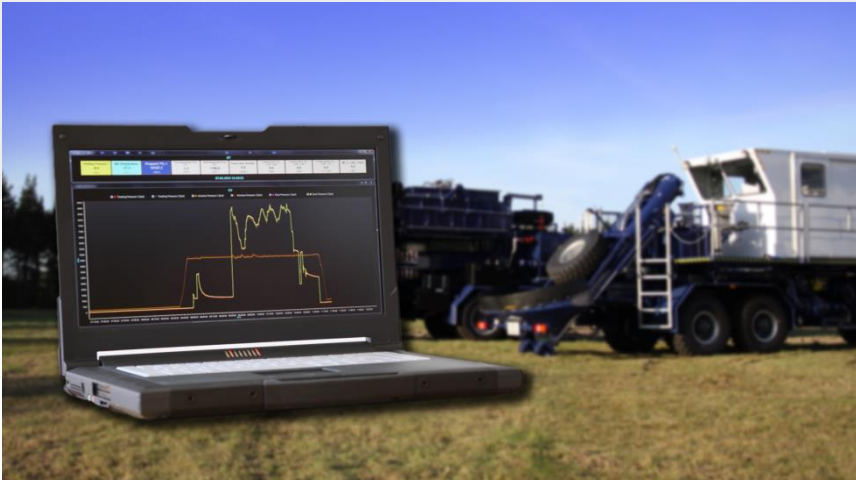


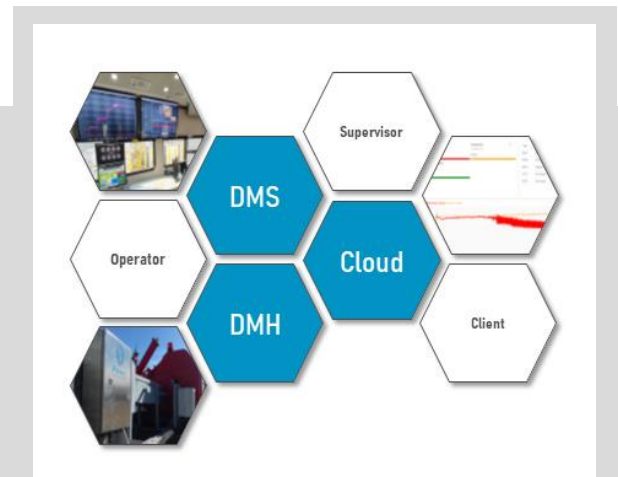


PRIME WELL
SERVICE
INSTRUMENTATION



Prime Well Service Instrumentation

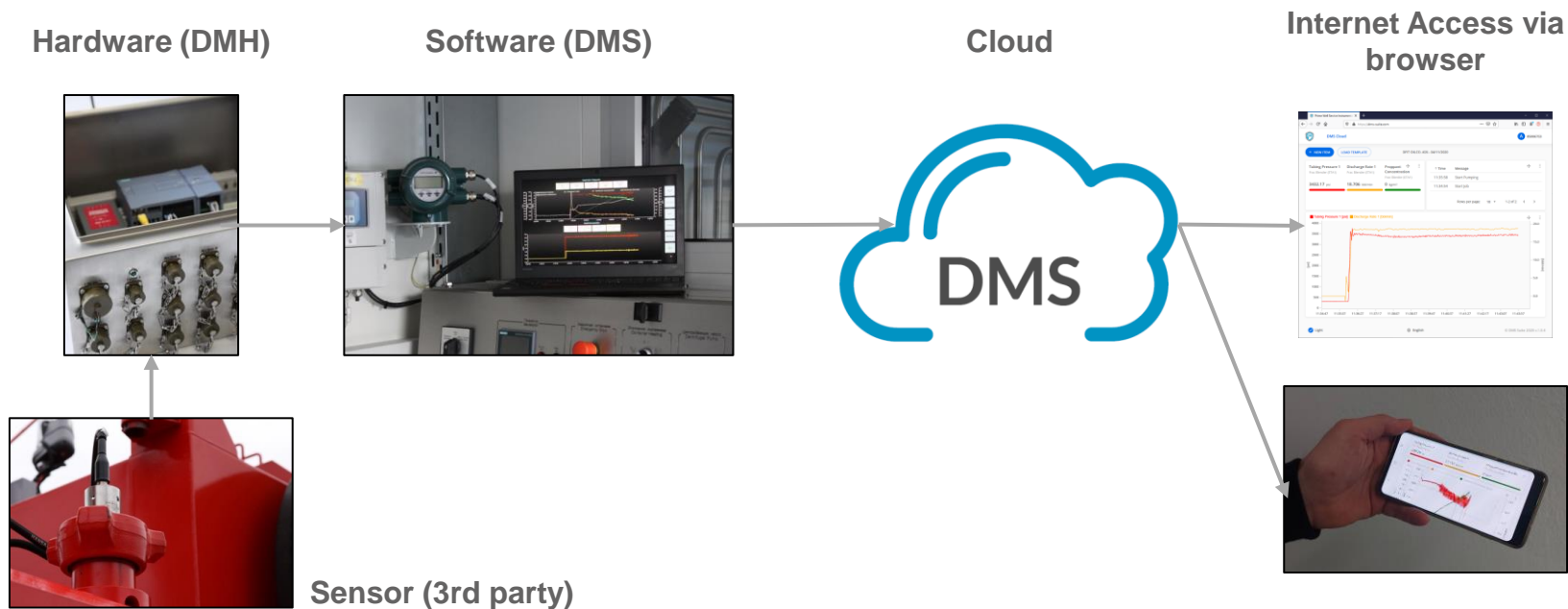
DMS / DMH - Oilfield Data Acquisition System





DAQ - System Overview

Data Acquisition is the process of sampling signals that measure real world physical conditions and converting the resulting samples into digital numeric values that can be manipulated by a computer.* The Prime system consists of sensors, a sensor junction box (DMH) and a PC-software (DMS) for recording, visualization, simulation and reporting. The cloud adds an easy-to-use remote transmit option for access via any web browser. The hardware can be configured and troubleshooted by using a dedicated configuration software, local and remotely.



* Source: https://en.wikipedia.org/wiki/Data_acquisition



DMS – Data Management Software

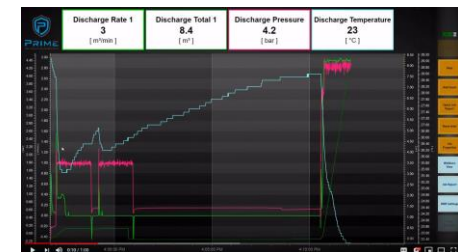
The Prime DMS is a real-time Data Acquisition software suite. It is designed to meet the operator’s and engineer’s needs, by integrating an intuitive interface with advanced function for analyzing and reporting of the well treatment on site, or post job in the office. ASCII job data can be also imported from separate acquired CSV-files or read from 3rd party equipment.

The online monitoring function is used to observe ongoing jobs in real time. Automatic unit detection simplifies the start-up in the field to a few clicks. Saved configurations can start automatically.

The advanced reporting functions include data optimization like filtering or graphical formatting, as well as automatically generated post job reports with a clear focus on intuitive handling and time savings.

The use of digital gauges, charts, tables and other windows can be set up to the specific needs of the customer and saved in recallable templates.

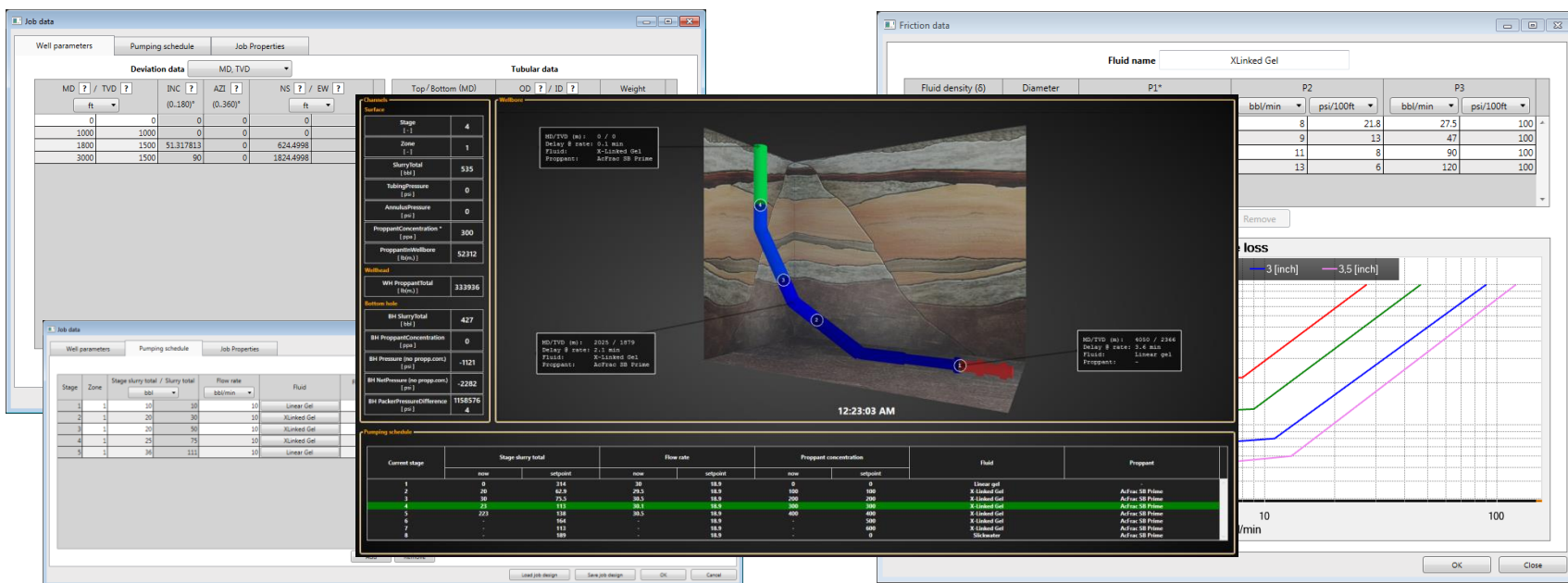
DMS can run on any typical MS Windows PC like laptops, workstations, tablets and vehicle PCs.





DMS – Stimulation / 3D Bottom Hole Pressure Tool

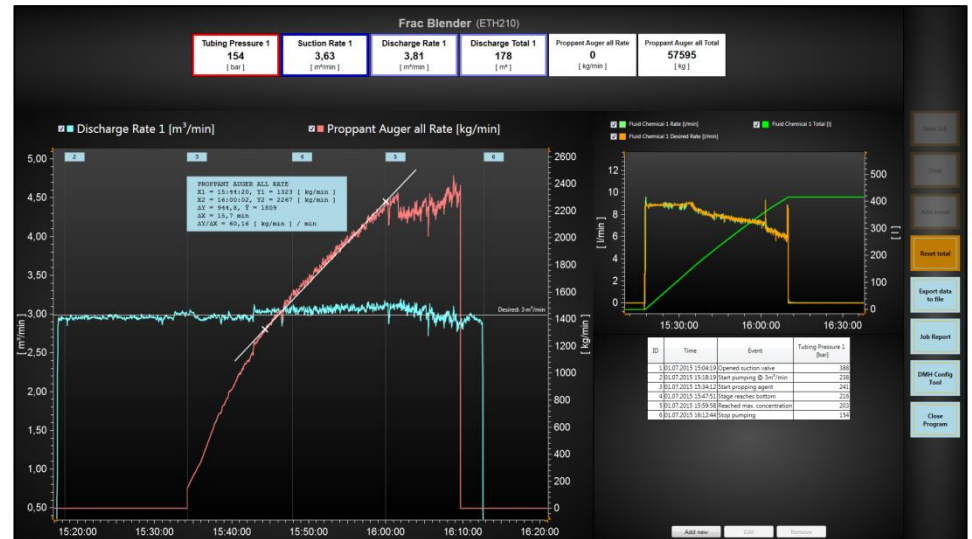
The 3D BHP Tool provides an accurate calculation of the pressure at the bottom of the well. It incorporates the surface pressure, the hydrostatic pressure and the friction pressure loss into a dynamic calculation depending on the well-, fluid- and proppant properties. Wellbore survey data or an approximation of this is used for a representative incorporation and visualization of the well. Fluids and proppants are taken from a data base into a pumping schedule steps.





DMS – Key Features

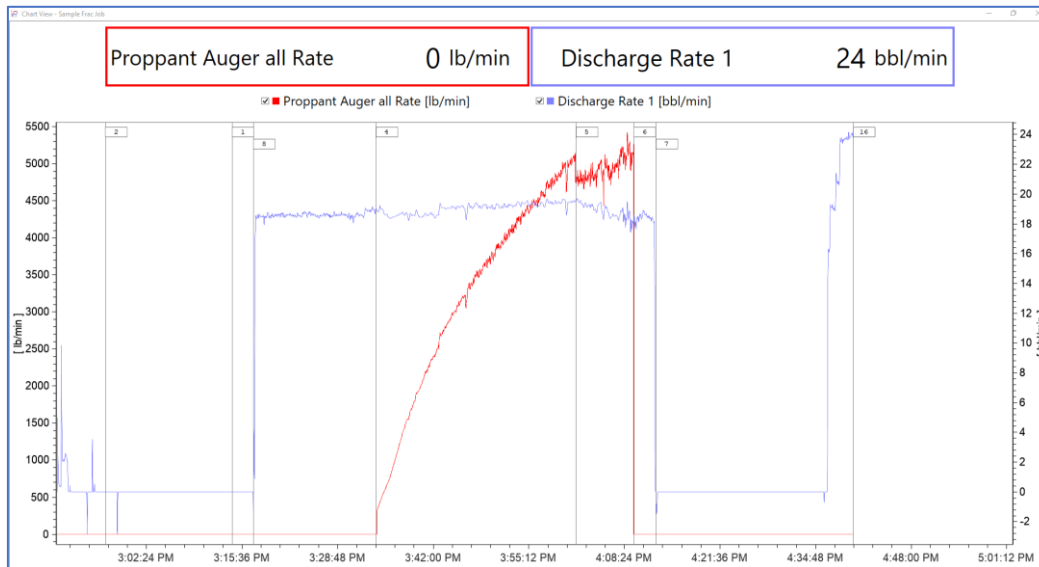
- Intuitive and modern interface
- Real-time recording
- Multiple charts and digital displays
- Import and export data (CSV/Excel)
- Visual and audible alarms
- Multiscreen usage
- Connects to any compatible hardware (TCP via Ethernet or Wifi, Serial)
- Data processing (filter, offset, ...)
- Recallable window templates
- Logging of event with current timestamp
- Exporting of pictures
- Generation of automatic post job reports
- Mathematical function in real-time or post-job
- Collection and combination of data from different sources in once (e.g. Frac- or CT-fleets)





Event logging

DMS provides a tool for logging events with the current timestamp to the database. These events can be shown in charts and attached to the automatic post job report.

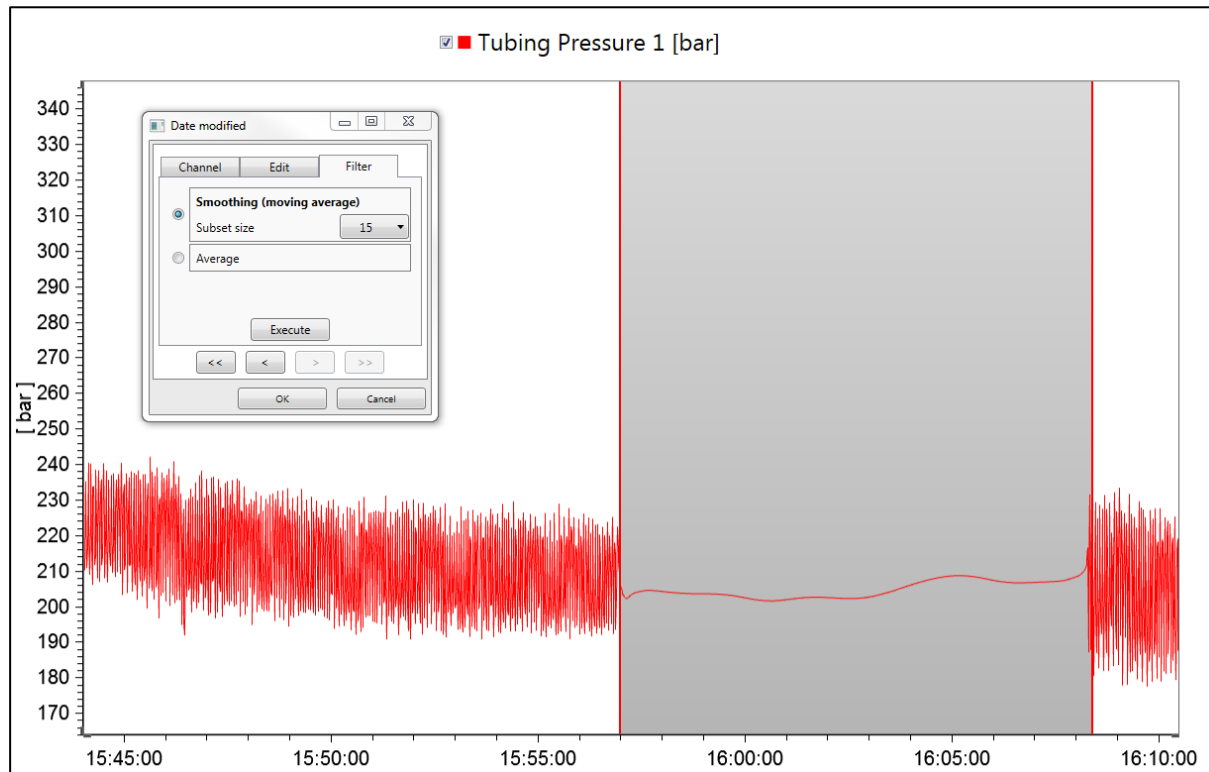


ID	Time	Event	Tubing Pressure 1 [psi]
2	7/1/2015 2:56:43 PM	Pressure test	5474
1	7/1/2015 3:14:14 PM	Start job	36.9
8	7/1/2015 3:17:10 PM	Step 1.	315
4	7/1/2015 3:34:06 PM	Start proppant	3489
5	7/1/2015 4:01:44 PM	Densitometer error	2943
6	7/1/2015 4:09:42 PM	Stop proppant Start flush	2941
7	7/1/2015 4:12:46 PM	Stop pumping	2297
16	7/1/2015 4:40:00 PM	Job end.	2231



Filtering

DMS provides an easy way for filtering fluctuating data to create presentable reports. The modified values are saved additionally as a second set of data and the original data will always be kept in the database.





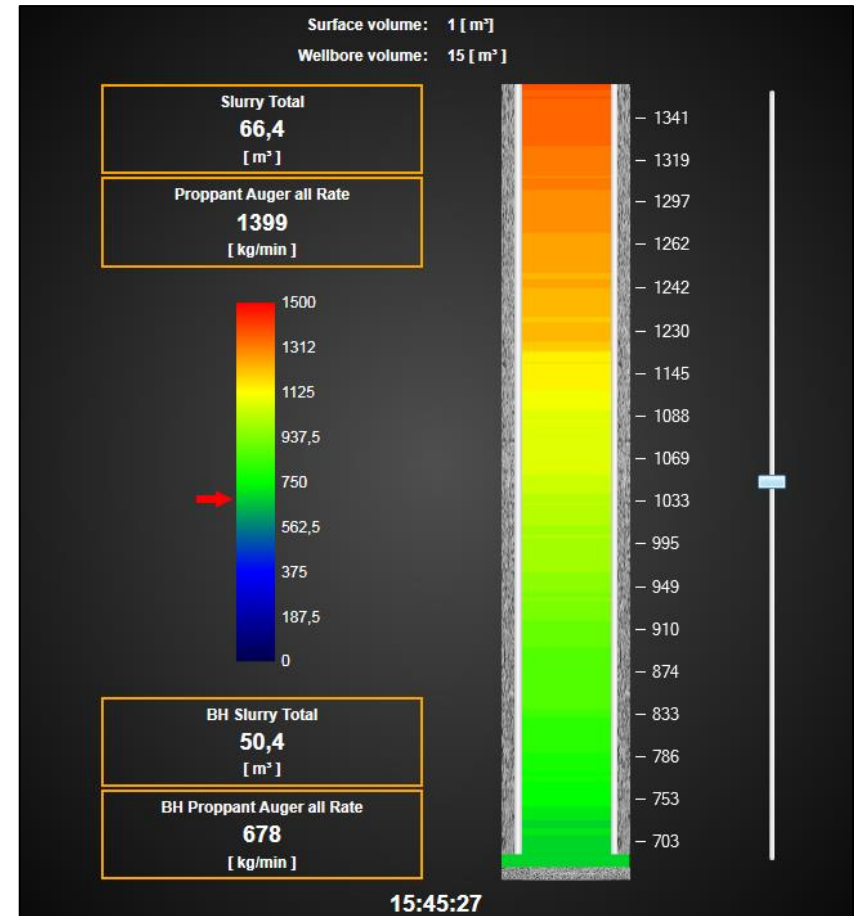
DMS – 2D Bottom Hole Concentration Tool

DMS has a dedicated tool for the calculation and visualization of a currently appearing concentration along the entire wellbore. Typical shown values are acid- or proppant concentration.

It uses a concentration value as well as a discharge totalizer channel as input values and calculates the movement of the slurry down to the bottom.

There is no sensor needed to show the currently appearing concentration value on any depth.

Depending on the reliability of the used sensors, this tool gives a good and intuitive feedback for the operator to doublecheck the currently ongoing operation.





Reporting tool

DMS provides a simple but customizable reporting tool that can create automatic post job reports within a few clicks. The report is based on a pre-defined word template that can be customized by the user. This template allows operators to customize header information, automatically generated screenshots and tables. All the necessary information can be fed into the system while the job is running. Preliminary or final job reports can be generated within seconds at any time.

Quick Job Report

Job: Frac Job - Celle, #56

Content: Template

Window template: SampleFracJob_Report

Bookmarks:

Job_Name: Frac Job - Celle, #56

Customer_Name: GOES GmbH

Customer_Address: Münchener Straße 32, 29392 Wesendorf

Customer_Contacts: Adam Czech <Adam.Czech@goes-well.com>, Andre Blidon <Andre.Blidon@goes-well.com>

Job_Location: Celle field, #56

Job_Start: 14:50:00 (Default)

Job_End: 16:40:00 (Default)

Import from customer list

Create report Close

GOES GmbH
Münchener Str 32
29392 Wesendorf

ID	Time	Frac Job - Celle, #56
1	01.07.2015 14:50:00	21.508
2	01.07.2015 14:50:00	81.791
3	01.07.2015 14:50:00	24.171
4	01.07.2015 14:50:00	24.172
5	01.07.2015 14:50:00	1.981
6	01.07.2015 14:50:00	21.437
7	01.07.2015 14:50:00	21.131
8	01.07.2015 14:50:00	21.131
9	01.07.2015 14:50:00	21.131
10	01.07.2015 14:50:00	21.131
11	01.07.2015 14:50:00	21.131
12	01.07.2015 14:50:00	21.131
13	01.07.2015 14:50:00	21.131
14	01.07.2015 14:50:00	21.131
15	01.07.2015 14:50:00	21.131
16	01.07.2015 14:50:00	21.131
17	01.07.2015 14:50:00	21.131
18	01.07.2015 14:50:00	21.131
19	01.07.2015 14:50:00	21.131
20	01.07.2015 14:50:00	21.131
21	01.07.2015 14:50:00	21.131
22	01.07.2015 14:50:00	21.131
23	01.07.2015 14:50:00	21.131
24	01.07.2015 14:50:00	21.131
25	01.07.2015 14:50:00	21.131
26	01.07.2015 14:50:00	21.131
27	01.07.2015 14:50:00	21.131
28	01.07.2015 14:50:00	21.131
29	01.07.2015 14:50:00	21.131
30	01.07.2015 14:50:00	21.131
31	01.07.2015 14:50:00	21.131
32	01.07.2015 14:50:00	21.131
33	01.07.2015 14:50:00	21.131
34	01.07.2015 14:50:00	21.131
35	01.07.2015 14:50:00	21.131

GOES GmbH
Münchener Str 32
29392 Wesendorf

GOES GmbH
Münchener Str 32
29392 Wesendorf

GOES GmbH
Münchener Str 32
29392 Wesendorf

GOES GmbH
Münchener Str 32
29392 Wesendorf

Frac Job - Celle, #56

REPORT

CUSTOMER

NAME: GOES GmbH
ADDRESS: Münchener Straße 32, 29392 Wesendorf
CONTACTS: Adam Czech <Adam.Czech@goes-well.com>, Andre Blidon <Andre.Blidon@goes-well.com>

JOB

LOCATION: Celle field, #56
START: 01.07.2015 14:50:00
END: 01.07.2015 16:40:00

Comment

COMMENT: Job complies to design



Software editions

DMS Lite

- Realtime recording from one unit at a time
- Charts and digital displays
- Fast Reporting tool for local storage
- Set up audible and visual alarms
- Multi screen usage
- Connects to any compatible hardware (TCP or Serial)

DMS Pro

- Realtime recording from multiple units at the same time
- Charts and digital displays
- Fast and Advanced Reporting tools with E-mail function
- Set up audible and visual alarms
- Multi screen usage
- Connects to any compatible hardware (TCP or Serial)
- Logging of events with timestamp to data base
- Detailed data export to CSV
- Send ASCII data via Serial Port and Ethernet

DMS Add-Ons

DMS Pro can be extended by several add-ons to specific applications such as:

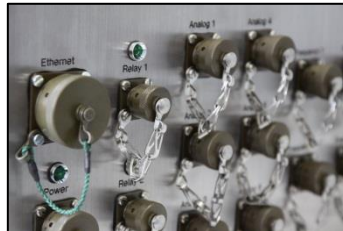
- 3D tubing visualization and pumping schedule with fluids and proppants database for realistic real-time calculation of the Bottom Hole Pressure (BHP Tool)
- 2D tubing concentration value visualization (Wellbore View 2D)
- Coiled Tubing specific software functions (FACT / TAS)
- Wireline interface
- Customer specific functions can be implemented on request

System requirements: Windows 7 or higher - 64 bit, 4 GB RAM, 20 GB free space on hdd. Reporting requires MS Word. E-mailing requires MS Outlook.



DMH - Data Management Hardware

The Prime DMH is built on the Siemens platform. The hardware converts electrical signals from the sensors to numeric values. Prime offers many different hardware configurations to suite many applications. Prime can provide suitcase versions as well as systems for permanent installation. The system can be equipped with cold- or hot-weather package. A variety of connections and also the use of intrinsic safe sensors in Ex zones is available. The system also provides digital relay outputs for the auxiliary equipment like alarm notification or overpressure shutdown. As an option, a 7" outdoor touch panel is available.





Features

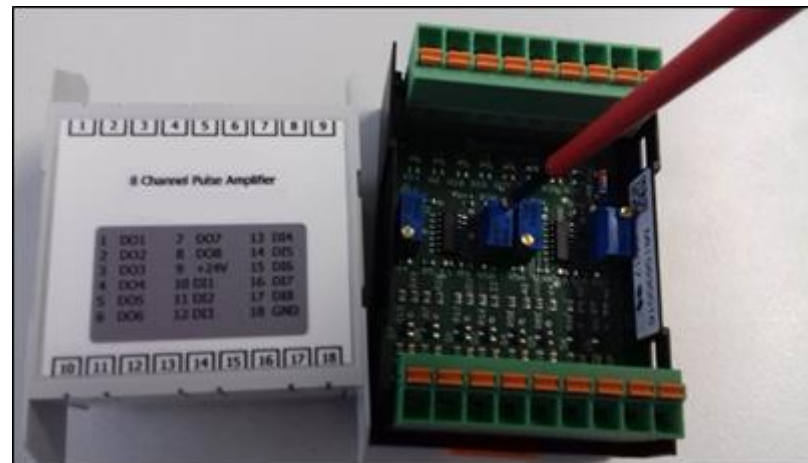
- Siemens PLC
- Waterproof IP65
- Cold- and hot-weather package
- Analog channels for pressure, temperature, electronic flowmeter, level, density, ...
- Frequency/counter channels for pump shaft pickup, turbine, revolutions, ...
- Encoder channels for depth and speed in CT-application or similar
- Relay outputs for external signaling or control functions
- Totalizer function
- Optional Siemens touch display with local storage and USB export
- Fit for purpose build in solutions available
- TCP-ASCII output
- Configuration utility for MS Windows free available
- 3-Year Warranty



Specialized for oilfield applications

DMH is equipped with special engineered input conditioning modules. These modules are amplifying and limiting the inputs signals to be in the desired range without changing the transmitted value. All signal inputs are protected against shortcut to ground or supply voltage.

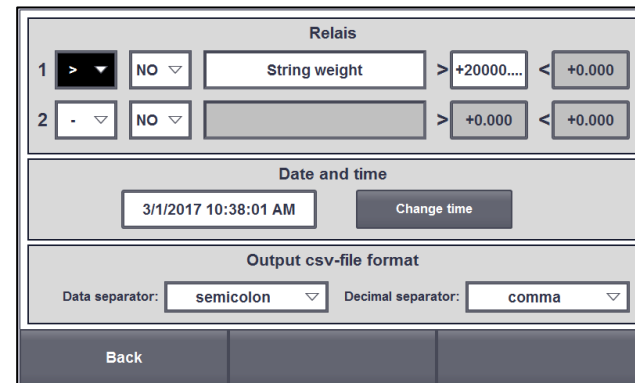
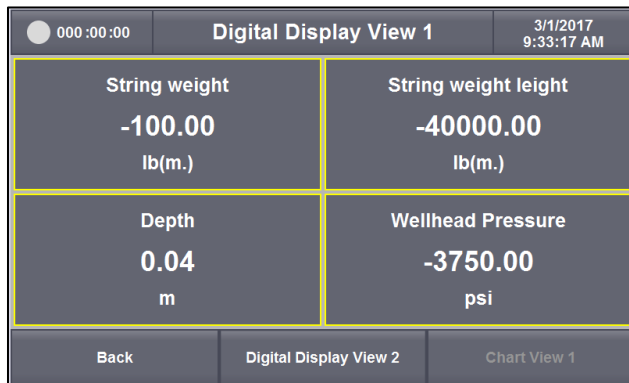
Due to this conditioning modules, the hardware is reliably able to read flow signals from high pressure turbines with two pin magnetic pickup sensors.





Optional touch display features

- Siemens SIMATIC HMI TP700 Comfort Outdoor
- Available as add-on set for any DMH channel configuration
- 7" display
- Waterproof IP66 (Nema4x)
- Shows 4 or 9 channels simultaneously
- Provides internal recording for 50 jobs on an internal SD-card
- Export of acquired data to USB stick
- Easy access to DMH relay settings, totalizer resetting and others





Use case Frac Datavan

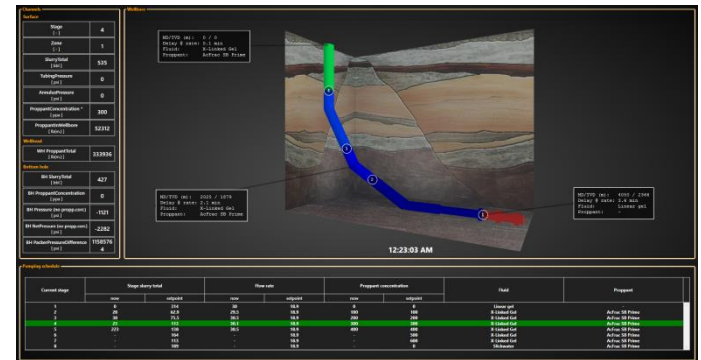
The typical Datavan installation consist of a hardware system with analog and frequency inputs as well as DMS Pro along with the 3D BHP Tool.

Wellhead sensors, high pressure turbines and densitometers can be connected directly to the hardware inputs.

Data from Blender, Fracpumps and other equipment on site is read by DMS directly from the units via Ethernet or Wifi connection.

Multiple individual screens show the important data directly at the responsible persons work place in the desired format as gauge, chart and in the 3D BHP Tool. The BHP Tool shows the current stages running along the wellbore in real-time until they hit the perforation.

Redundant IT prevents the loss of data in case of computer problems. Usage of rugged industrial IT reduces system failures to a minimum.





Use case Nitrogen

Some Nitrogen jobs are very cost sensitive and the Data Acquisition should fulfill only the main purpose of documenting the used amount of nitrogen. In this case, a simple system with a digital display and a USB export function is very suitable. If needed, a laptop can be used to get a more advanced Data Acquisition System.

If the nitrogen job is performed in conjunction with Coiled Tubing, the Data Acquisition should send the Nitrogen related data to the CTU or maybe a Datavan since the main display as well as the supervisor are located here.

To fulfill the entire range of Nitrogen applications, a simple build-in hardware with a digital values display and USB export can be used. In conjunction with a laptop or a CTU, the data is transferred via Ethernet or Wifi.



Contact



PRIME WSI

Prime WSI, Inc.

1544 Sawdust Rd, Ste 301
The Woodlands, Texas 77380 USA

Tel: +1 (866) 203-7744

info@fraccontrols.com • www.fraccontrols.com

In Europe:



GOES GMBH

German Oilfield Equipment & Services
Muenchener Strasse 32
29392 Wesendorf , Germany

Tel.:

+49 (0) 5376 / 97647 0

+49 (0) 5376 / 97647 90

info@goes-well.com • www.goes-well.com