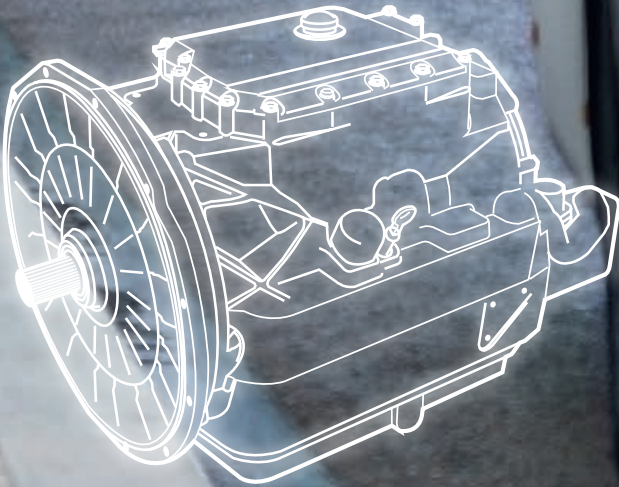


# Higher efficiency all along the line **DIWA.6 Efficiency Package**





Efficiency in one package ...



# Save fuel. Minimize emissions. Increase availability.

Consume less fuel, reduce complexity, increase driving comfort and economy, greater availability, drive down maintenance costs – there are many reasons to choose DIWA from Voith and now there is one more: the DIWA Efficiency Package.

## More than just a transmission

The DIWA package, including the topography-dependent gear-shifting program SensoTop and Stop-Start Technology, proves just how much more efficiency you can get from a drive with a perfectly complementary system. This also applies to traffic concepts with high service frequency such as “Bus Rapid Transit” (BRT), where only the most advanced drive technology is capable of achieving the required efficiency.

## DIWA.6 automatic transmission

A new take on a proven principle: Lower consumption and reduced emissions during operation, less complexity and lower installation costs for the manufacturer.

## SensoTop

The standard shifting program for constant availability of optimum shift points – depending on topography, load condition and acceleration.

## DIWA Stop-Start Technology

A technology which scores high not only in economy and efficiency, but also in high levels of comfort for passengers and drivers alike.

## Smart Service und Mobility Service

Our Smart Services contribute to significantly increasing driver performance, which can reduce power consumption considerably.

## Benefits of the DIWA.6 Efficiency Package



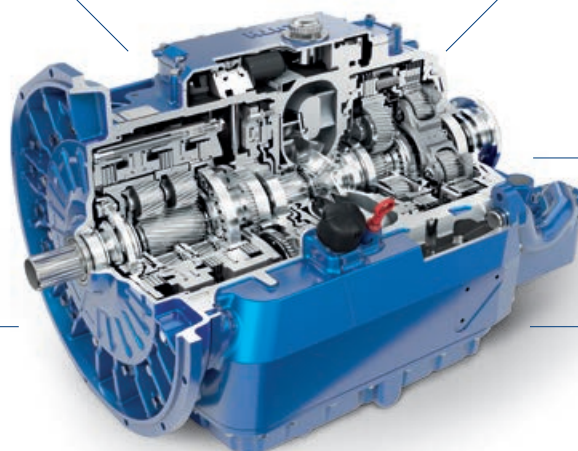
Optimized fuel consumption and reduced emissions



Maximum comfort and extremely high safety



Proven stop-start functionality



Best in class in CNG applications



Low maintenance and repair costs



High reliability and vehicle availability



## DIWA.6: Less consumption, lower emissions

Modern combustion engines are becoming cleaner and more efficient, and this trend is increasing due to the Euro 6 regulations which are now in force in many countries. DIWA.6 from Voith is the answer to these increasing requirements: The redesigned housing reliably helps meet the greater demands with respect to noise emissions. Intelligent start-up management and needs-based reduction of operating pressure reduce consumption by up to 5 %.

### Greater efficiency = lower consumption

The needs-based reduction in operating pressure is a significant benefit of the DIWA.6 system, whereby full operating pressure is only produced if it is actually needed. As a result, transmission efficiency is given a significant boost.

### Lower consumption = less CO<sub>2</sub>

An additional converter design is provided for engines with higher torque. The new design of torsional vibration damper allows shifts at even lower engine speeds. The benefits for you are lower consumption and reduced CO<sub>2</sub> emissions.

### Reduced vibration = lower noise emissions

The redesigned transmission housing has targeted ribbing in specific areas, which reduces vibrations and therefore noise emissions. The optimized operating concept also assists in this area. The DIWA.6 is therefore able to meet the more stringent Euro 6 noise guidelines.

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#### Key features of the DIWA.6:

- + Lower consumption thanks to intelligent start-up management, reduced operating pressure and optimized converter and vibration dampers
  - + Lower noise emissions due to a new housing and optimized operating concept
  - + Lower complexity due to greater torque limits
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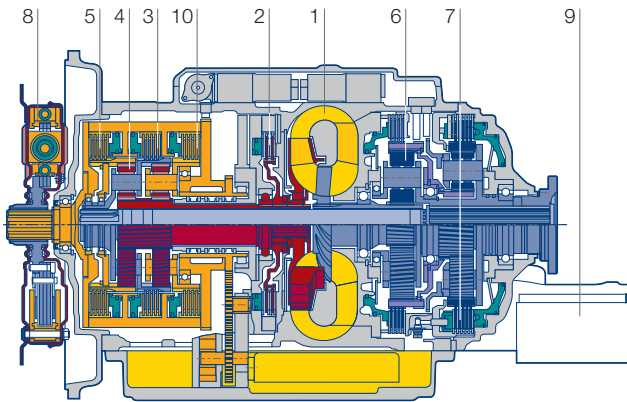
### Intelligent start up = saving comfortably

DIWA.6 combines automatic shift in neutral (ANS) with intelligent start-up management: It prevents starting against the active service brake. With the optimized ANS function, the transmission can stay in neutral for longer, thus saving on fuel. It also makes starting up on level routes more comfortable, so that the driver can effortlessly join moving traffic.

### The proven DIWA power splitting principle

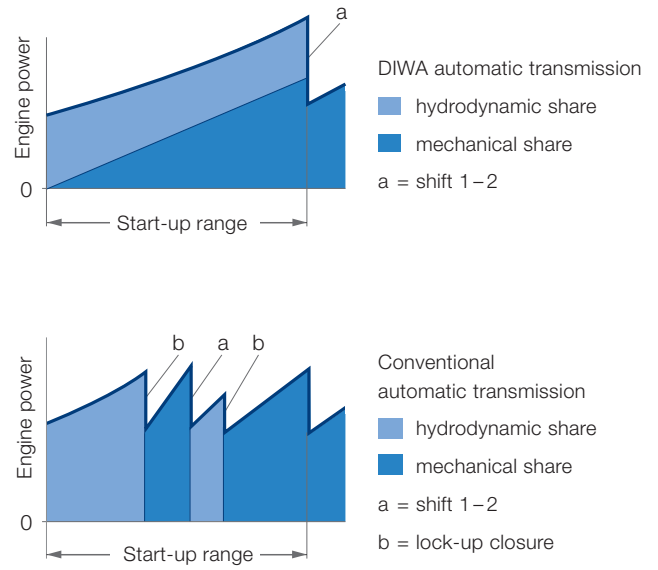
Allows stepless starting and braking across a speed range where other transmissions require two or three gear shifts. This results in up to 50% fewer gear shifts, higher driving comfort – and significantly lower wear in the driveline.

### Technical structure of DIWA.6



- 1 Offset converter
- 2 Pump brake
- 3 Lock-up coupling
- 4 Differential transmission
- 5 Input coupling
- 6 Planetary gear
- 7 Planetary gear for reverse gear and retarder
- 8 Torsional vibration damper
- 9 Heat exchanger
- 10 Overdrive coupling

### Reduced wear and comfort become visible thanks to DIWA's stepless start-up range



### DIWA.6 transmission performance data

Types		D 824.6	D 854.6	D 864.6	D 884.6
Input power $P1_{max}$	[kW]	200	240	290	320
Input torque $M1_{max}$	[Nm]	800	1 250	1 700 <sup>1</sup>	1 900
Input speed $n1_{max}$	[rpm]	2 500	2 500	2 500	2 200
Retarder braking torque $M_{BR}$	[Nm]	1 800 <sup>2</sup>	2 000 <sup>2</sup>	2 000 <sup>2</sup>	2 000 <sup>2</sup>
Dimensions of transmission (dry) incl. retarder	[kg]	approx. 329	approx. 334	approx. 339	approx. 344
Max. vehicle weight	[t]	15	28	28	34 <sup>3</sup>

<sup>1</sup> 1 750 Nm under certain conditions.

<sup>2</sup> Maximum value, depending on retarder configuration.

<sup>3</sup> Depending on axle ratio.

# Optimum gear-shifting points in any situation

## Fuel-efficient driving with SensoTop

Flat or steep roads? Heavy or light loads? Where some manufacturers exclusively rely on driving dynamics calculations, the inclination sensor provides additional and precise information about the terrain of the route – so that SensoTop can steplessly adapt the gear-shifting points in any situation – for maximum fuel efficiency.

### Up to 7 % less consumption

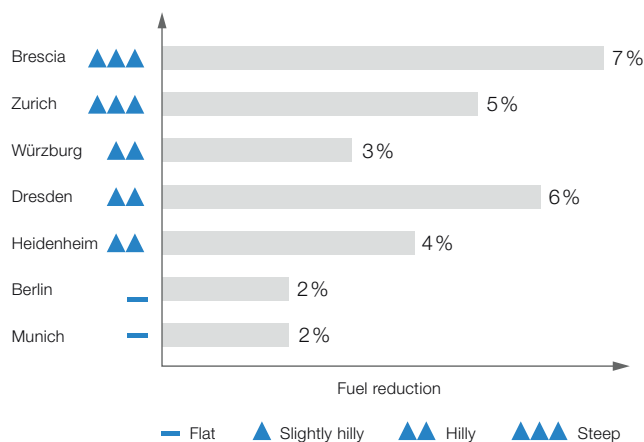
Depending on the topography and the vehicle operation, SensoTop reduces fuel consumption by 2 % to 7 % compared to conventional gear-shifting programs.

These is savings potential that can significantly reduce your operating costs. At the same time, SensoTop makes an active contribution to a cleaner environment, since CO<sub>2</sub> emissions are sustainably reduced.

### Higher safety

SensoTop also increases the safety of passengers and drivers: The gear-shifting concept eliminates gear hunting at upward gradients and allows comfortable start-ups.

### Up to 7% less fuel consumption with SensoTop



### SensoTop benefits at a glance

- + Optimum gear-shifting points thanks to a clever combination of maintenance-free inclination sensor and driving dynamics calculation
- + Low noise levels due to lower engine speeds
- + Higher passenger safety due to more comfortable start-ups
- + No gear hunting in demanding terrains

# DIWA automatic transmission with Stop-Start Technology: The ideal urban bus transmission

The new and unique Stop-Start Technology for the Voith DIWA.6 transmission provides a significant reduction in fuel consumption. The resulting greater efficiency offers a direct added value. Passengers, drivers and pedestrians benefit from the reduced noise during stop times.

## The evolution of efficiency in urban traffic

- Depending on the duty cycle, city buses spend up to 40% of their operating time in idle mode
- A reduction of up to 12% in fuel consumption can be achieved, depending on application
- No negative influence regarding startup readiness in urban city applications
- DIWA.6 Stop-Start Technology enables stop times of up to 180 seconds

# Reduced fuel consumption and optimized maintenance Smart Services

Voith has been a leading body in assessing and interpreting fleet data in public mass transit for years. By using the most up-to-date technology, we are able to automatically capture information on driver behavior and data for maintenance and to save this and provide a customized assessment of it for the operator. SmartMaintenance and SmartAssist from Voith Smart Services are two modules for smarter driving in the future.

## SmartAssist – significant increase in driving performance

Fuel is not getting any cheaper. This makes it one of the crucial items under operating costs. With SmartAssist, we offer an integrated platform to reduce the fuel consumption of an entire fleet. SmartAssist consists of two major components: SmartAssist Live assists the driver while driving and provides summarized feedback regarding driving behavior at

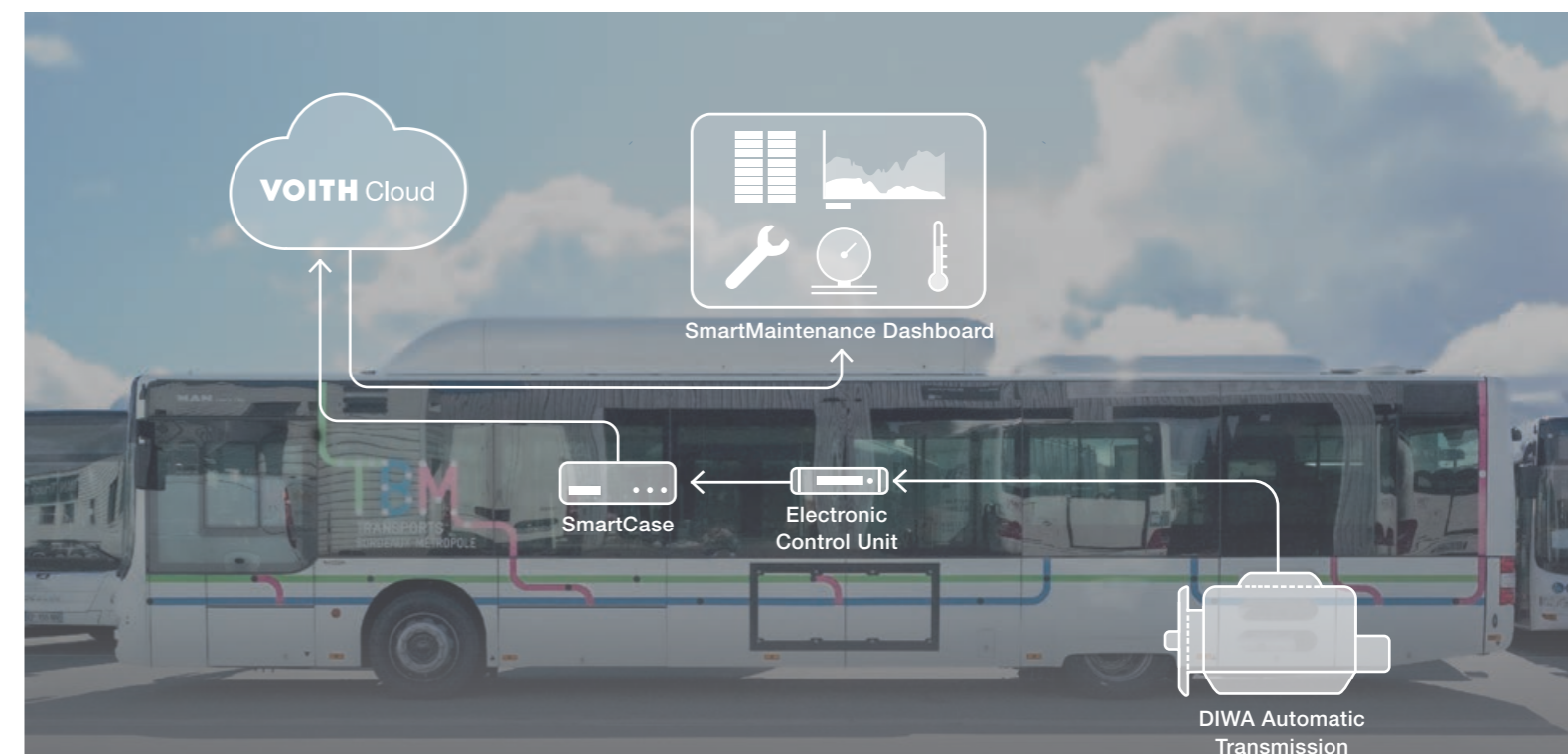
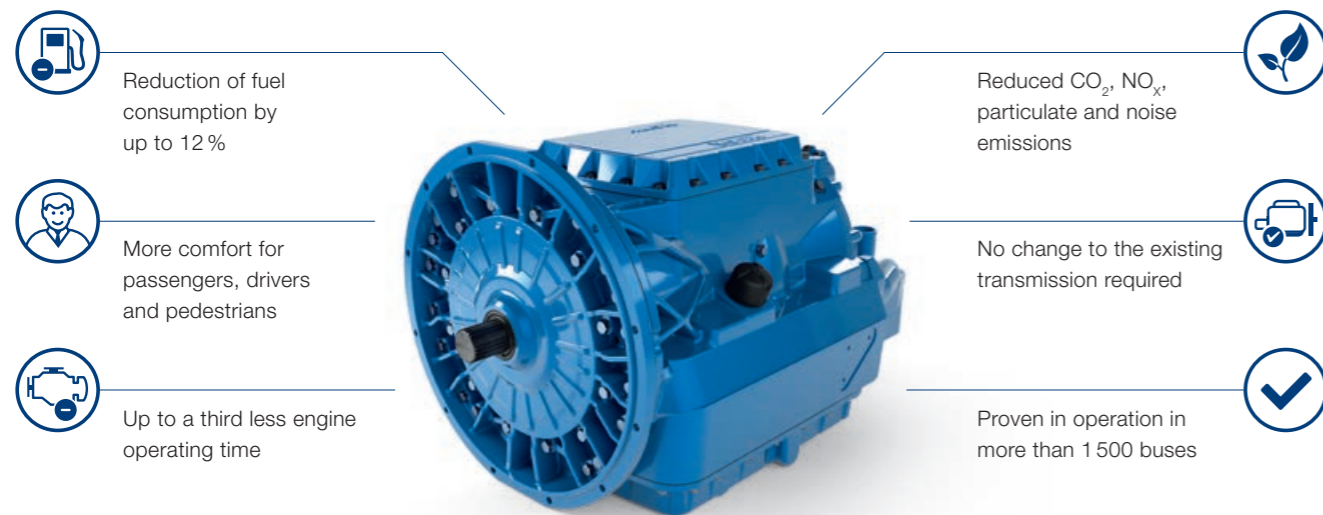
the end of the trip. In addition to this, SmartAssist Dashboard provides management with processed data to increase the efficiency of vehicle operation.

## SmartMaintenance – intelligent monitoring of the transmission

SmartAssist monitors the DIWA transmission at all times. The system identifies critical parameters and thus creates the conditions for predictive and optimal maintenance and repair of the transmission, matched to the relevant conditions.

At the highest level, SmartMaintenance also uses the traffic light logic using the colors green, amber and red to combine information on the condition and the temperature of oil and transmissions across the entire fleet. For more extensive information, detailed analyses are also recorded in the dashboard.

## Benefits of the DIWA.6 Stop-Start Technology





Our Service –  
Part of Your  
Business.

# Mobility Service

We are there to support you – whenever you need it! From training your employees, delivering and fitting replacement parts, and technical support to modernization, our high-quality service will ensure that you are kept safe on the road.



Spare parts



Retrofit



Replacement transmission



Non-Voith transmissions



Education and training



Service contracts



Repairs



Transmission exchange



Technical support



Fitting work



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