HYVOS 7.0
The simulation software at a glance

Valve
- freely parameterizable PT dynamics with velocity and control signal limitation
- overlap
- hysteresis
- any type of flow characteristic and spool type
- return oil-recycling
- implemented catalog of Rexroth control valves including datasheets, sectional drawings, characteristic curves, 3D animation and automatic model generation (non-linear models up to 12th order systems)

Cylinder
- single-rod, double-rod, or plunger cylinders
- internal and external leakage
- viscous and Coulomb friction
- flexible mounting
- flexible load connection
- variable mass (time and travel dependent)
- dynamic piping system models
- calculation of the natural cylinder frequency

Pressure supply
- constant pressure
- fixed displacement pump with pressure relief valve
- pressure controlled pump
- pressure accumulator
- freely definable system pressure characteristics

Controller
- open-loop control mode
- position, speed, load pressure or chamber pressure control
- PI, PID, PIDT controllers
- analog or digital controls
- sensors
- state feedback loops (analog or digital)
- non-linear control gain
- path control integrator
- switching integrator
- feedforward (command value or disturbance variable)
- directionally dependent gain
- overlap compensation
- freely definable additional valve voltage
- implemented Rexroth controller electronics
- hardware coupling to the Rexroth HNC 100 control

Command value definition and entry
- step function, sine and cosine signals
- command value profiles (linear, spline or NURBS interpolation)
- selection of zero order first and second derivatives
- command value curves from files
- freely definable command value via formula generator
- travel-dependent deceleration

Counterforces
- constant counterforce
- sine
- spring or damper stop
- travel-, speed- and time-dependent counterforce profiles
- freely definable counterforce via formula generator
- counterforces from file
- freely moveable spring stop

Functions
- simulation in time domain
- calculation of amplitudes and phase response
- calculation of drive characteristic curves
- comfortable graphical output
- generation of additional output values via post-processing
- extensive online help
- 2D animation of the hydraulic circuit

The software with the know-how from Rexroth
HYVOS 7.0 contains the wealth of experience and know-how of Bosch Rexroth specialists involved in all areas of drive and control technology. As a leading supplier of drive and control systems we use the software, which we developed, on a daily basis. Close cooperation between program developers and users guarantees a high level of practical orientation; it is this that has made HYVOS 7.0 a standard in simulation tool technology.
Knowledge – the decisive competitive advantage

Bosch Rexroth is one of the world’s leading specialists in drive and control technology and possesses unique technological know-how with respect to products, solutions and their use. The company passes this knowledge on through the Drive & Control Academy, supporting the specially tailored training and qualification of technically qualified personnel.

„Investment in knowledge always pays the best interest.”
Benjamin Franklin

HYVOS 7.0
Optimize the design of your valve-controlled cylinder drives

The planning, design and optimization of hydraulic drives with closed-loop control requires thorough knowledge of and experience in a range of different technologies. The complex interaction between hydraulics, electronics, the control system and the sensor equipment means that this type of drive is particularly demanding. However, our HYVOS 7.0 simulation software renders even the most difficult technical inter-relationships transparent and provides you with invaluable support in the design work related to these drives.

Simulation of valve controlled cylinder drives

Viewing of the results

Effective HYVOS 7.0 enables you to simulate your valve controlled cylinder drives in both open- and closed-loop systems. Hundreds of parameters facilitate the modeling of complex structures and the replication of virtually any motion sequences or loading conditions. With this software you have at your fingertips a tool with which you can minimize complexity and slice through the volume of work required on the testbed. So you can enjoy the benefits of substantially shorter development times – and avoid design flaws, with all the serious consequences that this can have.

Simple The friendly user interface renders operation of HYVOS 7.0 very easy. This means that the software is not only suitable for practical applications in design and development, but also constitutes a valuable aid for training in hydraulic drive and control technology.

Practical With HYVOS 7.0 all the drive components can be freely parameterized – or they can be loaded into the program from the comprehensive library of Rexroth components (control valves and control electronics). Aside from mathematical models the library also provides valuable product information in the form of sectional drawings, catalog datasheets, characteristic curves and 3D animations. It really could not be more practical.

User friendly Even the reproduction of complex control structures is no problem with HYVOS 7.0. From the simple P-controller to non-linear correction elements or multi-loop state feedback circuitry, the software covers every conceivable variant encountered in modern closed-loop control technology. Particularly easy to use is the parameterization function for the integrated controller modules, because all the control elements such as potentiometers, switches or jumpers can be manipu-