



BAKER HUGHES - HIGH PRESSURE TESTING FOR DRILLING TOOLS

THE CUSTOMER



Baker Hughes is a leading global energy technology company that employs 56,000 people worldwide and provides solutions to customers in the energy and industrial sectors. The main development site for the Drilling Services subdivision is located in Celle, Germany.



Bird's eye view of the Celle facility

With approximately 1400 employees at the Celle site, the focus is on the development and manufacture of autonomous tools to measure and log drilling data within a bore hole whilst drilling is being carried out.

THE CHALLENGE

Many safety and functional tests must be carried out on newly-developed or modified drilling tools, including those that use high pressure pumps to create high volume water flows and are combined with simulators to form an overall system. During integration tests, engineers must set and observe many different test parameters and variables. A particular challenge is to undertake testing with no physical human presence permitted in

the hazardous test area. Sophisticated measuring devices, such as network analyzers, data recorders and oscilloscopes, need to be located in the test area and remotely controlled from a distance. At the same time the computers for the surface system, which are normally installed on the rig and used to collect measured data and control tools, must also be integrated into the tests.



Laboratory 1 with KVM work stations

To monitor test systems, several video sources must be displayed simultaneously on multiple screens. For customer presentations, video sources need to be displayed on large screens or a projector. Prior to installation of the IHSE test engineers switched between computers using analog video switchers. However these were problematic and presented problems in switching different video resolutions as well as limiting the number of screens displayed. Also, at great transmission distances between the signal source and display screen, computer-generated images became blurred; an effect exacerbated by increasing image resolutions. These issues resulted in the adoption of several small isolated systems as an alternative solution

THE SOLUTION

When searching for a suitable KVM solution, Baker Hughes engineers identified the IHSE Draco tera KVM matrix as a solution that would meet all their requirements in a single system. Signals are transmitted over Cat X cabling so existing network

infrastructure in the laboratories could be used. Initially, a 32-port KVM matrix switch was installed and two additional 32-port switches were added later with Matrix Grid lines deployed to transmit video signals between the individual switches. The setup was later upgraded to a common matrix switch with 80 ports to overcome additional data transfer requirements.

„The system was straightforward to configure, worked immediately and was quick and easy to expand. During configuration, we were expertly supported on site by an IHSE support engineer.“

Hanns-Joachim Boldt, senior test engineer at Baker Hughes

The IHSE KVM switch made it possible to equip ten workstations each with two HD screens capable of displaying all necessary screen content from the labs. In addition, two large screens and a projector are connected to the system for customer presentations. To control the high-pressure pumps, a multi-monitor setup at the operator station hosts six permanently installed HD screens with fixed source assignment. These displays can also be accessed from any workstation. The offices are equipped with additional screens for monitoring and maintenance purposes.

The computers for pump control and monitoring are located in a separate server room. The four PXI chassis for generating test signals are located close to the simulators or the devices under test and are also operated via the KVM switch. Depending on the test scenario, additional test gear can be placed in the hazardous area and operated remotely via the KVM switch.

THE BENEFIT

IHSE’s KVM matrix switch has greatly simplified and improved collaboration between engineers during testing. A wide variety of video content can be viewed and operated from a fixed work location. Tests can run without interruption, as there is no need

for test personnel to move into the hazardous area to operate the measurement equipment. Comparing systems running in parallel and accessing all sources of information relevant to the test can be achieved by simply switching computer sources to the screens. Users benefit from more ergonomic, efficient, and comfortable workflows – as one test engineer noted: for the first time, device testing can be operated while seated.

„IHSE’s system runs in 24/7 operation at our facility without interruption or malfunction. The Tera Tool program allows easy configuration and maintenance. We are very happy with the solution.“

Hanns-Joachim Boldt, senior test engineer at Baker Hughes

IHSE PRODUCTS IN USE

- Draco tera compact KVM matrix switch
- Draco vario KVM extender (DVI)
- Draco compact KVM extender (DVI)

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