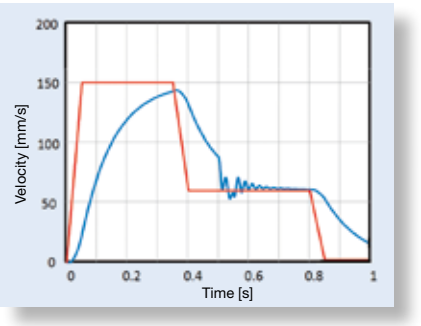
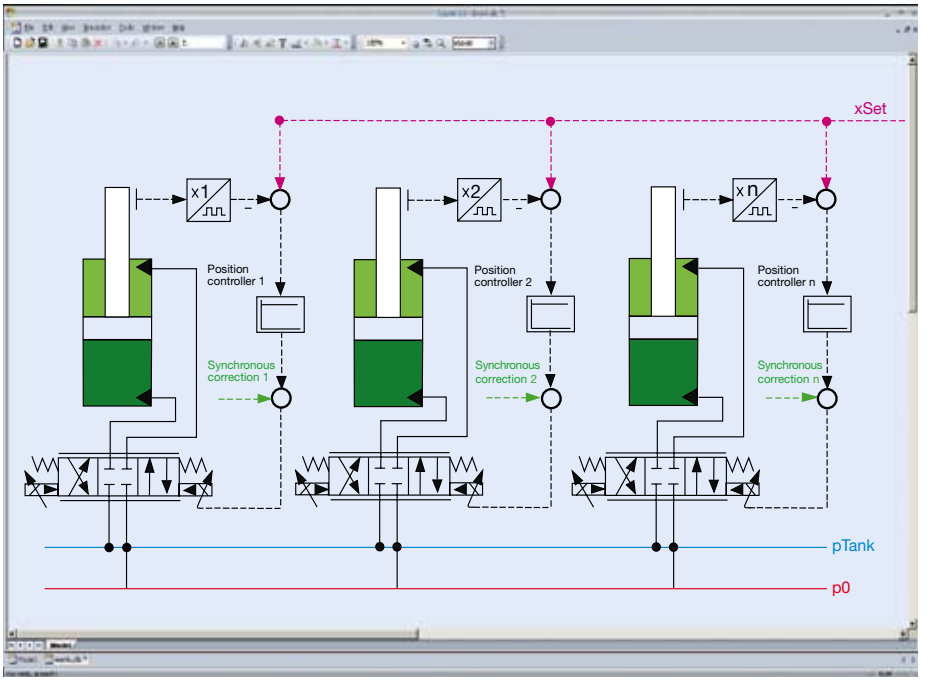
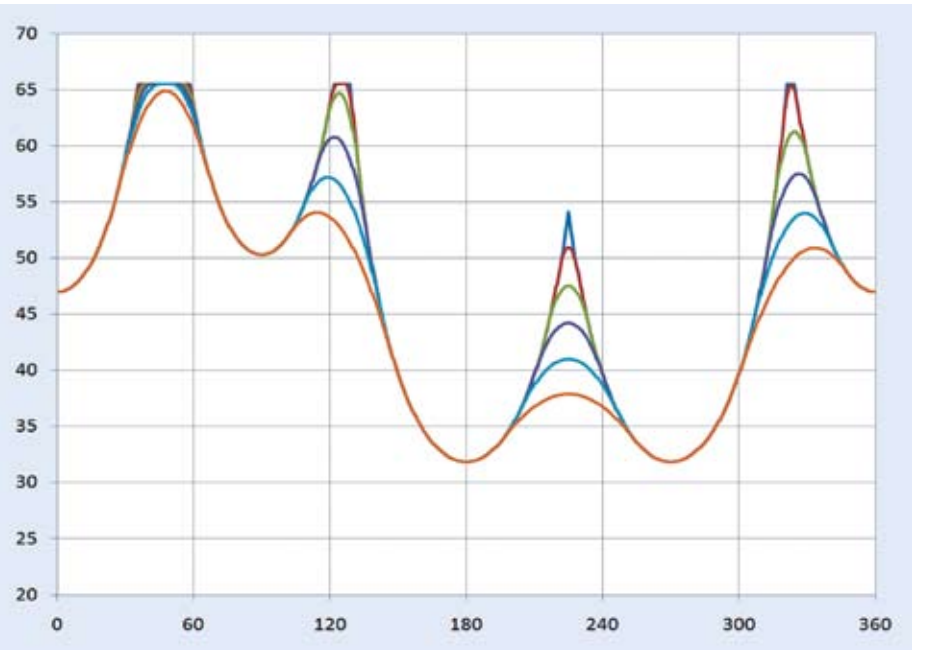
Hydraulic Simulations.



Static and dynamic simulation of complex hydraulic systems, taking into consideration the transmission behaviour of valves, pumps, motors, cylinders, accumulators, pipe systems, etc…

All relevant condition variables such as speed, acceleration, pressure and flow can be displayed by simulating the required process event, and the effect of different system parameters can be analysed.





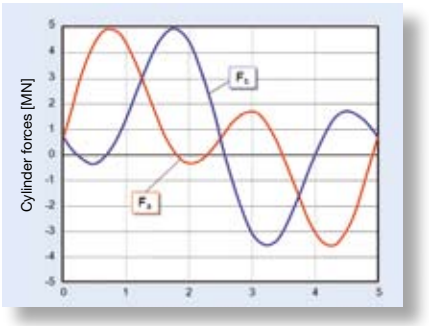
Multi-body dynamics.

It is not unusual for drive forces in hydraulics to be transferred to the moving machine components via complex kinematic mechanisms. Examples of such transmission structures can be found in moving platforms with several degrees of freedom, on robots, chassis structures, presses and numerous other applications in general machine building.

Multi-body dynamics enables the stationary and dynamic behaviour of planar or spatial mechanisms to be analysed, taking all the forces and movement variables into account.

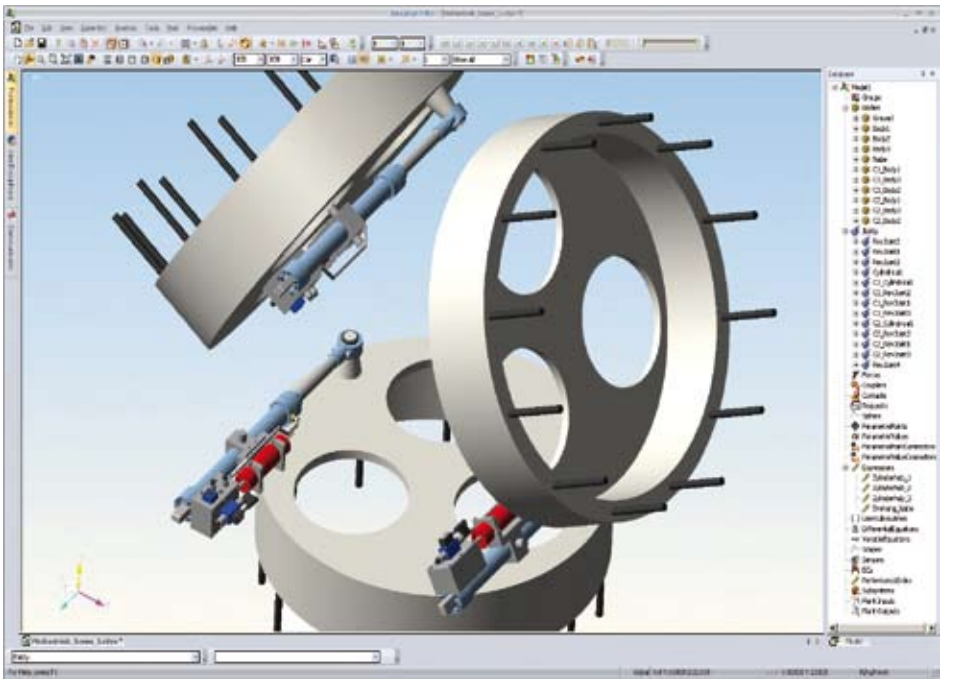
The interlinking of forces of different drive units or the effect of mechanical elasticities of the driven machine structure can be taken into account.

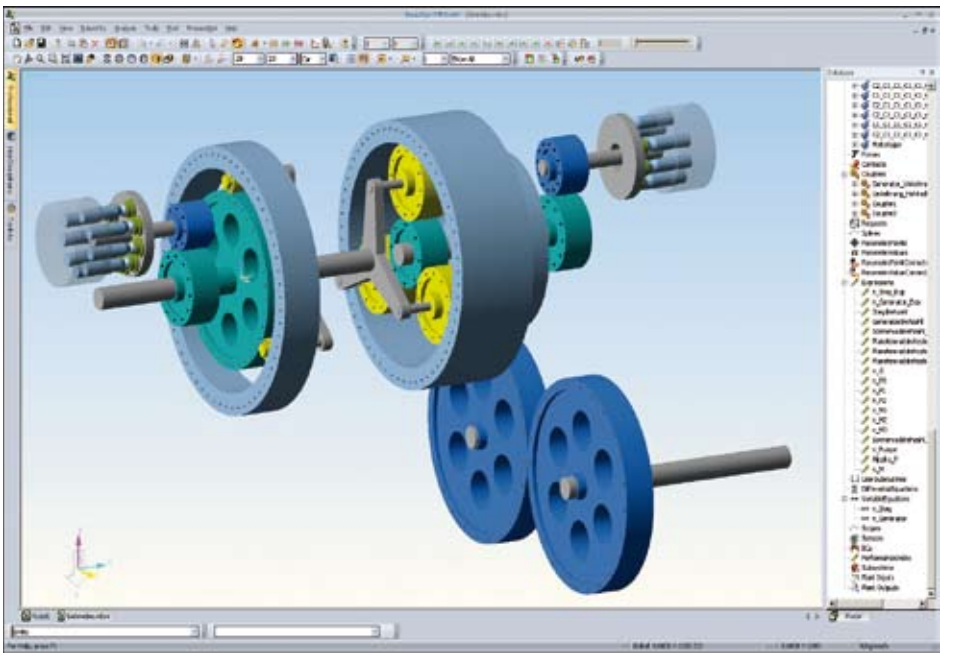
Simulation of Control Systems.



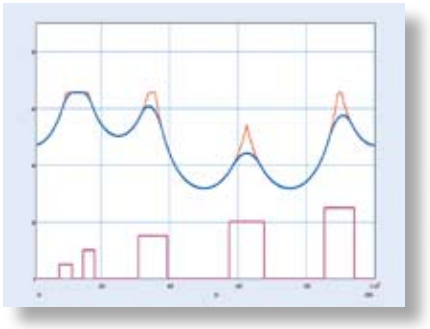
Control technology has a central role in designing hydraulically operated machines and systems and is crucial to the quality. By specifically tailoring the control design to the machine and drive characteristics, not only does this guarantee a process which operates smoothly, but it also has a fundamental effect on the precision and dynamics of drive functions.

Take advantage of our experience and development methods in the area of controlled electrohydraulic drives. We will be pleased to work out proposals for the most modern control designs and by using simulated models, we will tailor our design precisely to your requirements and process conditions.



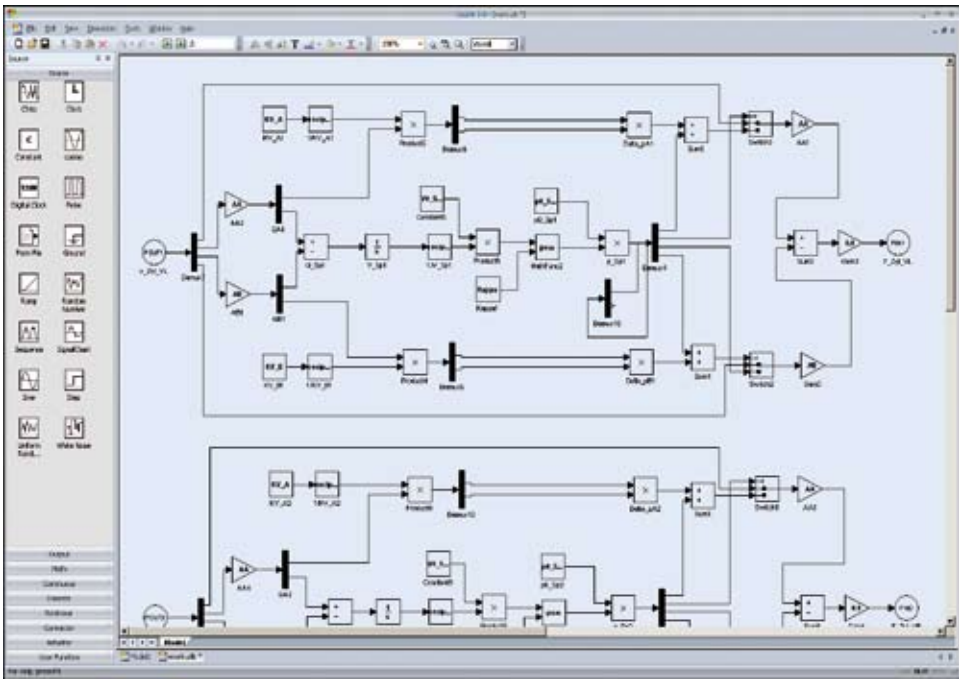


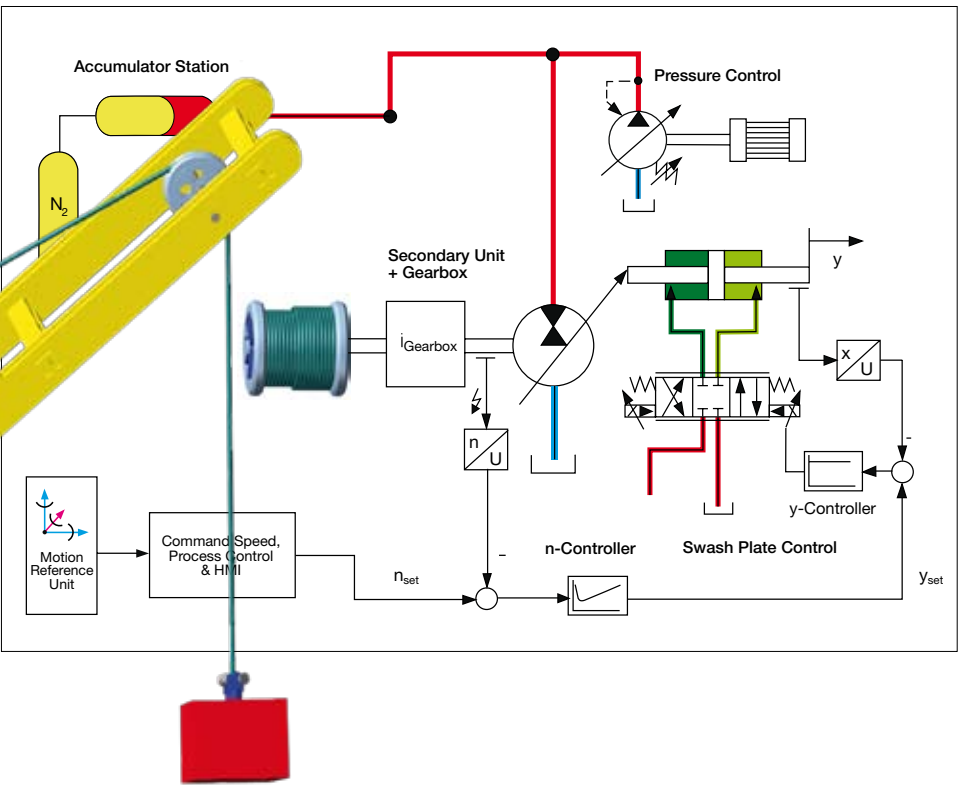
Fully Integrated System Analysis.



The machine or system can however only be guaranteed to operate perfectly if the subsystems, mechanics, drives, control and process-related loads and movement sequences are systematically aligned to each other. Only then can a strong technological edge be maintained and the competitiveness of your products be protected long-term.

By interlinking different simulation programs, we are able to reproduce your machine with all the function-defining subsystems as a fully integrated virtual model. This brings you accurate corroboration of the expected machine behaviour and allows you to optimize functions at no risk, before entering the costly implementation phase.



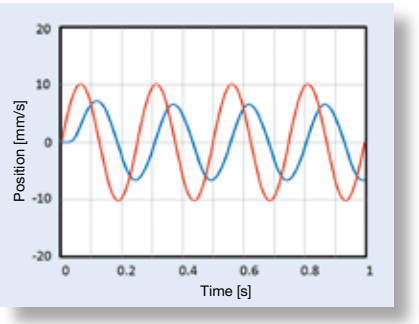


Hardware-in-the-loop simulations (HIL).

The development of software for extensive process controls is often expensive and it is not unusual if this forms a significant proportion of the development costs of machines. Commissioning, trouble-shooting and optimization of the software is costly and can usually only be started once the target machine already exists.

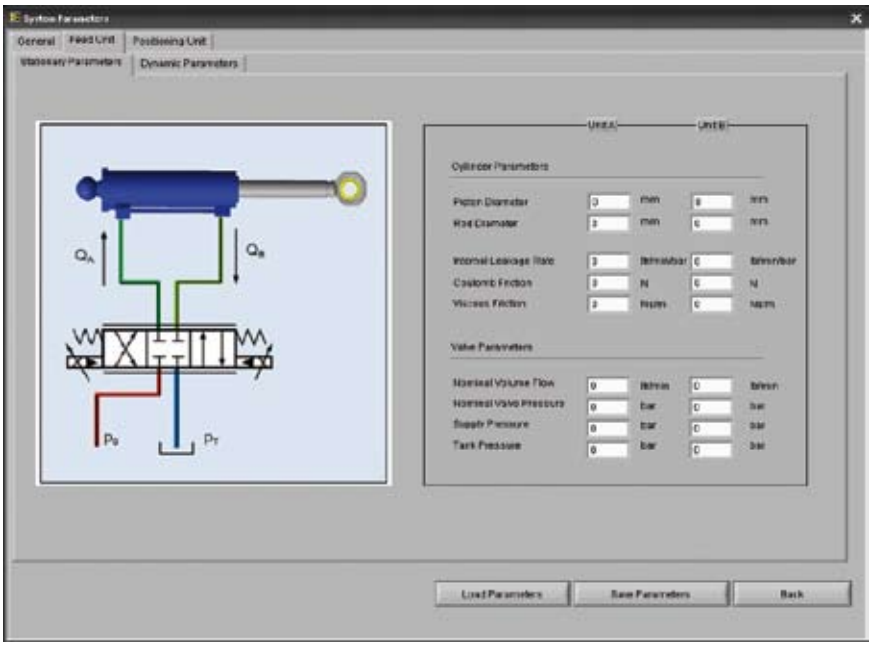
HIL simulations can link the control hardware, including the implemented software, with a real-time virtual machine model and can therefore permit the software to be optimized “in the office” without needing a real machine (virtual commissioning).

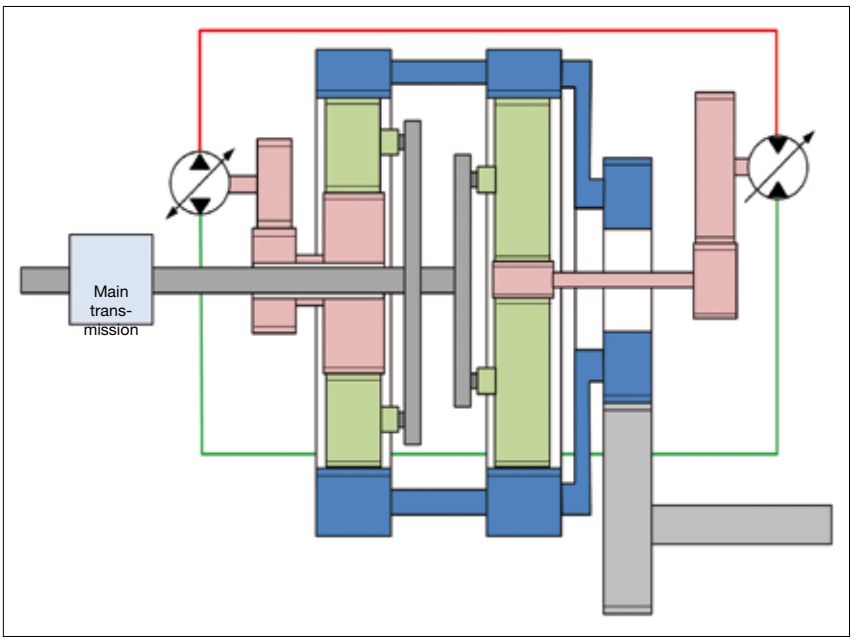
Application-Based Simulation Software.

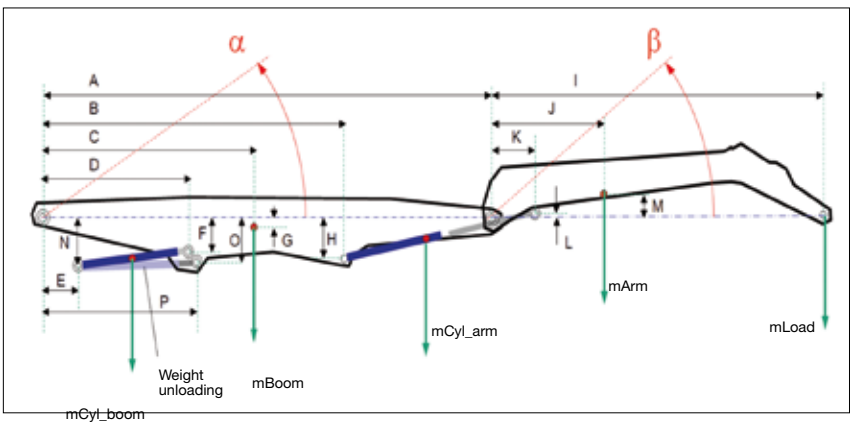


If you wish to use the simulation technology tool in your own company, but do not have access to the highly specialized technical departments, we offer to develop simple-to-use simulation programs for you which are specific to your application and where the function is tailored to your everyday research areas and products.

Virtual test rigs or machine-specific simulation programs are useful tools for development, training or sales support.







Profit from our Experience.

For many years HYDAC has been one of the leading suppliers of hydraulic components, systems and drive solutions in numerous fields of machine and system building.

You will find examples of our activities in the following areas of technology

- **Automotive industry**
- **Construction machinery**
- **Agricultural machinery**
- **Lifting and material handling technology**
- **Machine tools**
- **Plastics machinery**
- **Presses**
- **Iron and steel industry**
- **Power plant technology**
- **Wind power**
- **Process engineering**
- **Mining machinery**
- **Shipbuilding**
- **Paper industry**
- **and in many other sectors**

Take advantage of our industry experience, our development methods and our first class products and systems.

As your development partner, HYDAC opens up new ways of further extending your development lead, anywhere in the world.

Accumulators D 30.000

Filter Range D 70.000

Filters for Ind. Processing D 77.000

Fluid Systems D 79.000

Compact Hydraulics E 53.000

Accessories D 61.000

Electronics D 180.000

Cooling Systems DEF 57.000

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- HYDAC Headquarters
- HYDAC Companies
- HYDAC Distributors and Service Partners

HYDAC INTERNATIONAL

Head Office
HYDAC INTERNATIONAL GMBH

Industriegebiet
66280 Sulzbach/Saar
Germany

Tel.:
+49 6897 509-01

Fax:
+49 6897 509-577

E-Mail: info@hydac.com
Internet: www.hydac.com

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HYDAC INTERNATIONAL

Engineering Support for the Design of Electrohydraulic Drive Systems.

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HYDAC Engineering Support.

Designing electrohydraulic drive systems requires optimum coordination between hydraulic, electronic and mechanical system components.
It is only through the optimum interaction between all the technologies involved that today's requirements for precision, dynamics, stability and energy efficiency can be achieved in the drive.

In numerous applications in almost all sectors of machine and system building, we at HYDAC have built up extensive experience and expertise in drive and control technologies.

We utilize the most modern simulation and engineering methods to continually extend our system and application expertise.

Hydraulic simulation, multibody dynamics, control circuit optimization and virtual prototypes are just some of the tools used daily in our development work.

These methods together with the experience of our drive specialists are made available to interested customers to support them in designing competitive systems, to provide new momentum and to detect and eliminate possible errors at an early stage.

New demands require new development methods.

The global competitive pressure in machine building today demands new approaches to solving a problem. These are increasingly linked to the exacting requirements of all functional components and subsystems. Positioning processes in the micrometer range, processes requiring split-second accuracy or very high acceleration with extreme loads are just a few of the challenges which face the drive and control system developers.

Additional constraints arise from increasing energy costs, high safety requirements or the demand for robust and low-maintenance operation. Furthermore, the steadily rising rate of innovation requires ever shorter development times and minimal commissioning periods. These increasing demands can only be met by systematic use of the most up-to-date development methods. This is the only way of guaranteeing the technological edge which protects competitiveness in the long-term.

Success factors for competitive drive systems.

Technology	Development process
Control quality	Short development times
Dynamics	Low development costs
Stability	Prevention of development errors
Energy efficiency	Short innovation cycles
Reliability	Efficient development methods
Usability	
Low-maintenance	
Service life	
Safety	

Our simulation know-how facilitates your development work.

Computer-aided simulation technology today is one of the most efficient development methods and is constantly opening up new opportunities – not least as a result of the ever advancing computer technology.

We will be pleased to support you with our simulation methods when designing and optimizing complex drive systems, machine functions or process sequences. Even in the early phases of development, simulation models provide deep insights into the operating behaviour which can be expected of electrohydraulic drives. Simulated ranges can minimize expensive work in the test room and can often replace it completely. This quick and cost-saving method allows you to test new product ideas for feasibility and to exploit potential for improvements at an early stage.

The risk of development errors is considerably reduced. In certain cases, the development of costly prototypes can be dispensed with. When it comes to developing orders, simulated models help to convince your customers of innovative approaches to solving problems right from the beginning.
Let us know what tasks are facing you – we are happy to help!