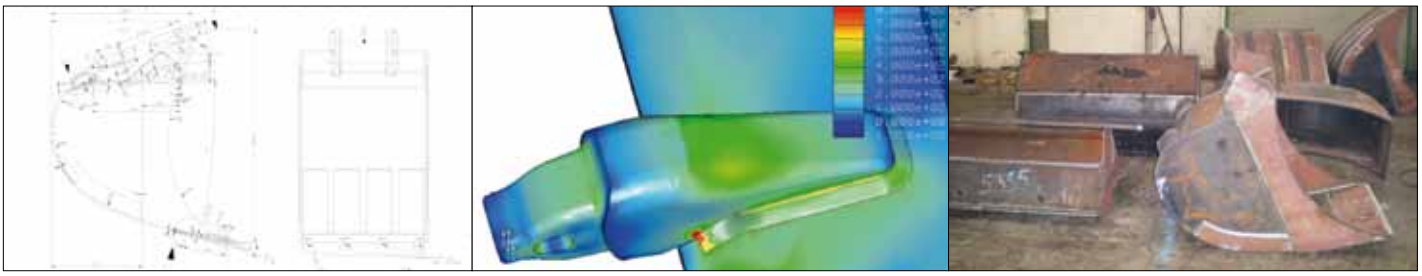




CORE AREAS OF MECHANICAL ENGINEERING:
CONSTRUCTION MACHINES, AGRICULTURAL AND FORESTRY MACHINES

ACCESSORY EQUIPMENT FOR CONSTRUCTION MACHINES

We design and develop many different types of attachments, especially excavator buckets and special tools which may be manufactured on an optional basis. A few examples of the latter include special tools, equipment and components such as e.g. front and rear blade supports, front and rear outriggers, specially- designed auxiliary equipment and other customized special constructions.



Excavator buckets are dimensioned according to their intended use and equipped with wear plates. We also offer complete designs manufactured from fine- grained steels of the required quality. FEM calculation tools such as „ANSYS“ are used to achieve optimum dimensioning, which implies a very good stability- weight ratio with high safety reserves.

COMPONENTS AND SPARE PARTS FOR CONSTRUCTION MACHINES, AGRICULTURAL AND FORESTRY MACHINES

DESIGN OF COMPONENTS, SUCH AS FRAMES, COVER PANELS, PLAIN BEARING BUSHES, PINS AND OTHER PARTS
Our services cover basic activities such as layout design, dimensioning, material selection, preparation of drawings, preparing production schedules etc. We offer special solutions for modifications and extensions as well as follow- up manufacture realisation by our partner companies.

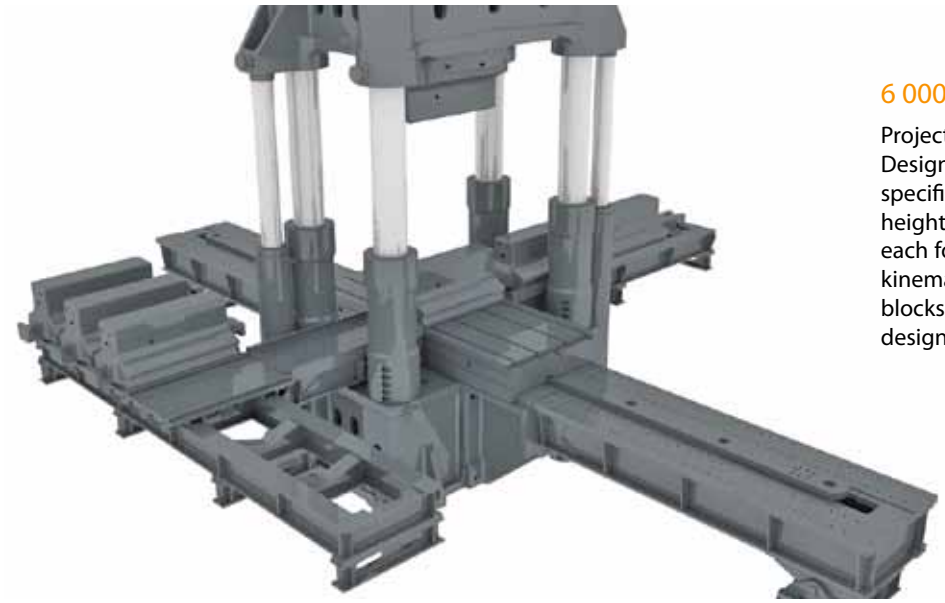
FURTHER EQUIPMENT FOR CONSTRUCTION MACHINES, AGRICULTURAL AND FORESTRY MACHINES

COUPLING SYSTEMS AND EQUIPPING OF ATTACHMENTS
It is generally possible to design any kind of mechanical, semi- automatic or fully- automatic coupling system. Furthermore, depending on the attachment, mechanical, hydraulic and electrically- operated auxiliary units can be added, such as e.g. hydraulically- operated side shift devices, hydraulic tipping devices, proximity sensors etc., all taylor- made to meet the customer‘s individual needs.

CORE AREAS OF MECHANICAL ENGINEERING:
SPECIAL PURPOSE MACHINES, TOOLS AND EQUIPMENT

15 000 t, 4 COLUMN OPEN DIE FORGING PRESS

REPAIR ORDER FOR A 4 COLUMN HYDRAULIC PRESS IN THE UKRAINE
Modelling of the entire press including its foundation, the production hall, chambers for housing electrical and hydraulic units, bridge crane etc. for installation and collision investigations of different solution approaches for improving forging press performance.
Background: wide- ranging modifications to an existing oil- hydraulic unit to optimise its performance data in forging steps 1, 2 and 3, particularly with regard to forging forces and stroke speed during each step as well as retraction speed.



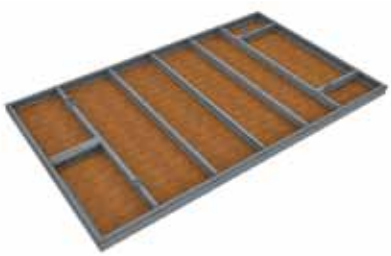
6 000 t, 4 COLUMN OPEN DIE FORGING PRESS

Project planning for a 6 000 t open die forging press.
Design of the press configuration according to customer specifications, such as clear passage width and clearance height, stroke, forging force and stroke speed during each forging step as well as table and tool displacement kinematics, number and dimensions of the forging die blocks and the resultant boundary conditions for designing the tool magazine.

MACHINES, TOOLS AND FRAME CONSTRUCTIONS

WELDED SEAM ROLLER
Specially developed for the production of tanks and containers in order to smooth out the displacement of plate joints after tack welding as well as to compensate weld distortions and smooth weld seams by means of a seam roller. Advantage: uniform shape of tank walls, no constrictions, reduced grinding effort.

TANK BOTTOM DEEP- DRAWING TOOL
Using the deep- drawing method, this tool permits the economic manufacture of special tank bottoms with polygonal shapes. Advantage: a considerable reduction in manufacturing time, less surface scratches and improved dimensional accuracy.



EXCHANGEABLE PLATFORM FOR A TRAILER
Platform design for a trailer (removable).
Specially folded profiles to achieve high structural stiffness with the least possible amount of welding work. Fully galvanized construction.
A wide range of such frame designs are possible in compliance with currently applicable regulations and standards.

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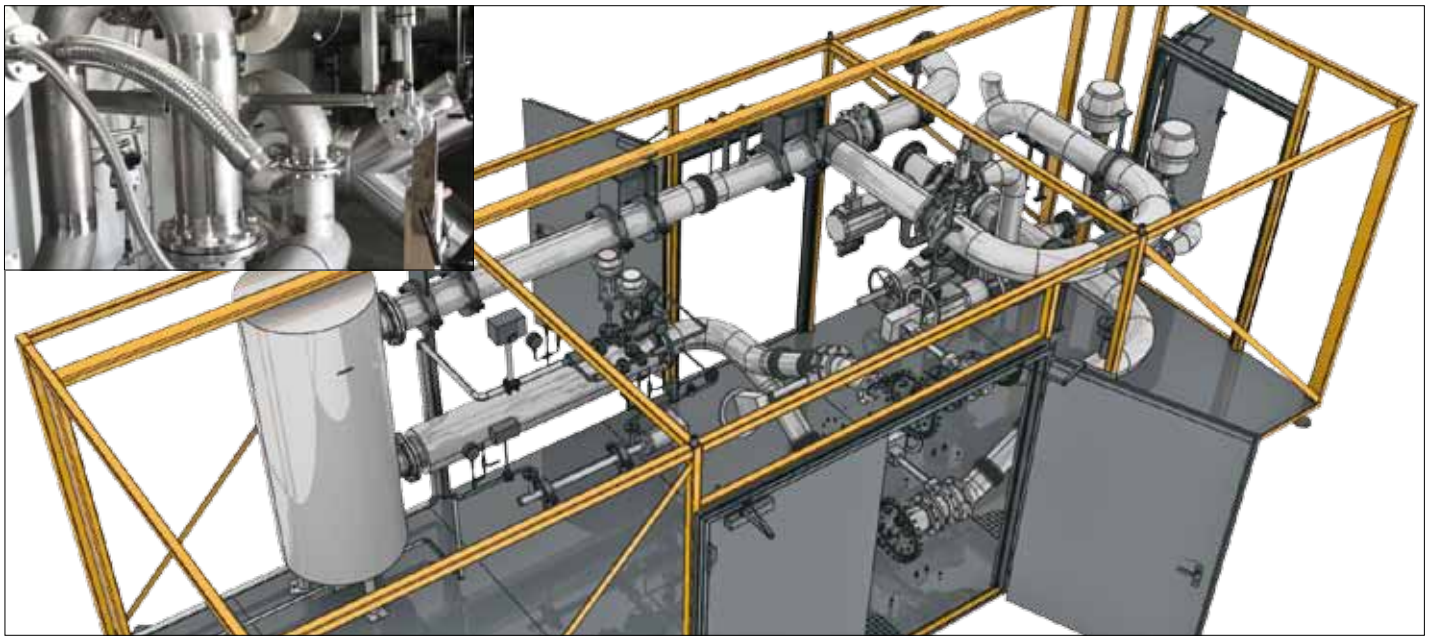
PLANT AND TANK CONSTRUCTION:

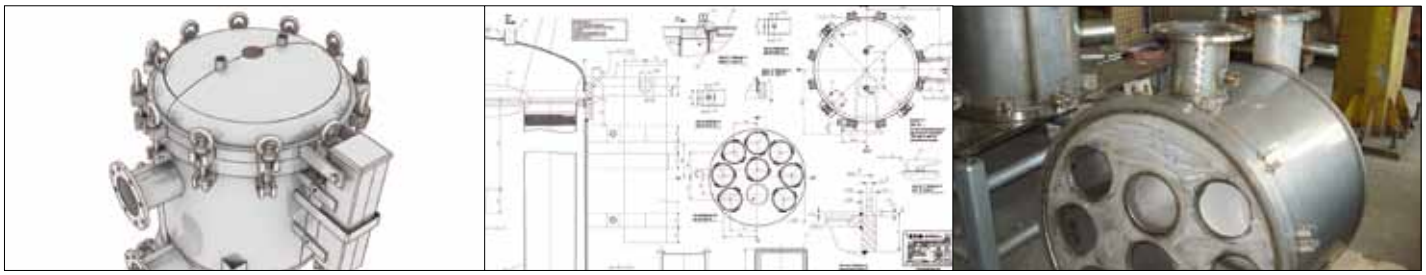
APPARATUS, TANK AND PIPELINE CONSTRUCTION, ESPECIALLY FOR THE BEVERAGE, CHEMICAL AND PHARMACEUTICAL INDUSTRIES

THERMAL CONDITIONING UNIT (TCU)



The extension of an existing TCU unit for the German Space Research Centre. Main activity: project management within the framework of a customer team engaged in the development of a plant for cooling thermal test chambers down to -170 °C and heating them up to +160 °C for the purpose of simulating an artificial space climate.
The entire plant was completely redesigned, beginning with a definition of the flow system right up to the components necessary to ensure proper functionality and performance as well as to meet safety regulations. Definition of performance parameters for all components, design and computation of these components and the piping system as well as the dimensioning of a container for housing the plant unit.
Further assignments: assembly on the customer's premises and all tasks necessary to integrate the plant into the customer's existing system.

FILTRATION TANKS



Computation and design of tanks and components. Modelling, preparation of drawings, production planning and manufacture realisation for a wide range of designs. We also offer customised modular systems for differently equipped tank series.

SACK FEED TANKS

We design a wide range of tanks and plant components for the foodstuff, pharmaceutical and chemical industries to meet many different requirements. In this case also, we offer numerous special solutions ranging from non-pressurised vessels to complex plant units.

OUR SERVICES:

ENGINEERING SERVICES ON 2D AND 3D CAD SYSTEMS

- Project planning and design of plants, machines and utility vehicles as well as subtasks thereof.
- Project management
- Conceptual design, layout and calculations
- Design, development and modelling of castings, especially steel castings and nodular iron castings
- Model setup for FEM computations
- Model setup for RAPID PROTOTYPING
- Model setup for complete plants, production halls, installations, piping systems etc.
- Model setup and animation for:
    - the collision testing of models
    - the optimisation of motion cycles and sequences (visualisation of motion cycles and sequences)
    - the visualisation of complete plants
    - the presentation of new machines, plants, components etc.
- Extensions and modifications of existing designs
- Detailed engineering
- Preparation of drawings
- Conversion of existing drawings from 2D into 3D
- Creation of standard parts libraries
- Documentation (plant documentation, preparation of spare part drawings etc.)
- Management of documents and master data records, also possible on the customer's premises
- Other services on request.

DATA EXCHANGE

- As files, plots or both, as requested by the customer
- Data transfer is possible via remote data transmission, Internet, e-mail or data storage media as well as by any generally- accepted method used by the customer

IMPLEMENTED SOFTWARE

- Pro / ENGINEER Wildfire with Intralink, CREO with PDM-Link
- Solid Works
- AutoCAD Mechanical
- Ansys
- General computational software, software for the management of materials, standards and general data as well as miscellaneous software

MANUFACTURE REALISATION

By drawing on the expertise of specialised partner companies in both Germany and Bulgaria, we are able to manufacture goods at a favourable price- performance ratio (product realisation, prototype construction).

FURTHER SERVICES

- Production monitoring
- Monitoring of welding during manufacture (e.g. DIN 18800 „Steel structures", DIN EN ISO-14731, 3834, 5817, 15607-15614 and others)
- Contact partner for German- Bulgarian cooperation projects

EXTRACT FROM OUR LIST OF REFERENCES ON REQUEST.

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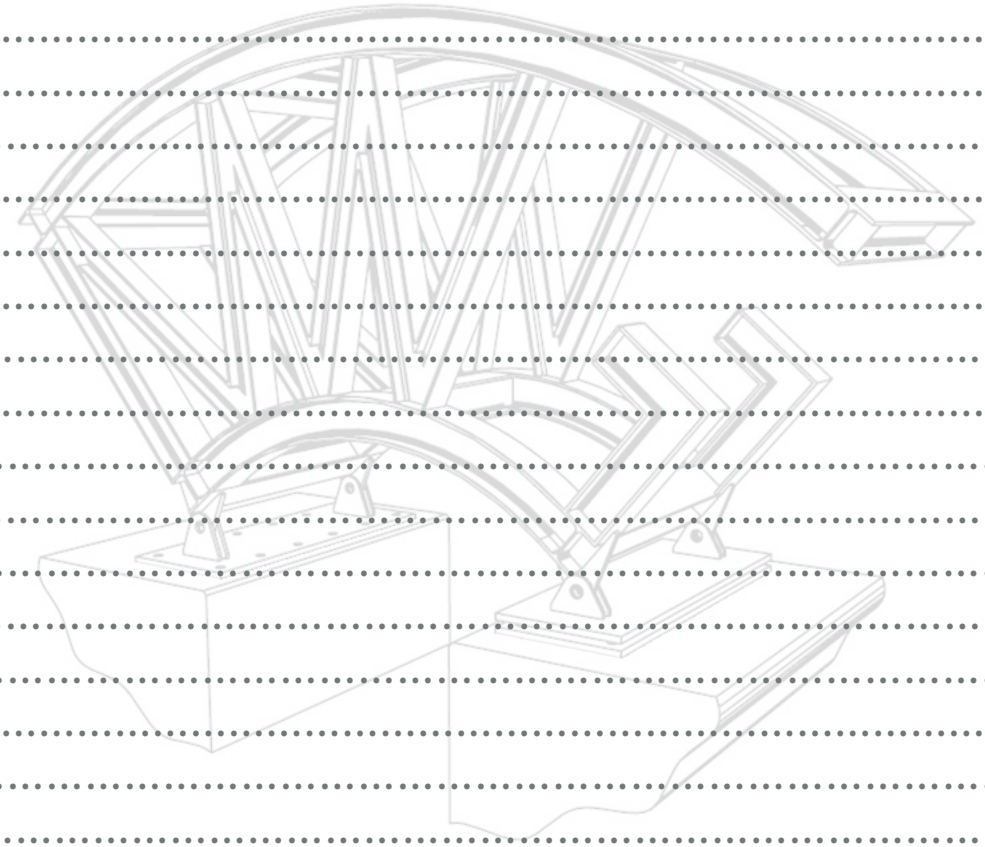

KEYFEATURES

- EXPERIENCE
- COSTS
- FLEXIBILITY

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