

Investigating the correlations  
between electrical power & NVH

# e-NVH

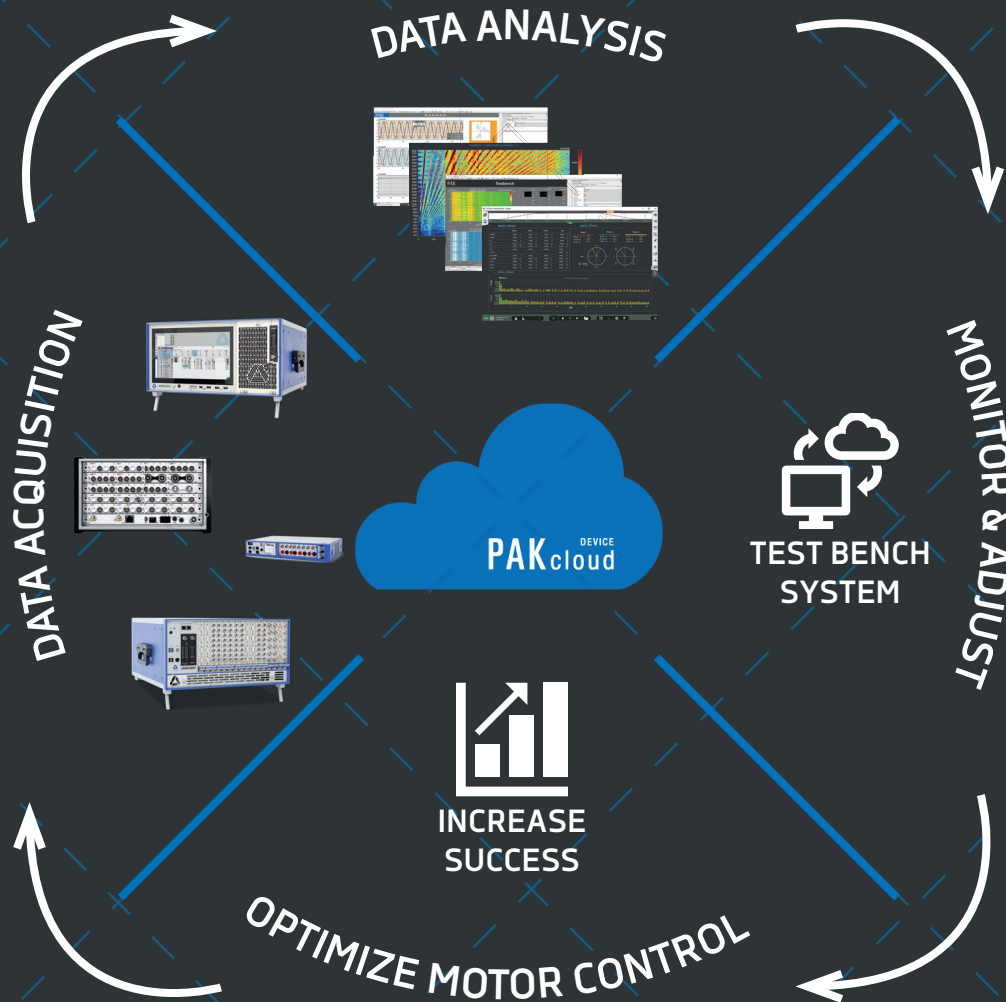
energized by  
**DEWETRON & MÜLLER-BBM VibroAkustik Systeme**



The future of analyzing electric motors

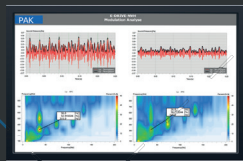
# OPERATING PRINCIPLE

of (online) e-NVH analysis by DEWETRON & MBBM-VAS



- > Target-based development of active components on the test bench
- > Optimization of NVH & e-power performance through motor control during testing
- > Correlation analysis between NVH & e-power data for an all-encompassing engineering approach
- > Combination of NVH & e-power data from several sources in only one view
- > Overall e-NVH system analysis with PTP synchronized measurement data

# APPLICATION #1



PAK



POWER ANALYZER OXYGEN



DEVICE  
UNDER  
TEST

> Online data processing & analysis of NVH & e-power with MBBM-VAS' PAK

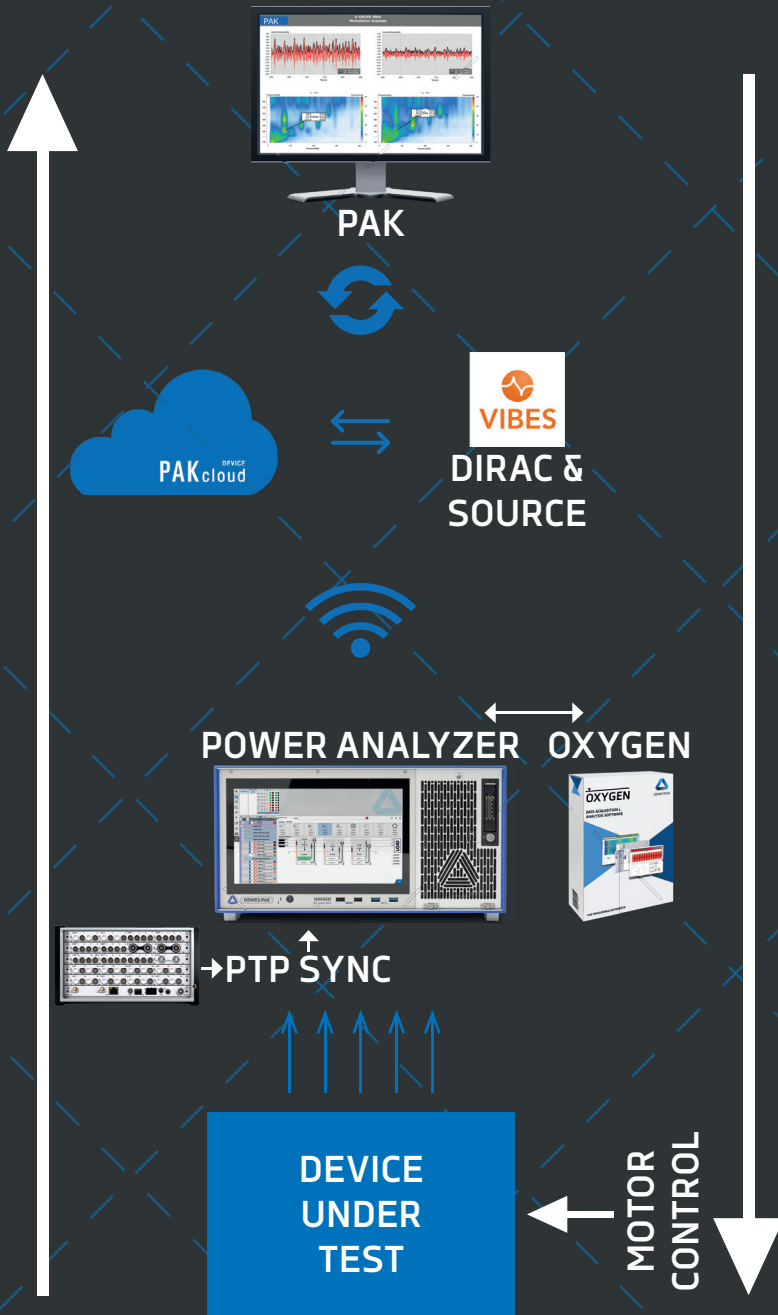
> Online transmission of data to the live IO hub of MBBM-VAS' PAK device cloud

> Data acquisition with DEWETRON's power analyzer (various chassis types)  
> E-power computation with OXYGEN – DEWETRON's DAQ & analysis software

Data from various sensors & signals:

- > Electrical parameters
- > NVH parameters
- > AUX

# APPLICATION #2



- > Online data processing & analysis of NVH & e-power with MBBM-VAS' PAK

- > Online transmission of data to the live IO hub of MBBM-VAS' PAK device cloud
- > Evaluation of motor control changes at the driver's ear using blocked force & component TPA from VIBES.technology
- > Online calculation by PAK virtual channels with embedded TPA model for simulation of vehicle responses directly on the test bench
- > Optional simulation of vehicle changes using stiffness injection & dynamic substructuring

- > Data acquisition with DEWETRON's power analyzer (various chassis types)
- > E-power computation with OXYGEN – DEWETRON's DAQ & analysis software
- > Comprehensive & highly interactive visualization of dedicated electric phenomena

- > Targeted motor control tuning

Data from various sensors & signals:

- > Electrical parameters
- > NVH parameters
- > AUX

# YOUR ADVANTAGES

- ▶ Online data analysis with the processing of NVH & e-power signals in PAK
- ▶ Seamless integration of DEWETRON's power analyzer into the PAK family
- ▶ Optimization of NVH & e-power performance through motor control on test benches
- ▶ Usage of the proven MBBM-VAS rotating machinery software packages
- ▶ Online simulation of vehicle response on test benches using blocked force methodology
- ▶ PTP synchronized data acquisition
- ▶ 10 MS/s & continuous raw data storage for PWM signals with DEWETRON's OXYGEN

## DEWETRON + OXYGEN

- > Dedicated power analysis of systems with up to 9 phases with various power parameters
- > Highest flexibility due to a modular design & DEWETRON's mixed signal inputs approach
- > Perfect signal synchronization to guarantee the most reliable measurement data integrity
- > Highly dynamic range with tremendous accuracy as a key requirement for test bench applications
- > Continuous & gapless storage of raw data
- > Integrated (redundant) sensor supply for a direct connection to the power analyzer

## MBBM-VAS + PAK

- > Open architecture combining data streams from different sources by a live IO hub
- > NVH software suite with dedicated e-NVH analyses, including Clarke/Park transformation, PWM orders & sound design
- > Direct visualization of acquired quantities & spectral evaluations in the powerful reporting tool (highly interactive graphic functionalities)
- > The perfect solution for troubleshooting, highly standardized tasks, quality assurance, mobile measurements & test bench operation



The future of analyzing electric motors

# Start investigating the correlations between electrical power & NVH with us!

## DEWETRON

DEWETRON is the manufacturer of high-precision test and measurement equipment. As the key player in the electrical & mechanical power analysis sector, DEWETRON develops high-performance hardware in the megasample range. This is particularly relevant to fulfill the high demands of NVH analyses. With the highly intuitive data analysis software OXYGEN, DEWETRON enables the simultaneous calculation of up to 16 different power phases.

## MÜLLER-BBM-VibroAkustik Systeme

MÜLLER-BBM VibroAkustik Systeme is the leading solution provider for the acquisition, analysis and management of physical data in the field of vibration and acoustics (NVH). MBBM-VAS provides a live IO hub (PAK device cloud) that handles data streams from various data sources synchronously. Users benefit from a holistic approach to process all data online which facilitates investigating correlations & dedicated phenomena.



## The future of analyzing electric motors

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**DEWETRON**

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