

Test Stand for Industrial Pumps KT-289200



Customer: Leading manufacturer for centrifugal pumps and displacement pumps

Final Product: Industrial pumps and eccentric screw pumps, amongst others

Segment: Industry

Short Description:

We developed a test system for determining the characteristics of industrial pumps. Especially data regarding pressure and flow rate are tested according to the customer's specification.

Customer Requirements:

- Reducing the testing time for manual testing from 25 minutes to 5 minutes
- Communication with SAP-server for test data interrogation and test result storage
- Calculation program regarding temperature and viscosity of the media
- User interface in accordance with customer specifications
- Fully automatic sequencing with system verification and security check
- The operator can prepare other pumps in parallel

Implemented Solution:

The test stand was developed to determine industrial pump specifications, including characteristic and flow rate and to record the suction and pump pressure and to compare them to the client's requirements. The test data is downloaded automatically from SAP by entering the tracking ID of the DUT. The test data is also stored in SAP.

The test system takes over the activation and regulation of the pump motor at different speed settings. A slider for regulating the pressure is also controlled by the test system. A various range of sensors for parameters like pressure, flow rate and temperature are also a part of the system.

The test runs fully automated, as soon as the pump is mounted into the system. Should any of the values fall outside the determined tolerance values, the system immediately interrupts operation and displays an error message.

The temperature measurement is of prime importance, as it is used as a basis to calculate the environment's viscosity and to derive other calculation offsets. If necessary, a cooling unit will also be activated in the medium tank.

The ordered system was designed as a real-time embedded system, to guarantee the necessary operation security. For this reason we used a CompactRIO system from National Instruments, equipped with the corresponding signal conditioning modules for sensor integration.

All data is stored and managed online in SAP, so that the customer may automatically receive the characteristic lines corresponding to one particular pump.

Software:

NI TestStand:	Sequential Control Editor, Debugger
NI LabVIEW:	Test step libraries
KT Operator Interface:	User guidance Debugging
KT Test step libraries:	Functional Test SAP Communication
KT SAP-Connection:	Test data interrogation based on tracking number from SAP Result data stored in SAP

Hardware:

CompactRio Test System:	FPGA / Real-Time Test system
Tests:	Controlling / Regulation Digital I/O Analogue I/O Thermocouple conditioning Frequency counter
Options:	Parallel test Expanding the measurement functions External vibrometry Vision Control
Adaptation:	Manual mounting of the pump Testing cell with medium tank and drive motor „End-of-Line“ System
Interface:	Ethernet with TCP/IP for communication between the embedded system and the visualization calculator



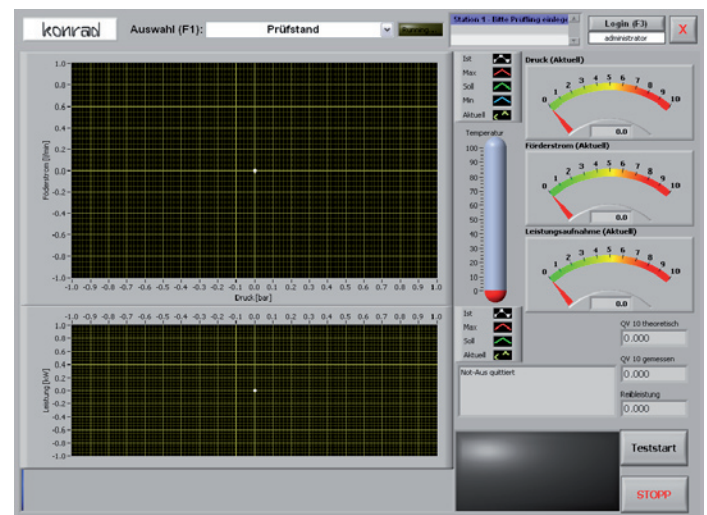
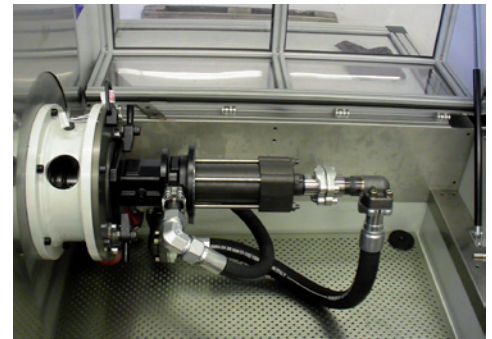
Summary:

By introducing this test system, the testing time was significantly reduced from the usual 25 minutes to 5 minutes. This again significantly reduced the customer's time used during manufacturing.

While testing, the operator can already mount the next pump. The system runs in two-shift operation and guarantees a hundred percent testing with exact characteristic line specification.

The system is designed as a modular and scalable embedded system, to satisfy the corresponding security requirements and offers the option for future expansions. It is designed universally for all types of pumps.

By now, Konrad Technologies successfully employs this solution not only in the development stage, but also in the test field and production facilities of our customers.



Automotive +++ Avionics +++ Semiconductors +++ Telecommunication +++ Medical +++ Industrial