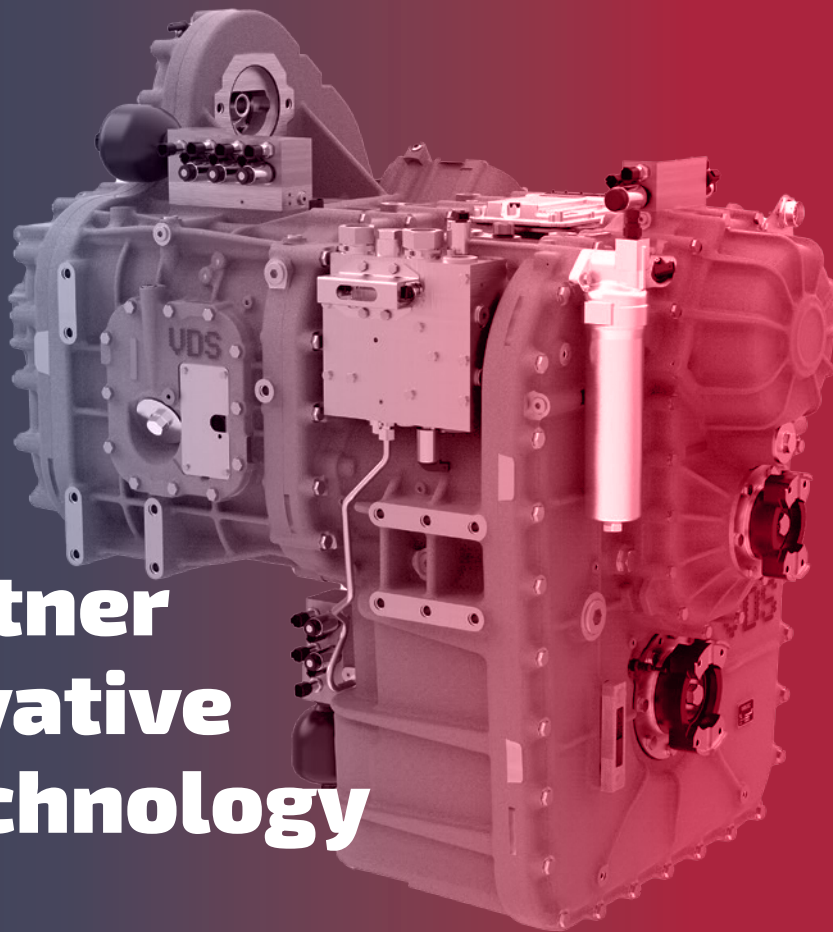


Your Partner for Innovative Drive Technology



INNOVATIVE DRIVE TECHNOLOGY

Innovative Solutions for Your Drive Technology



Whenever special driveline solutions are requested, VDS will find a way to solve them.

Located in Wolfersdorf close to Steyr, the heart of Austria's vehicle and driveline technology, we have specialized in the development and production of individual, advanced drive systems for agricultural tractors, forestry machines, municipal vehicles, construction machinery and off-road vehicles. Our expertise ranges from concept development to series production.

OUR SOLUTION FOR YOU

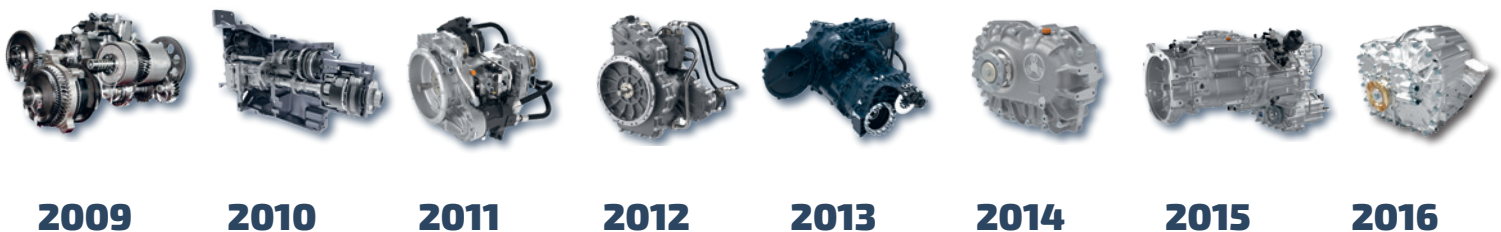
At VDS Getriebe GmbH, we offer holistic solutions that master your specific drive challenges. With our experience and innovative strength, we provide customized drive systems that guarantee maximum efficiency and reliability.

Benefit from our know-how and experiences in powersplit technology to develop products that meet your requirements.

In order to achieve optimal functionality and highly efficient solutions, we can choose from different powersplit approaches developed and patented by VDS. The transmissions cover a power range from 80 kW to 400 kW and applications in agriculture, municipal vehicles, forestry, construction, handling and wherever best functionality in combination with high efficiency is requested. In most cases hydrostatic units are used as variator systems, also electric variators are considered within our products.

VDS also covers gearboxes and transmissions for electric drives for challenging applications. Explore the transmissions and gearboxes crafted by VDS, which reflect 15 years of expertise and innovation.

TRANSMISSIONS DEVELOPED 2009 TO 2024



2009

2010

2011

2012

2013

2014

2015

2016



„VDS makes powersplit technology also available in niche applications.“

Gerhard Hörmann (left), CEO
Heinz Aitzetmüller, CEO

”



2017



2018



2019



2020



2021



2022



2023



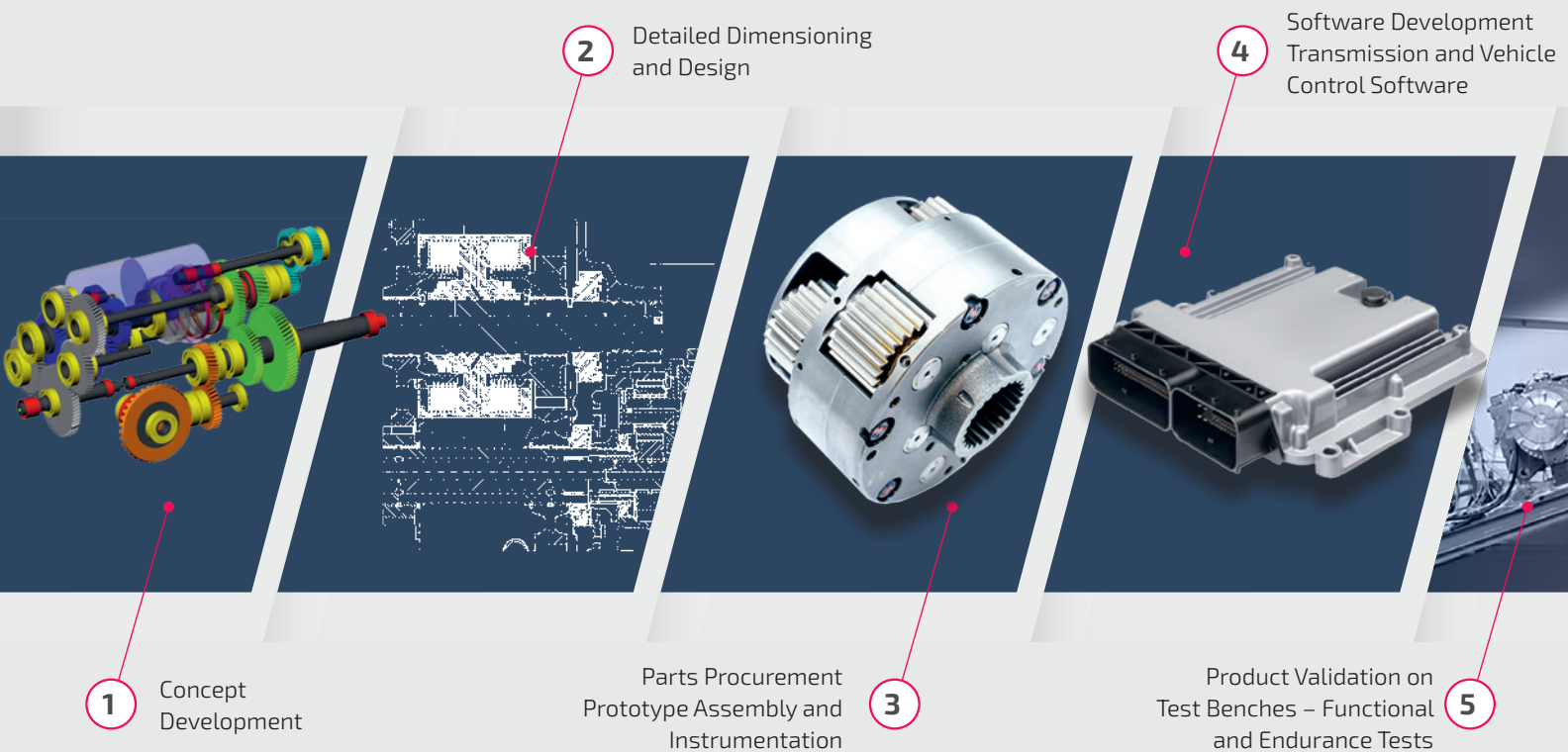
2024

SUCCESSFUL CUSTOMER PROJECTS

From Driveline Concept to Production

VDS PRODUCT DEVELOPMENT PROCESS

VDS covers the whole process from driveline concept to series production.



VDS covers the whole process from driveline concept to series production. "Let us know your requirements. We will find a solution." That's the motto of our engineering staff and in most cases we find proper solutions.

Our mix of engineers with many years of experience in transmission dimensioning and design and young engineers highly skilled in most modern development tools provides the basis for successful engineering work.

Our software engineers provide solutions for transmission control as well as for vehicle control.

For prototyping and transmission production within reasonable volumes, VDS has built up close cooperations with suppliers in gear manufacturing, aluminum casting, grey and nodular cast iron and housing machining.

First assembly, extensive functional and endurance testing and adjustments on test benches, in most cases hand in hand with software and control parameter adjustment activities, guarantee that functional and durability requirements are met.

Integration of transmissions into vehicles, parameter tuning and field tests are also covered within VDS activities. Considering the results of functional,



„Innovation drives us – without it, we wouldn't stand a chance in the engineering market. Our engineers have long-term experience in the development of transmissions and drivelines to meet challenging requirements.“

Heinz Aitzetmüller
CEO VDS Getriebe GmbH

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6

Vehicle Integration and
Vehicle and Field Tests



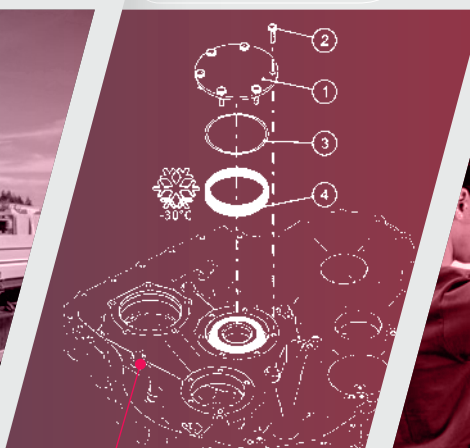
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Series Production
in Low to Medium
Numbers



7

Technical Documents
for Mass Production
and After Sales



endurance and field tests and taking into account the feedback of component suppliers, VDS updates technical documents for series production.

Depending on customer requirements, VDS offers to organize parts provision, logistics and transmission assembly in low to medium production volume. Before delivery every transmission is extensively tested on VDS end-of-line test bench.



MOORE SKZ

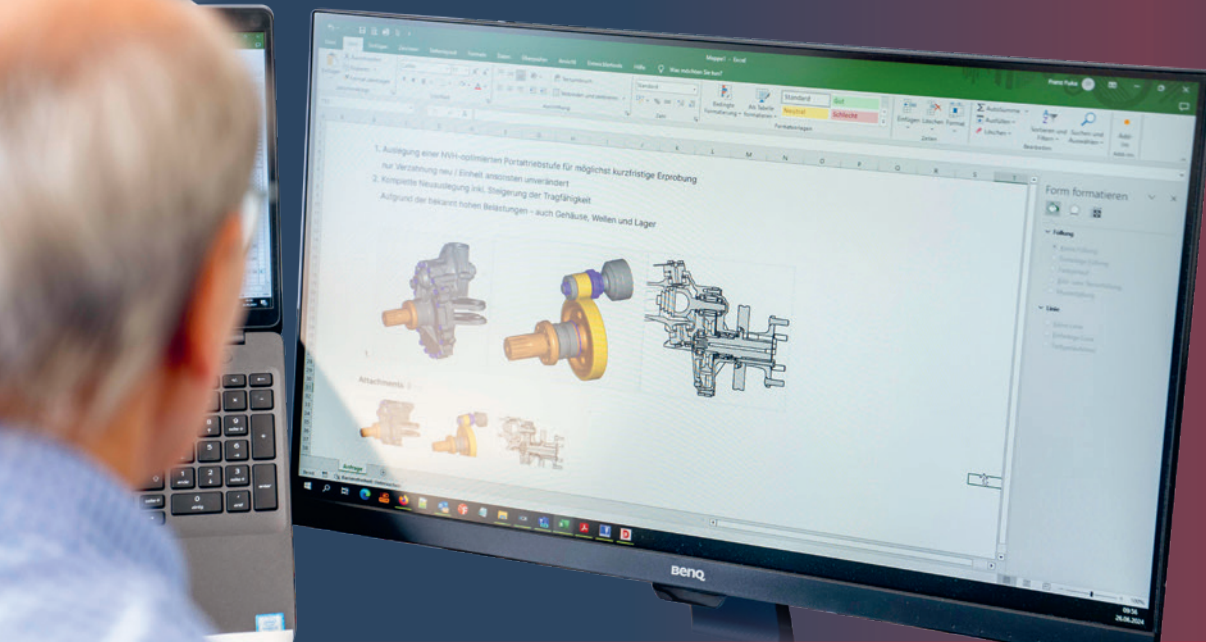
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FROM CONCEPT TO SERIES PRODUCTION – DEVELOPMENT STEPS AT VDS

Concept Development, Detailed Analysis and Design



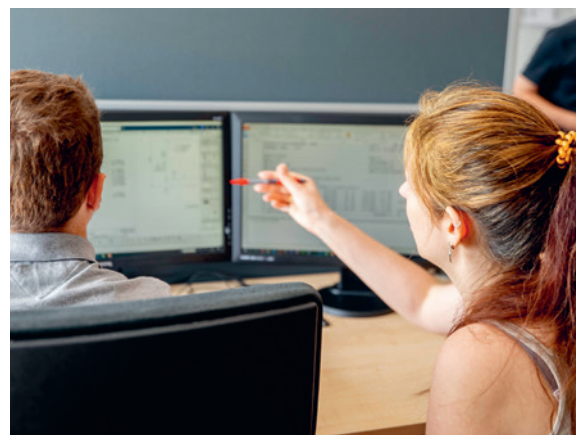
VDS engineers have long-term experience in developing gearboxes, transmissions and drive-line systems for most challenging applications in agricultural tractors, municipal vehicles, forestry machines and various types of off-highway applications.

Besides our core competencies in CVTs/IVTs based on hydrostatic-mechanical powersplit principle, VDS is also focusing on transmissions for electric drives, powershift and powershuttle applications. Tailored solutions for the patented VTP and VRP powersplit systems are available in power ranges from 80 to 420 kW.

Let us know your requirements, our team of well experienced engineers will find proper solutions.

Tools for Simulation and Design:

- CAD Software: CATIA
- Wire Harness Design: EPLAN
- Transmission and Gear Analysis: KISSsoft/KISSsys
- Finite Element Analysis: ANSYS
- Simulation Software: AMESIM
- VDS In-House Developed Simulation Software



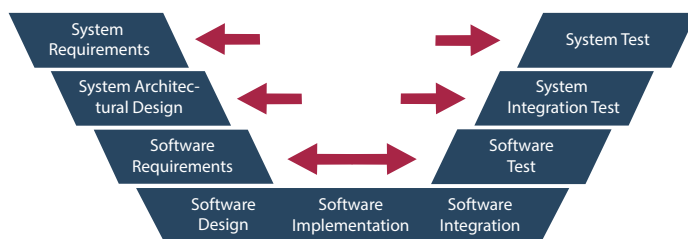
SOFTWARE

Experience gained in many different projects and the understanding of complex mechatronics systems enable VDS software engineers to find an optimum solution for your application. Control software is not only optimized to ensure outstanding controllability of the machine but also to maximize the efficiency of the overall drivetrain system. The use of modern tools like MATLAB/Simulink is the basis for a flexible and highly reliable development process to create control software solutions meeting customers' needs.

State-of-the-art toolchains using V-development steps enable quick software adaptations and tuning of functional behaviour while guaranteeing functional safety requirements.

Our Tools:

- MATLAB Simulink, SimMechanics, Embedded Coder
- Vector Informatics CANape
- EPLAN Electric P8
- Bosch BODAS Service Tools



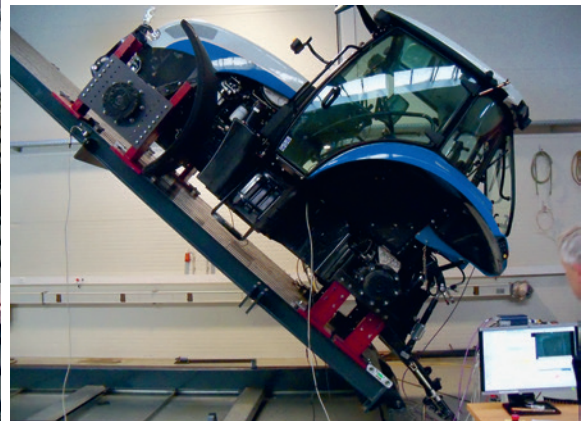
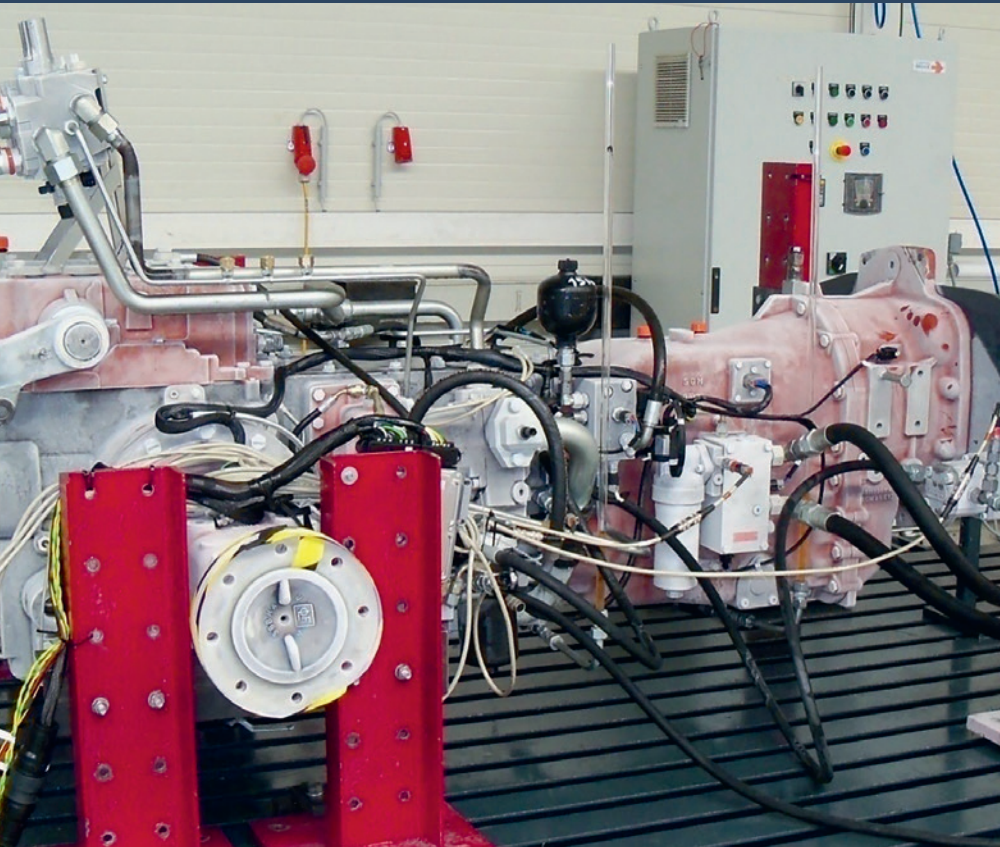
The Chiaravalli Group is today structured into four commercial divisions which cover Industrial, OEM, Food and Motorcycle. Chiaravalli Group represents today a unique synthesis of passion, technical know-how, and tradition.

We design and manufacture high-precision mechanical components for world-famous manufacturers in the most varied sectors. We have more than 300 state-of-the-art CNC machine tools that allow us to work safely and precisely, making mechanical components that meet the highest precision requirements of our customers. Chiarelli boasts, among others, the UNI EN ISO9001 and ISO TS 16949 certifications.



FROM CONCEPT TO SERIES PRODUCTION – DEVELOPMENT STEPS AT VDS

Prototyping and Validation

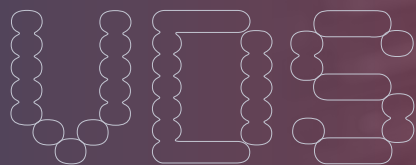


In close cooperation with our manufacturing partners, VDS is in a position to provide tooling, parts and components for prototypes including first sample inspection within a reasonable time frame.

After assembly of prototypes, we perform the installation of sensors and measurement devices and extensive testing on our functional test benches. Together with our analysis team, measurement data is compared to simulation results to continuously adjust and confirm parameters for dimensioning and design.

After successfully performing functional tests and adjustment of parameters, extensive endurance tests are conducted at test benches. VDS has test benches available with two or three machines with a maximum test power of around 250 kW.

Installation of transmissions into test vehicles including the adaptation of interfaces and field testing for data acquisition to evaluate and confirm load spectra are also part of VDS services.

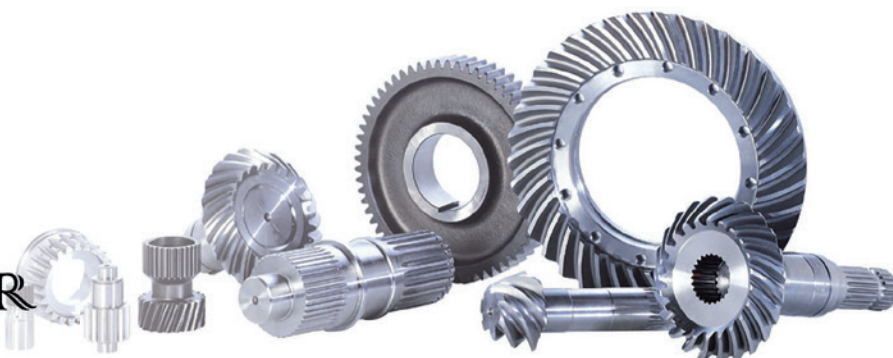


Tools for the Measurement of Operational Data and Testing:

- Measurement and Data Processing System: imc CS-7008-1
- Noise Emission and Noise Localization: SevenBel
- Functional Test Bench for Lubrication, Thermal Behavior, Inclination, and Efficiency
- Test Bench for Functional Testing of Hydraulic Components
- Cold Temperature Test Bench
- 2- or 3-Machine Test Bench for Endurance Tests, Test Power up to 250 kW
- Axle and Transaxle Test Bench, with Maximum Axle Torque up to 90 kNm
- Ultimate Load Tests

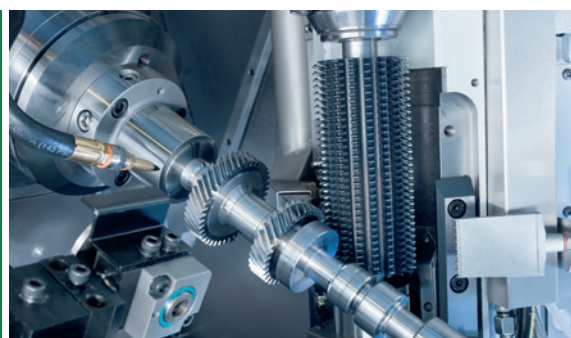


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Series Production by VDS Driveline



If requested, VDS gives support in building up mass production at customer premises. VDS is also offering production and delivery of sub-assemblies (e.g. planetary units, clutch units, pumps), transmissions and gearboxes in low to medium volumes.

For transfer from prototype manufacturing to series production the know-how and experiences of engineers and assembly personnel involved in the development process provides seamless and high quality product start up. The use of modular assemblies and components in

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"Our versatility and flexibility in the development of customized gearboxes and transmissions enables our customers to make optimal use of machines and vehicles under demanding conditions."

Gerhard Hörmann
CEO VDS Driveline GmbH

”



different gearboxes increases the number of units and is the key to competitive cost levels.

VDS driveline has specialized in the production of gearboxes as well as in complex transmissions for niche applications requiring highly skilled assembly personnel.

In close cooperation with our suppliers, the parts are optimized in terms of tooling requirements and manufacturing technology to achieve necessary quality levels at reasonable costs.

To make sure that functional and quality requirements are met, each transmission is extensively tested on our end-of-line testbench.



front linkages • front pto's • prototypes

- » development / FE calculation
- » measurement technology
- » gear cutting technology
- » machining technology (turning / milling)
- » welding technology

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DRIVE
SYSTEMS



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