



DEUTZ ADVANCED DRIVE SYSTEMS

Dr.-Ing. Markus Müller

A **NEW** DYNAMIC

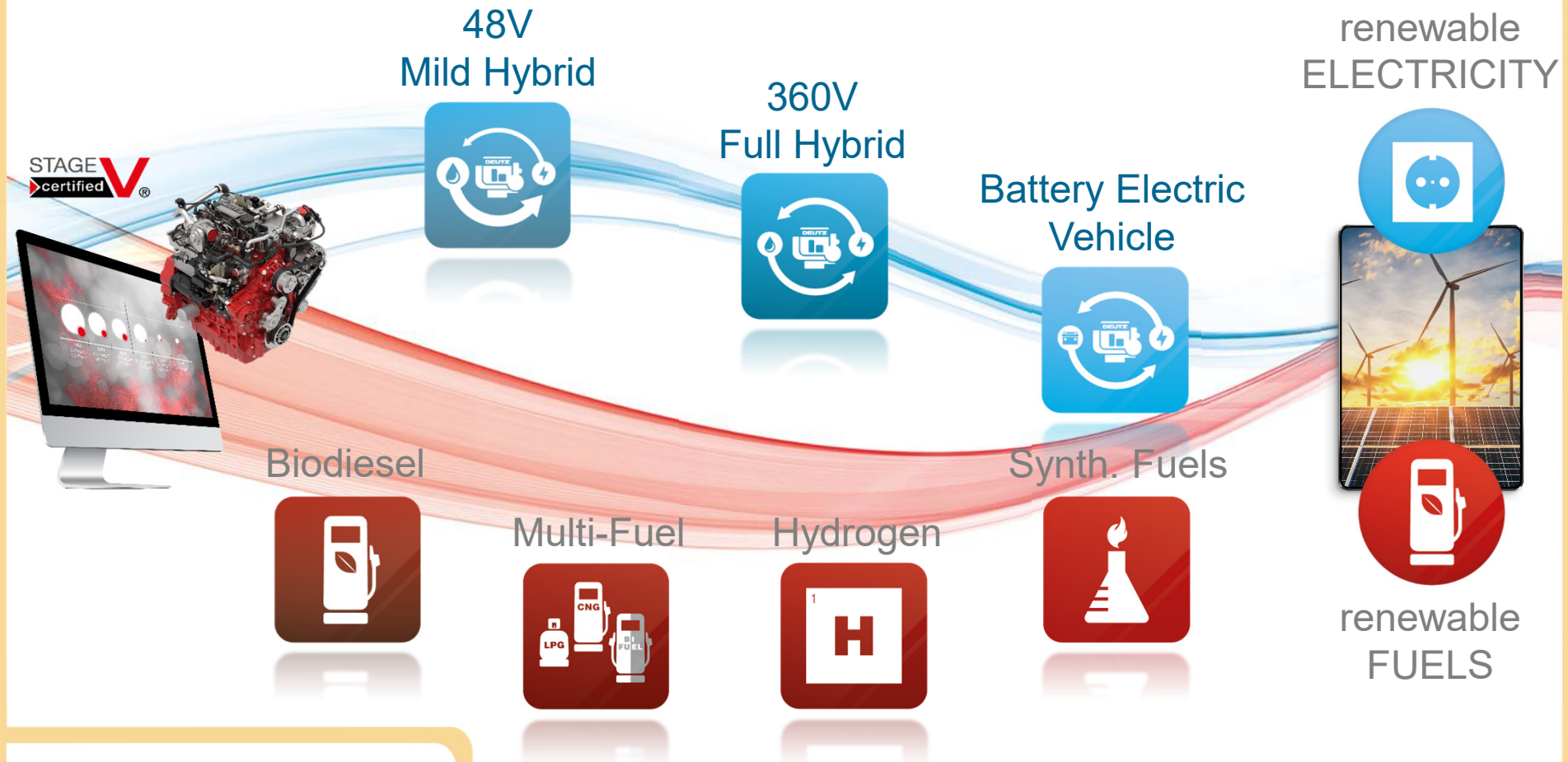
DEUTZ Environment

Megatrends in our Industry

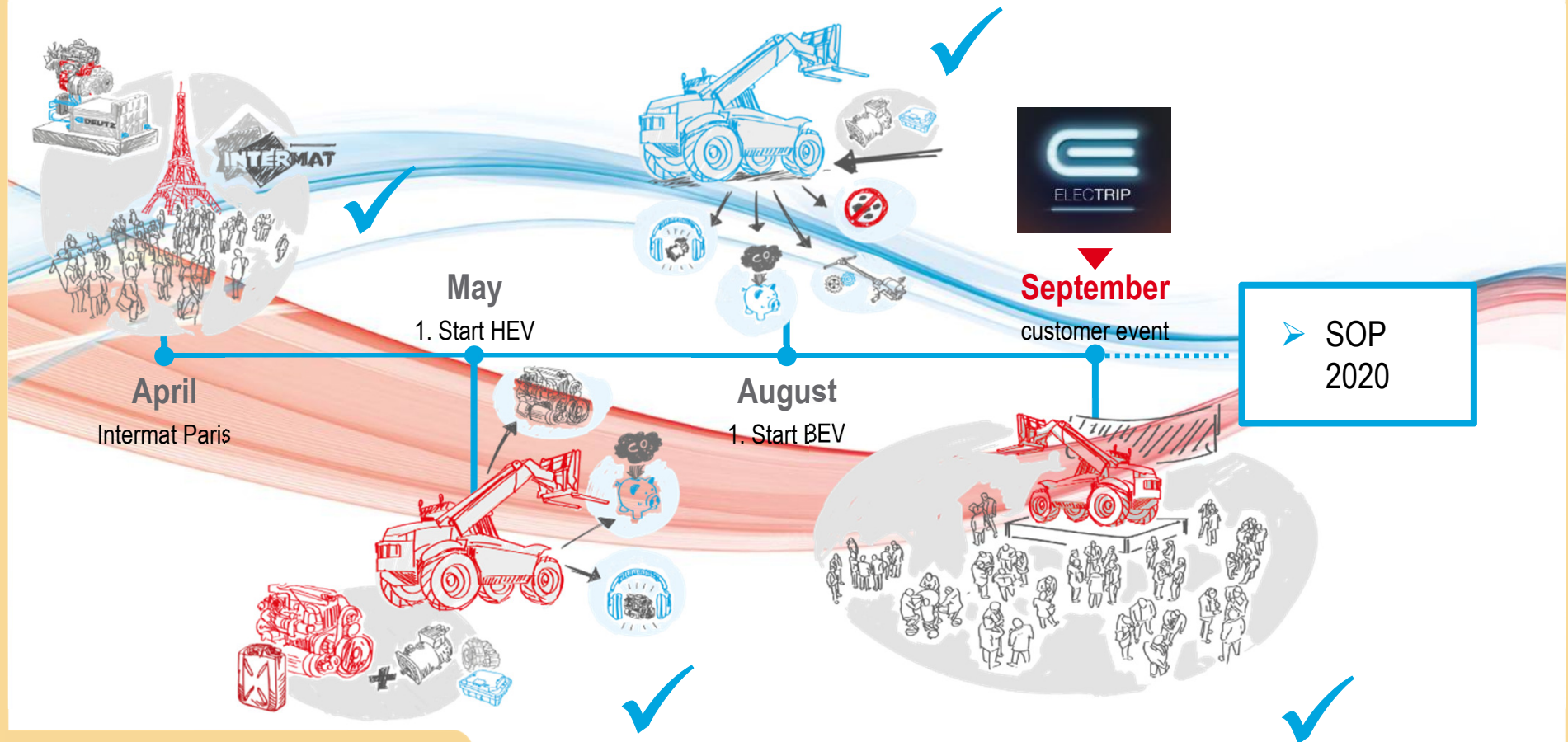


DEUTZ Market Positioning

Advanced Drive Systems for clean Power



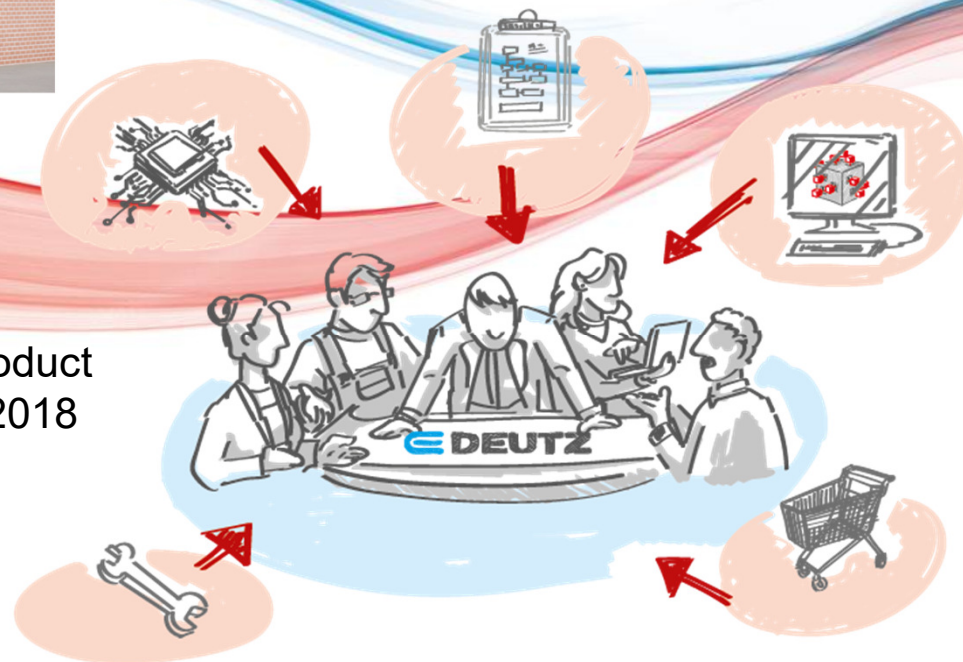
DEUTZ Advanced Drive Systems From Diesel To Electric – Roadmap



DEUTZ Advanced Drive Systems eDeutz Team



An interdisciplinary team of electronics, software, hardware, purchasing and product management was founded in January 2018 with DEUTZ and Torqueedo colleagues.



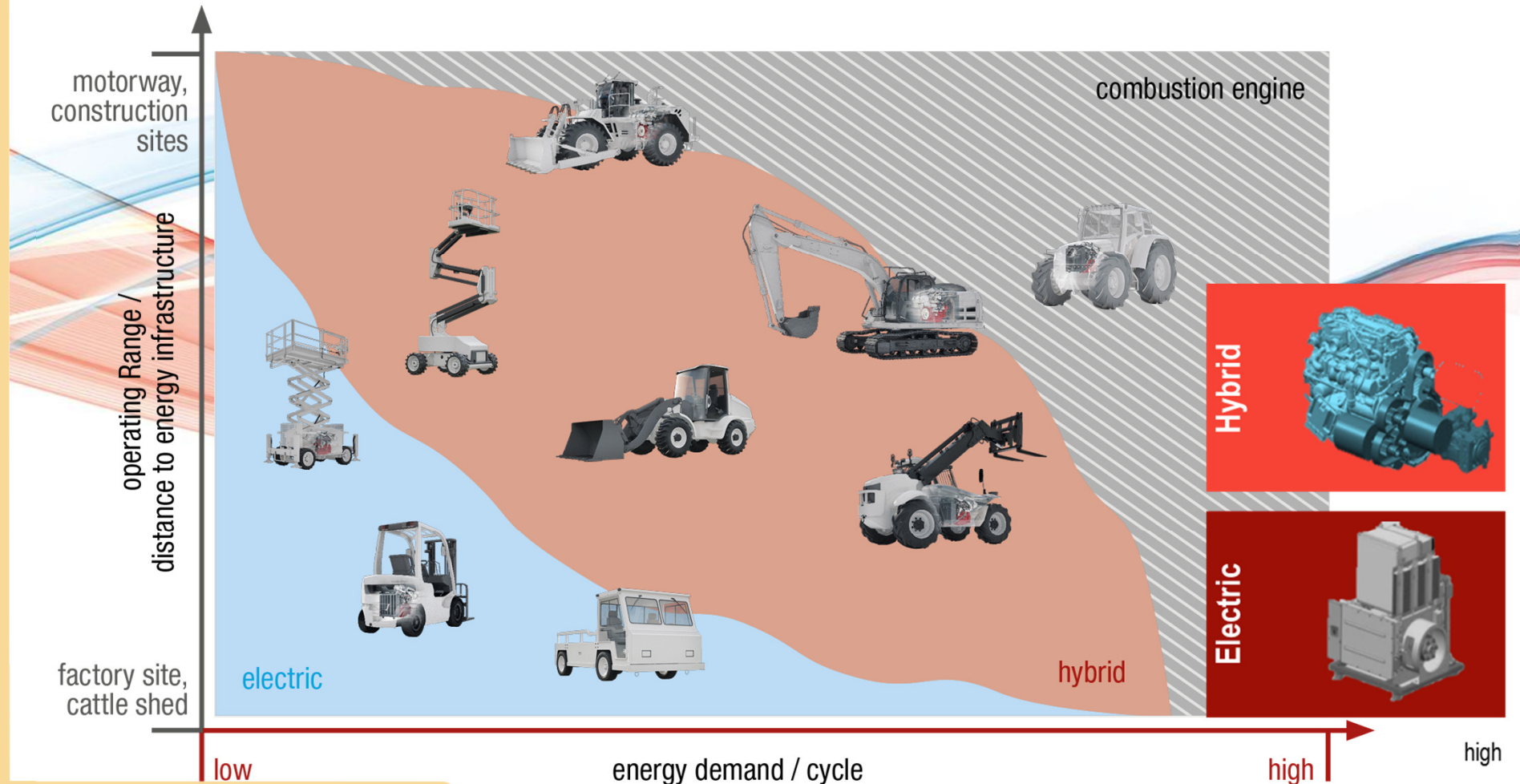
DEUTZ Advanced Drive Systems E-Deutz Team

7. Fachtagung
Hybride und energieeffiziente
Antriebe für mobile
Arbeitsmaschinen
20. Februar 2019
Karlsruhe



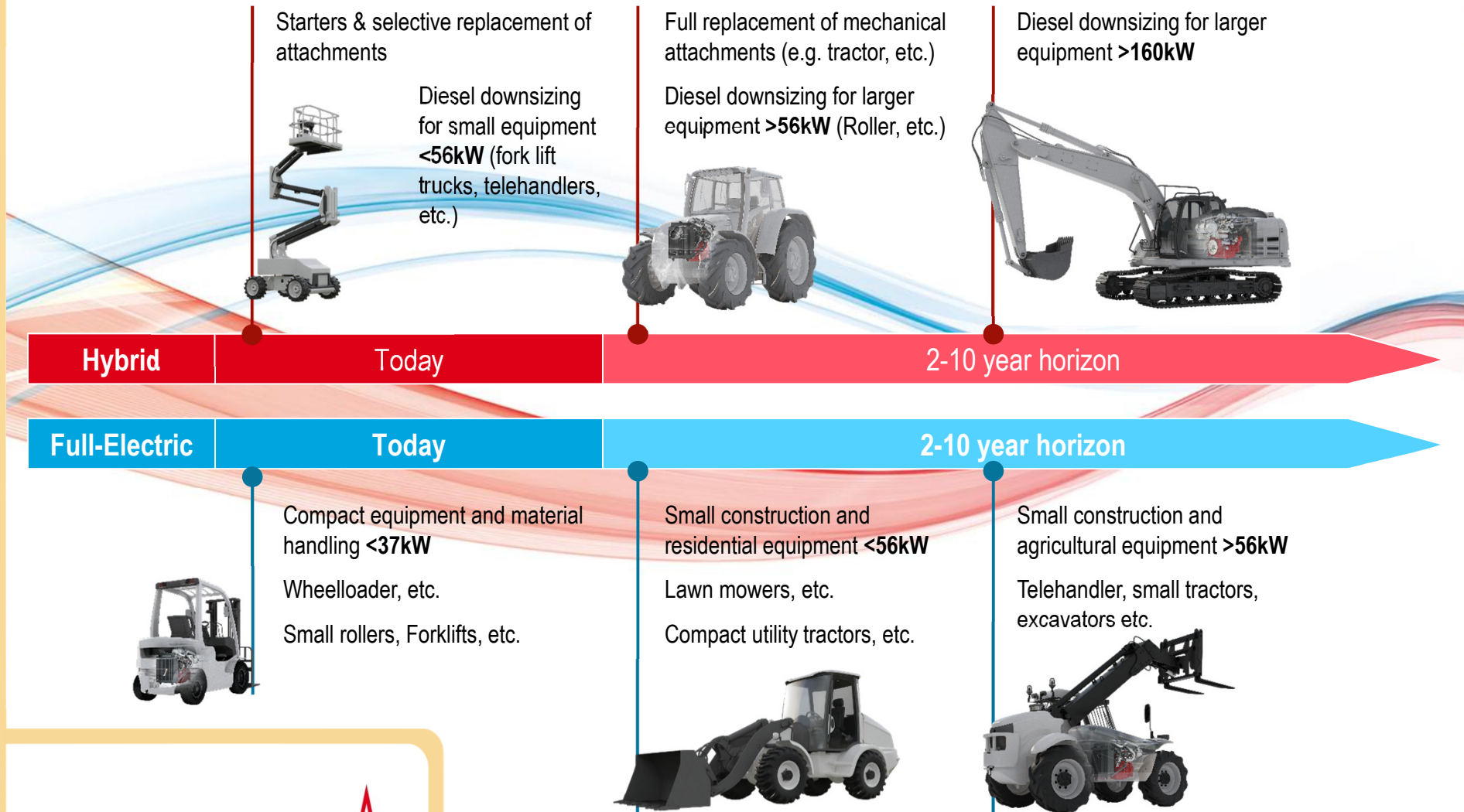
DEUTZ Advanced Drive Systems

Electric & Hybrid



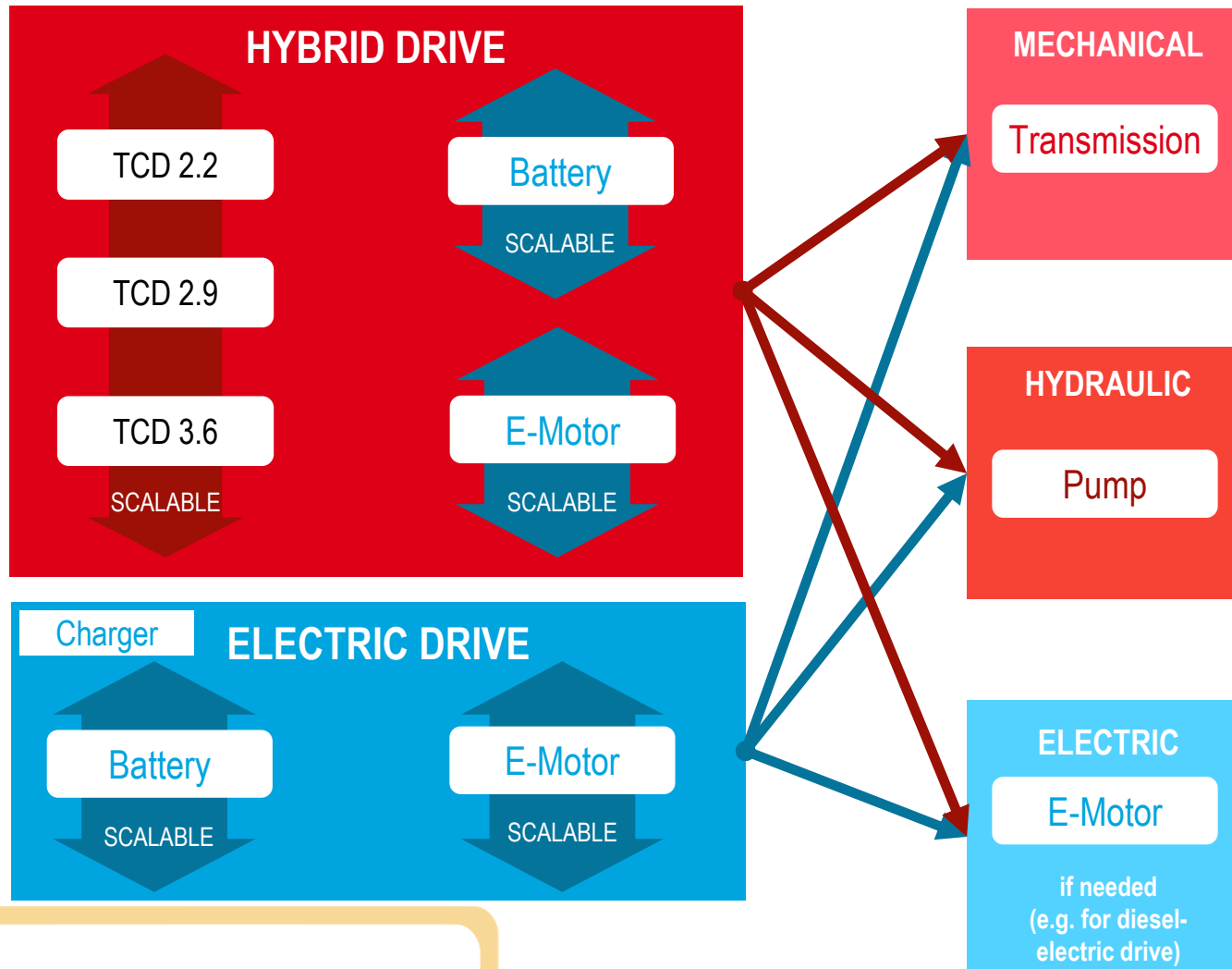
DEUTZ Advanced Drive Systems

Strategy - Markets/Segments/Applications



DEUTZ Advanced Drive Systems

Components & Modularity (48V or 360V)



Features for driving & working:

- Boost
- Stop/Start
- Recuperation
- Electric driving

Operation

- Electric auxiliaries
- Operating range
- Operating time
- Charging rate
- Average load

On-board power

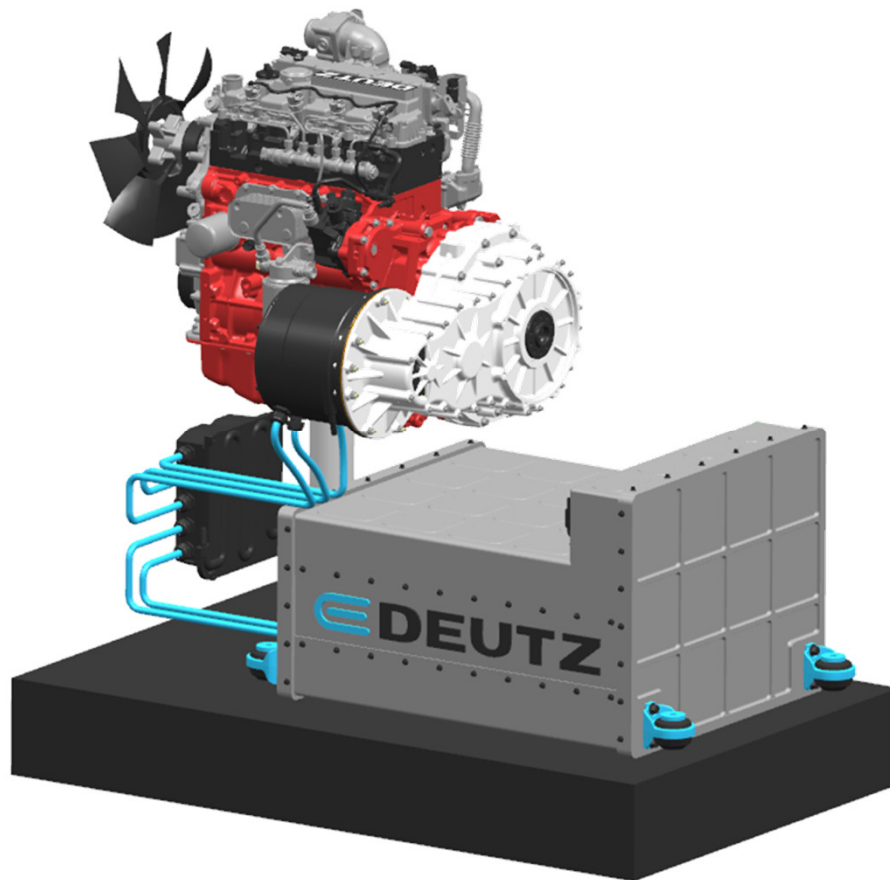
12V / 24V / 48V /

230V AC

Power need (x kW)

DEUTZ Advanced Drive Systems

INTERMAT 2018 - Trade Show Prototype



High voltage hybrid system

TCD 2.9 stage V (55,4 kW without SCR)

Intermediate flange gear with integrated clutch

Electric motor and power electronics

High voltage battery package

Features

boost

battery charging

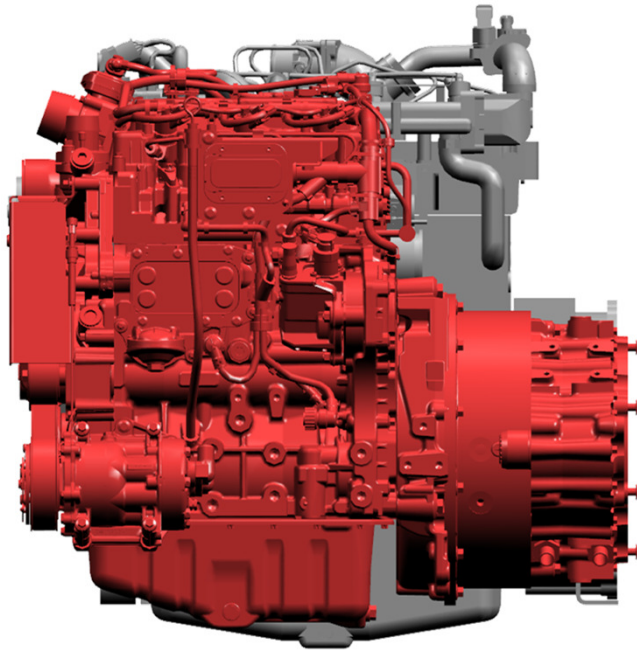
pure electric operation

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48 V Hybrid System

Downsizing with comparable Size

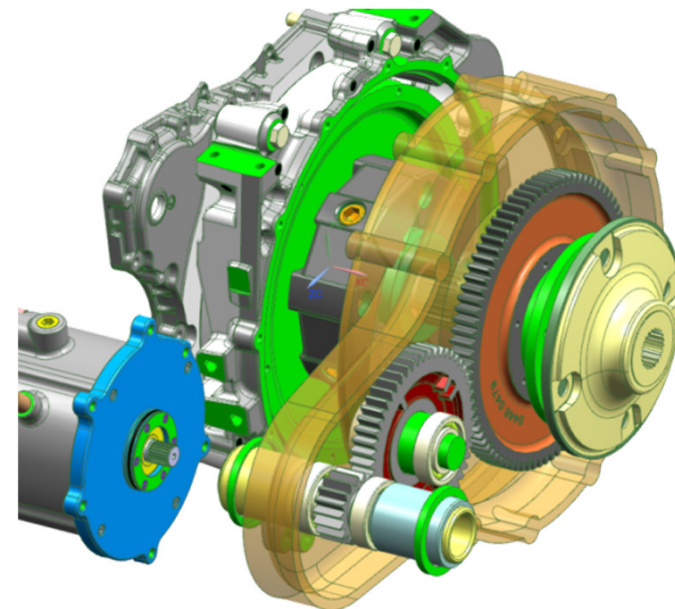
Downsizing TCD 3.6 (75kW) to **TCD 2.2 (55,4kW)**
plus electric motor (20 kW peak) at comparable space
claim and costs



Comparison TCD 3.6 (grey) to **TCD 2.2 Hybrid (red)**

Electric motor linked via intermediate flange gear

- High torque transmission
- Flexible mounting
- High gear ratio

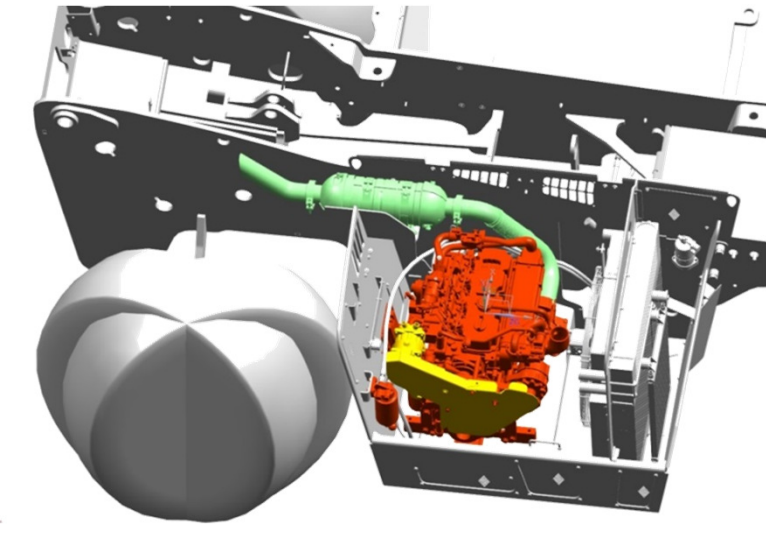


Technical concept to link the electric engine

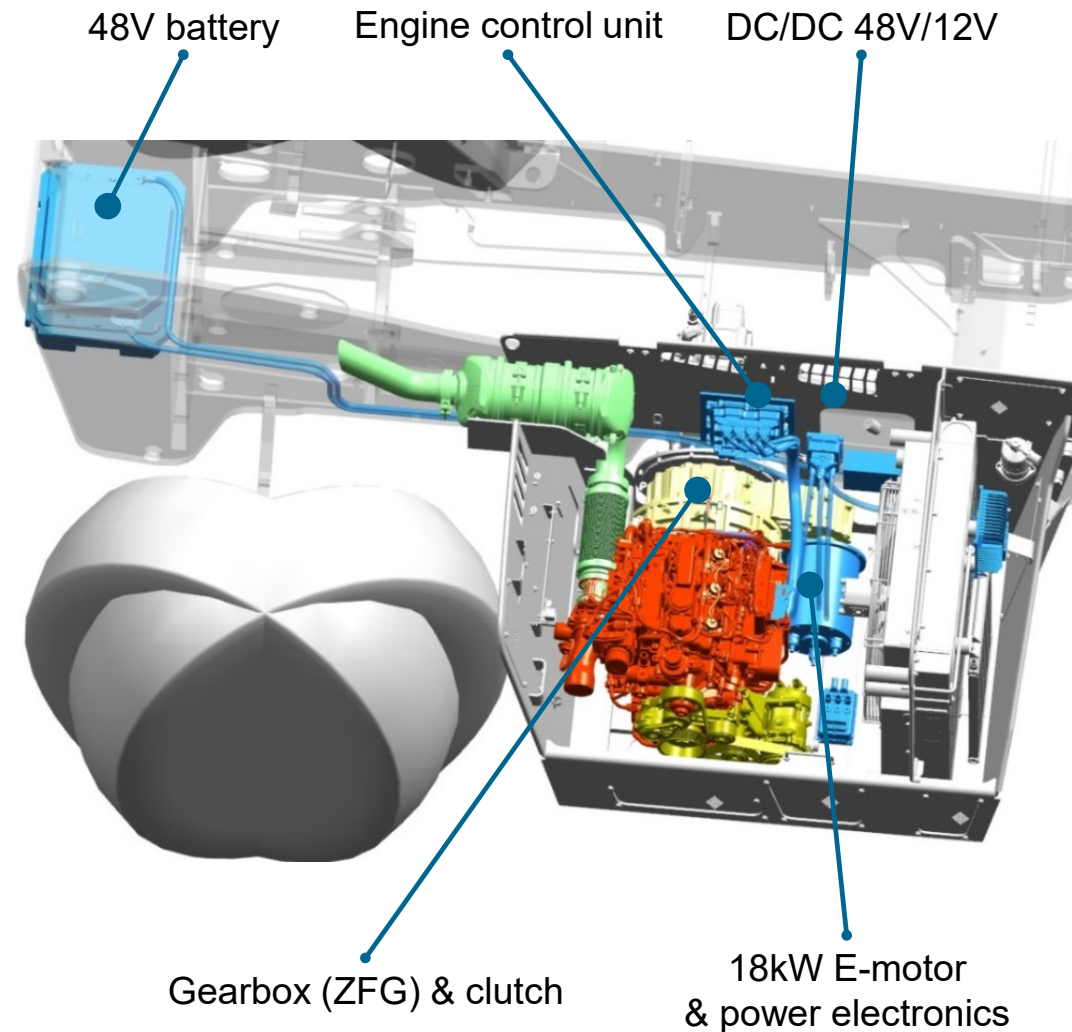
DEUTZ Advanced Drive Systems Installation 48V Hybrid System



TCD 3.6



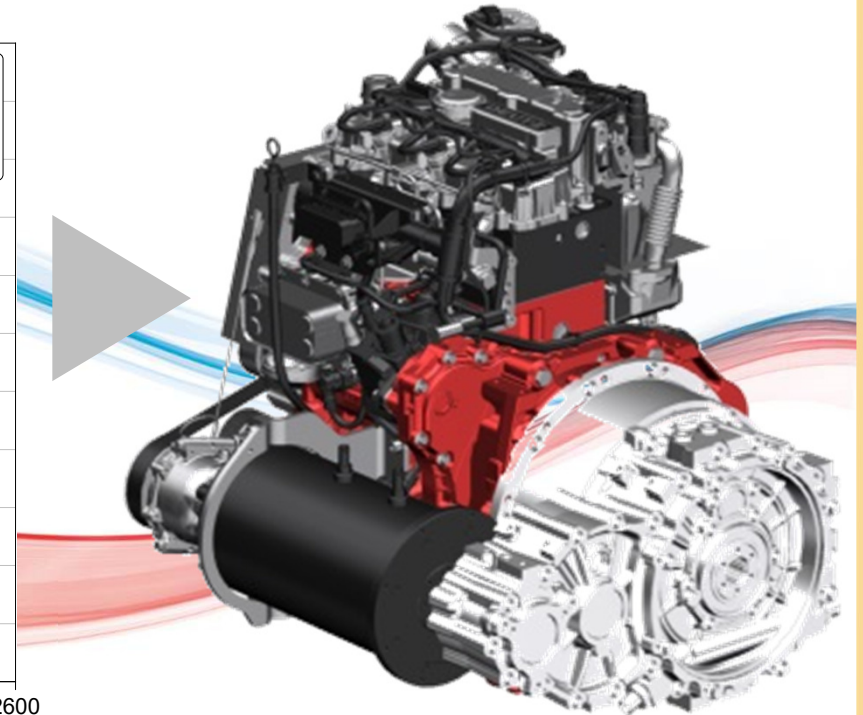
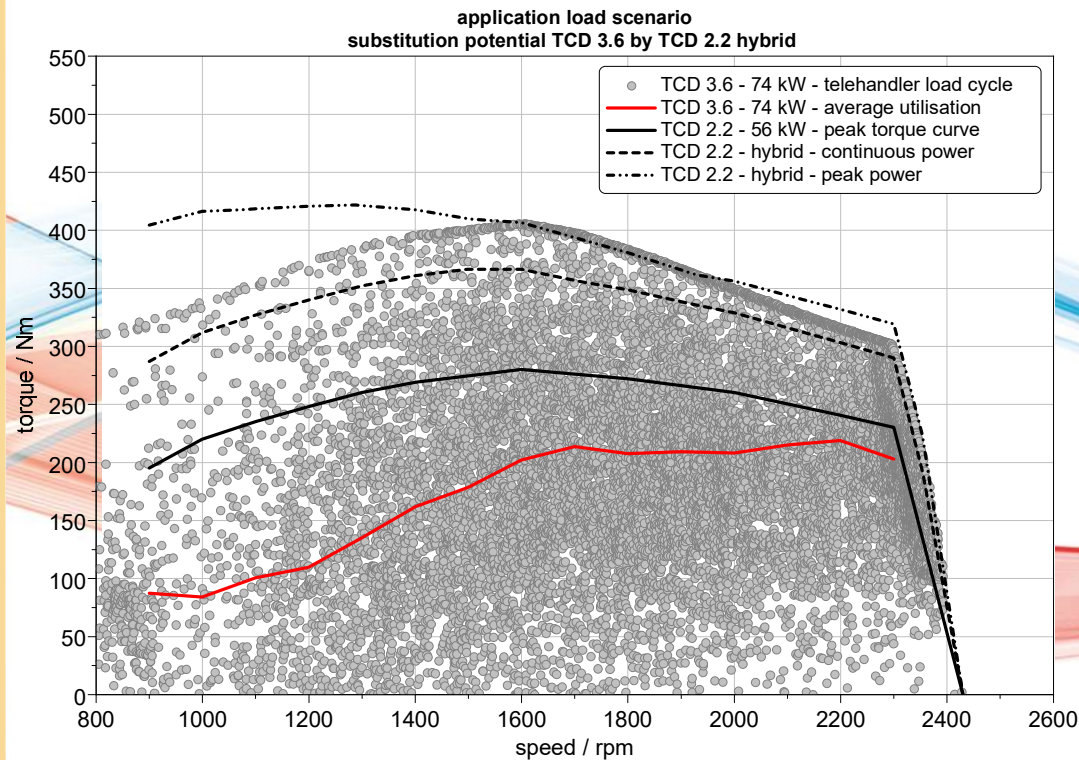
Hybrid TCD 2.2 with 48V system



DEUTZ Market Positioning

Advantages of the 48V Hybrid System

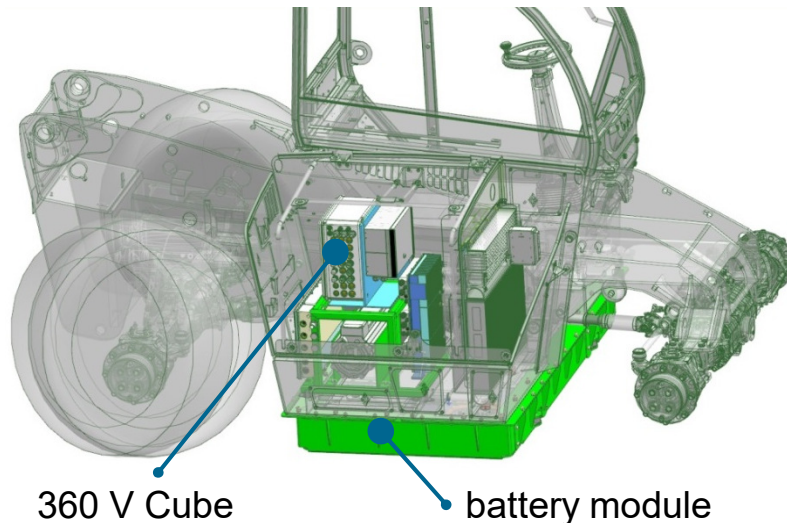
Matched performance level



Downsized IC, improved fuel consumption at the same maximum performance

DEUTZ Advanced Drive Systems

Installation 360V Battery Electric System

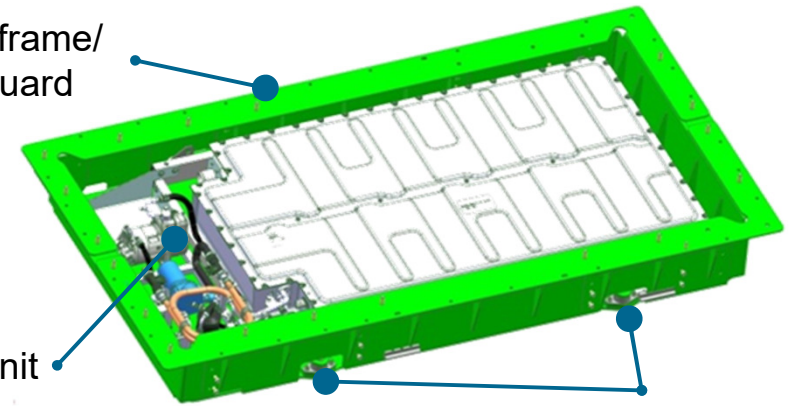


Battery module

installation frame/
underride guard

cooling unit

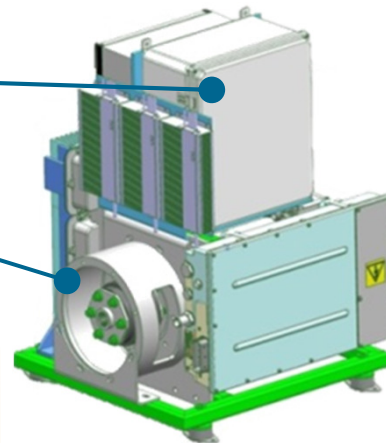
vibration dampers



360 V Cube

3x DC/DC converter

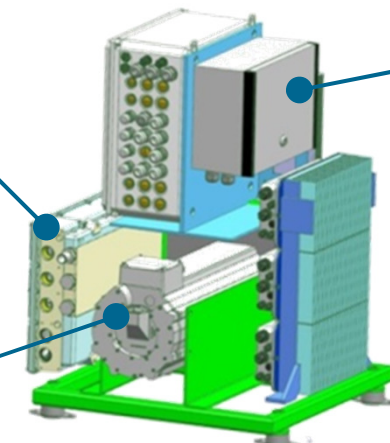
interface to
hydraulic pump



power
electronics

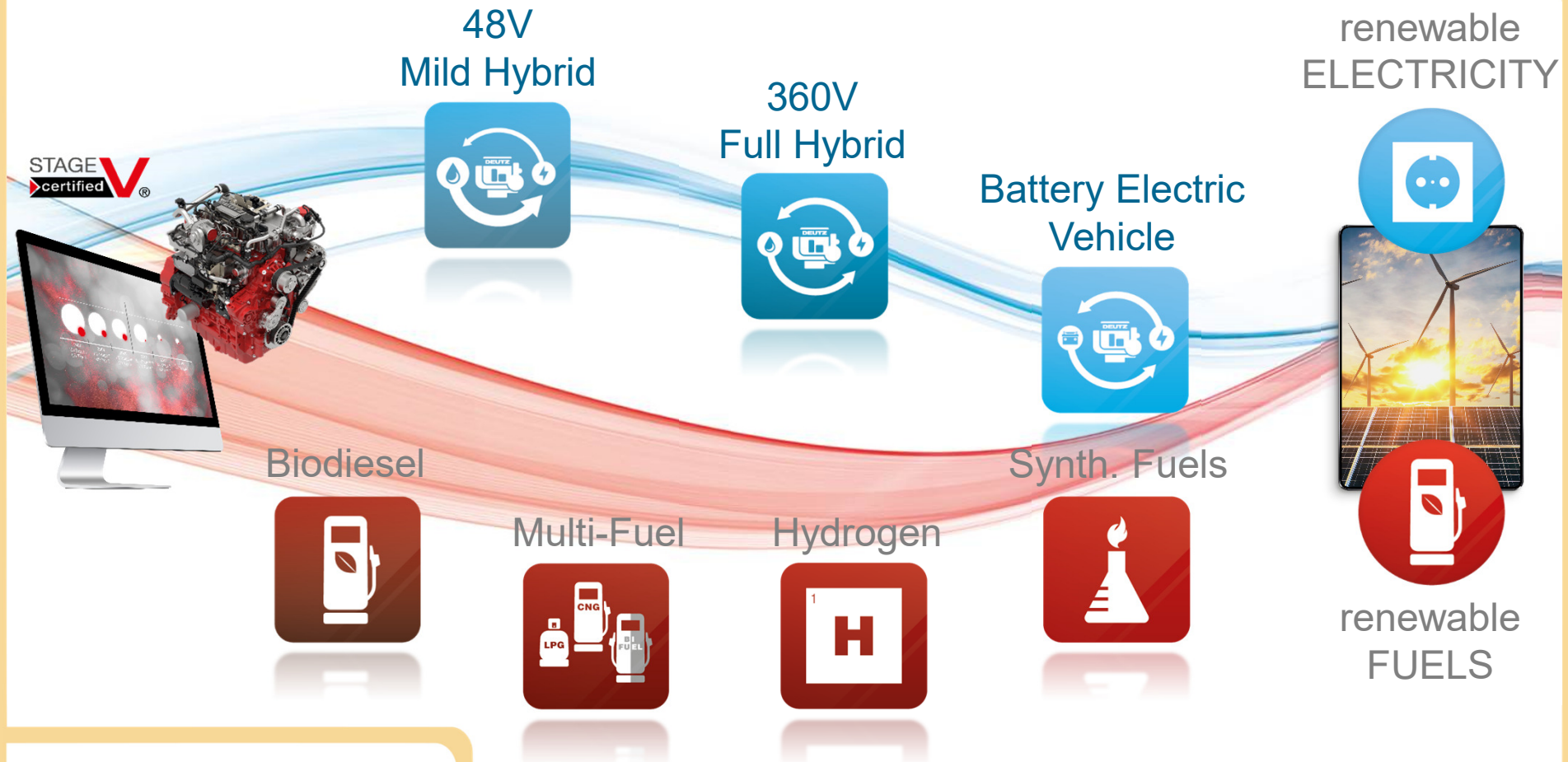
electric motor

charger
box



DEUTZ Market Positioning

Advanced Drive Systems for clean Power



DEUTZ Market Positioning

Modular Product KIT

Offering Power from clean Technology



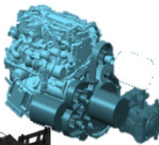
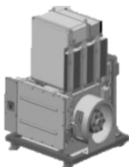



DEUTZ Modular Product kit offers maximum standardization to fit customers applications



DEUTZ Modular Product kit is the base for future machinery architecture


DEUTZ scalable IC engines, Electric motors, battery sizes & packages allow to individualize along applications

DEUTZ Modular product kit support downsizing on IC engine

	DIESEL	ALT. FUEL	HYBRID	ELECTRIC			
19 kW							
37 kW							
56 kW							
75 kW							
100 kW							
150 kW							
200 kW							
	Clean diesel		Clean fuels				
	2.2	2.9	3.6				

InCombE	48V	360V
2.2	1 2 5	10 20 40
BATTERY (kWh)		
2.9	10 - 20	20 - 100
E-MOTOR (kW)		

Exhaust Aftertreatment
<div>75kW</div> <div>Stage V: DPF + SCR</div> <div>Tier 4: DOC + SCR</div> <div>STAGE V certified </div>
<div><56kW</div> <div>Stage V/CN IV: DPF</div> <div>Tier 4: DOC</div> <div>STAGE V certified </div>

Exhaust Aftertreatment
SCR
DPF DOC
Downsized Emission After Treatment
 ZERO EMISSION

Vielen Dank für Ihre Aufmerksamkeit!

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