

REX - Control System for Advanced Process and Machine Control

General characteristics

The REX control system is an advanced tool for design and implementation of complex algorithms for automatic control. The algorithms are composed from individual function blocks, which are available in extensive function block libraries. These libraries cover not only all common fields of automation and regulation but offer also a variety of

elements for high-level control algorithms. Moreover, a user defined function block can be used for creating unique algorithms in special applications.

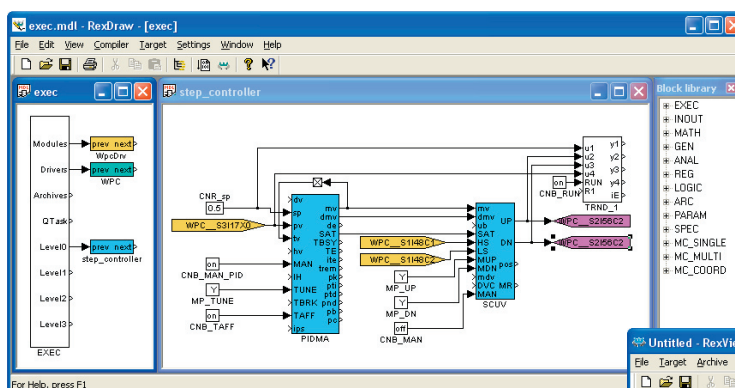
If the license of Matlab®-Simulink® system is available, it is possible to benefit from its compatibility with the REX control system and exploit its simulation capabilities for testing the designed algorithms before deployment.

Supported platforms

- ☐ Windows® XP/Vista/7
- ☐ Windows® 2009 Embedded/XP Embedded
- ☐ Windows® CE
- ☐ GNU/Linux
- ☐ GNU/Linux + Xenomai
- ☐ PharLap ETS

Communication and data acquisition

- ☐ Ethernet POWERLINK
- ☐ EtherCAT®
- ☐ Modbus® TCP/IP, Modbus® RTU
- ☐ CAN
- ☐ OPC Data Access 2.0 and 3.0
- ☐ RS-232
- ☐ Plug-in or USB I/O cards and modules

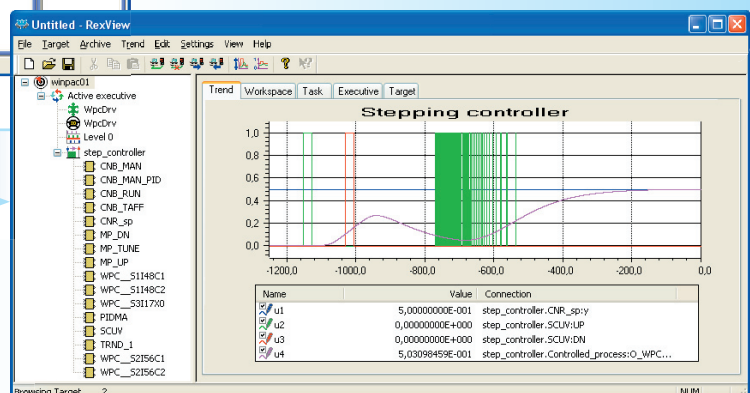


RexDraw

- ☐ Graphical programming of the control algorithms
- ☐ Extensive function block libraries
- ☐ On-line signal monitoring

RexView

- ☐ Diagnostics of the control algorithm execution
- ☐ Modification of the algorithm parameters
- ☐ Real-time signal trends



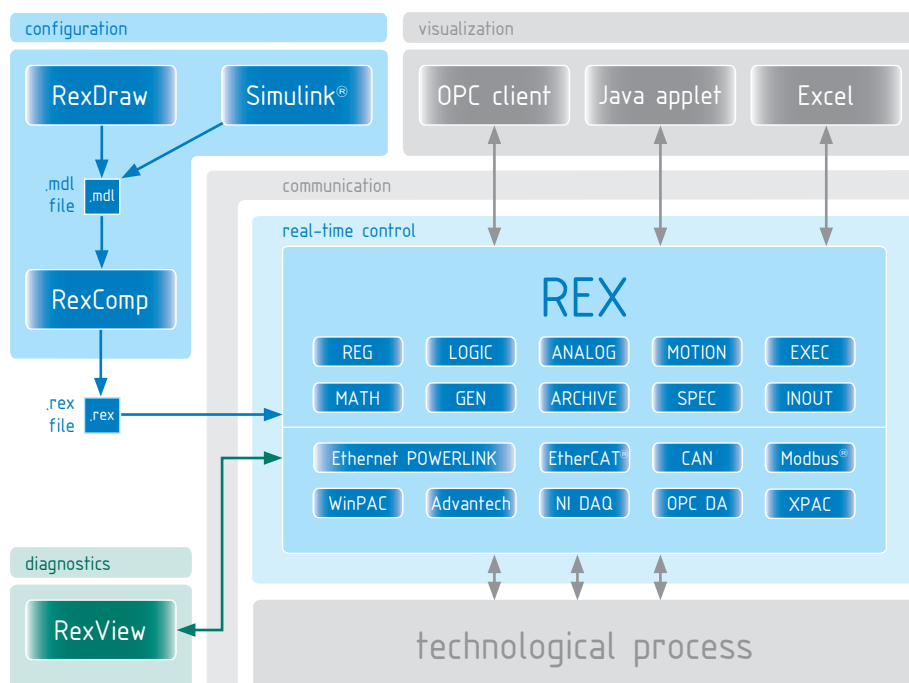
Typical use of the REX control system

hardware	OS	I/O	application field	sample
ALIX	GNU Linux (+ Xenomai)	Ethernet POWERLINK	control system with remote data acquisition, 1 kHz	
MOXA	GNU Linux (+ Xenomai)	EtherCAT® or Ethernet POWERLINK	complex control system with remote data acquisition, 1 kHz	
WinPAC	Windows® CE	Plug-in modules	control system with centralized data acquisition, 500 Hz	
IPC	PharLap ETS	PCI plug-in cards	high-sample-rate control system, 10 kHz	
Notebook	Windows® XP/7	USB modules	mobile laboratory measuring and control system, 200 Hz	

Function block libraries

- REG – function blocks for regulation, PID controllers with automatic tuning, active vibration damping, predictive control, heating&cooling systems control
- LOGIC – blocks for control logic, sequential automats (SFC, formerly Grafcet)
- ANALOG – processing of analog signals, vibration-damping filters
- MOTION - implementation of the PLCopen Motion Control standard
- ARCHIVE – archiving subsystem
- GEN – signal generators

Structure of REX



References

- Power controller for experimental nuclear reactor, NRI Řež
- Control of testing systems for automobile industry, ZF Engineering Plzeň
- Control of plastics extrusion machines, PMA GmbH
- Control system of an experimental steam turbine, Škoda Power
- Control system of carding machine for textile industry, VÚTS Liberec
- Robotics and mechatronic models

