DEWESoft®

CASE STUDIES

IMPROVING FIELD TESTING

for a Global Farming Equipment Manufacturer

ABSTRACT

This application note shows how Dewesoft products provide an effective solution for multi-physics validation of farm tractors. The mobile measurement instruments and easy-to-setup software are used for online field monitoring and multi-physics data acquisition with more than 200 channels.

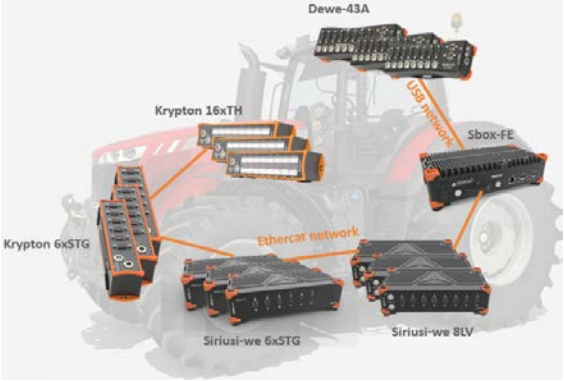
INTRODUCTION

The client, a large tractor manufacturer, is in the business of developing and producing farming machinery for the markets across the globe. With a multitude of use conditions for their machines all over the world, the engineering department needs more accurate multi-physics data for real field conditions as related to life profile specifications, numerical simulations and test bench input data.

To avoid multiple test campaigns, the client decided to simultaneously acquire multi-physics signals from over 200 channels using only one data acquisition system. If the tractor is far from the development plant, the client can access the machine for remote control and data transfer by GSM or Wifi connection.

MEASUREMENT SETUP

The data acquisition architecture is based on rugged IP67 measurement modules such as SIRIUSiwe and KRYPTON on EtherCAT® protocol (using one cable for data transfer, power supply and clock synchronization). It also involves versatile USB systems such as DEWE-43A. The EtherCAT® and USB networks work together and are managed by the SBOXfe control/storing unit.

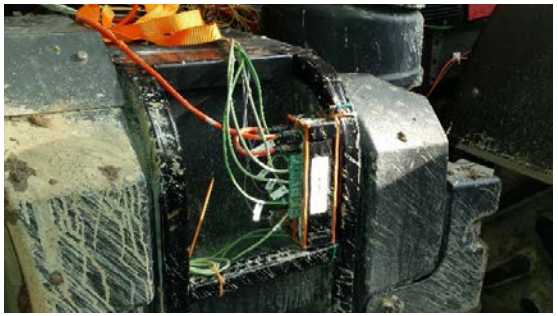


DATA ACQUISITION SYSTEM

Dewesoft Modules	Function
KRYPTON 16xTH	Temperature
KRYPTON 6xSTG	Strain gauges and universal conditioning
SIRIUSiwe 6xSTG	High-speed strain gauges and universal conditioning
SIRIUSiwe 8xLV	High-speed voltage
DEWE-43A	Universal conditioning and CAN bus
SBOXfe with 10Hz GPS GNSS & Wifi receiver	Control unit and storing
EtherCAT® SYNC Junction	Clock synchronization

TYPE OF CHANNELS/SENSORS

Type of channels	Applications
> 200 analog channels	Strain, hydraulic pressure, temperature, voltage, noise and vibration…
CAN bus channels	Engine, transmission, gearbox parameters…
Counters	Tachometer, rpm measurement
Video	Webcam monitoring

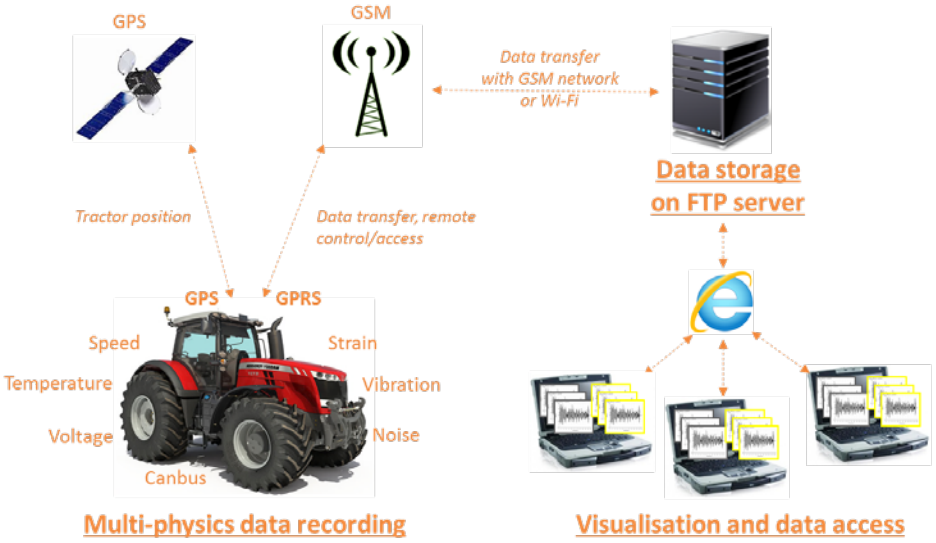


WIRELESS COMMUNICATION DEVICE

Any GSM 4G modem with USB or Ethernet port

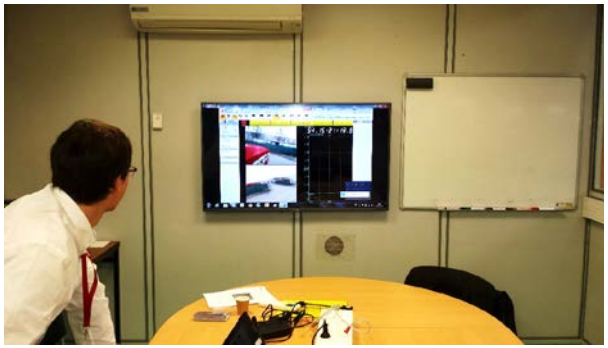
SOFTWARE

Software	Function
Dewesoft X2	Data acquisition setup and post-processing
DSA dynamic signal analysis Plugin	Noise and vibration analysis
ODE online data export plugin	Export selective data online from a Dewesoft measurement in progress
Data Manager plugin	Copy and store Dewesoft files automatically on FTP server or local drive
Any windows sharing desktop software	For internet remote control/access to SBOX control unit
Big data search engine (optional)	Data search on request parameters

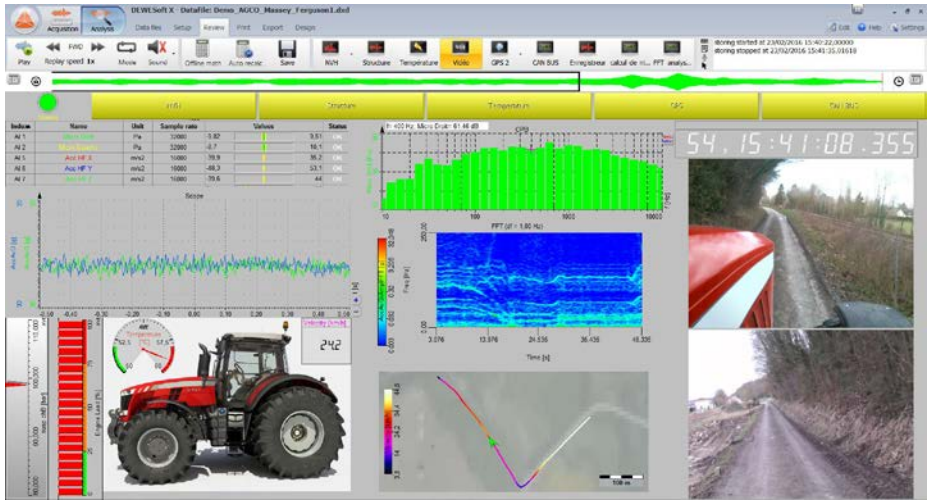


ANALYSIS

With simple GSM/internet connection, the user can access Dewesoft control units inside the vehicle for monitoring or selecting data to transfer.



The measurement screen below is an example of Dewesoft X2 software capabilities to easily set up several different kinds of analysis representation: time signal, frequency spectrum, CAN bus parameters, level meter, GPS track (coloured channels and map overlay) and video synchronisation.



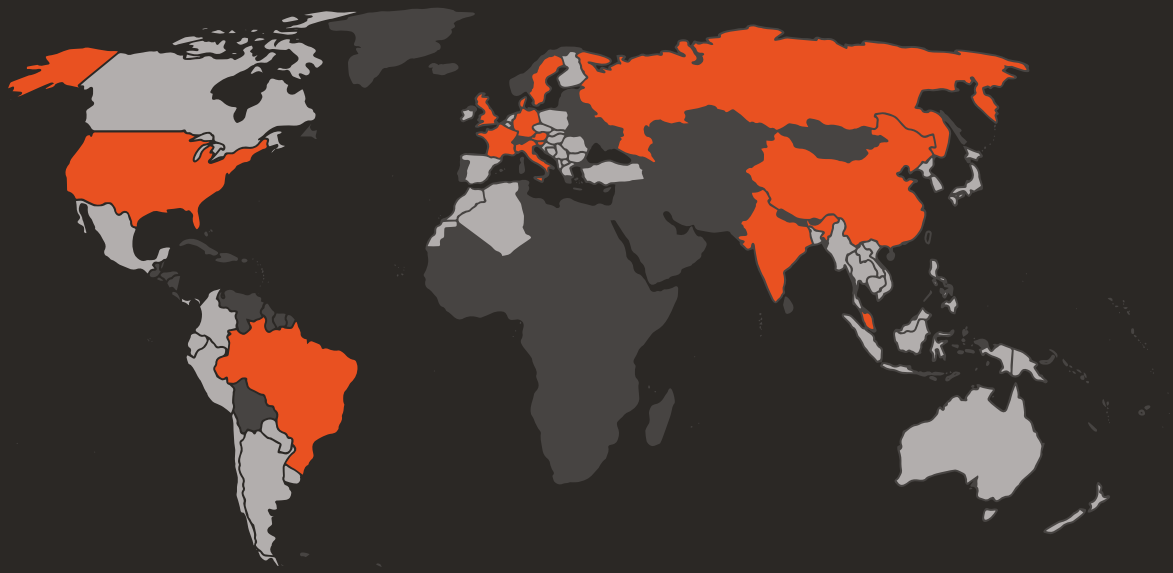
KEY FEATURES:

- Time data recording and post-processing (statistics, filters, maths functions…)
- Extensive trigger features for the start/stop of the measurement
- Export in multiple file formats or video, custom reports
- Selective data transfer during acquisition
- Simple access/remote control with desktop software
- Data management

CONCLUSION

This off-road measurement configuration permitted the customer to combine different kinds of measurements with the same rugged data acquisition system. With various displays and calculations, the user was able to analyse multi-physics phenoma for any internal engineering clients or to export data in an appropriate file format for third-party post-processing software.

Based on Windows platform, the Dewesoft control unit was able to communicate/interface with a common GSM modem. With appropriate software solutions such as Dewesoft plugins and other Windows software, data were sent from the machine to the customer over large distances with possibility to view the vehicle on the road in real time through an onboard webcam



DEWESOFT® WORLDWIDE: AUSTRIA, BRASIL, CHINA, DENMARK, FRANCE, GERMANY, HONG KONG, ITALY, INDIA, RUSSIA, SINGAPORE, SLOVENIA, SWEDEN, UK, USA. PARTNERS IN MORE THAN 50 COUNTRIES

HEADQUARTERS
DEWESOFT SLOVENIA
Gabrsko 11A, 1420 Trbovlje, Slovenia
+386 356 25 300

WEB: www.dewesoft.com
SUPPORT: support@dewesoft.com
SALES: sales@dewesoft.com