

Our product **HYBMOT** adopts a new philosophy of integration of drive components for road and rail drives in the power range of 40...400kW. It integrates all functional requested auxiliaries to fulfil the traction requirements and simplifies the drive system.

HYBMOT is the first „PLUG & Drive“ product for vehicle builders who want to buy total responsibility of the traction in one product.

HYBMOT is further our basic drive module for hybrid topologies, electrical vehicles and in futuristic zero emission solutions based on fuel cell supplies.

HYBMOT is developed for rail and road traction application as electric driven busses and urban freight vehicles, hybrid traction systems in general, harbour freight transporters and automatic guided vehicles.

The drive integrates beside a robust reluctance traction motor, the power conversion, controllers, cooling and – optional – a Disk brake system.



The advantages

- Simple integration in the vehicle → Plug and drive
- Less vehicle assembly work → Cost & time benefits
- Less drive components → increase in reliability
- Optimized product → High efficiency and availability
- Reduced LCC → Simple spare part, maintenance & repair concepts

Simple to engineer, simple to integrate, simple to maintain

The user benefits

The vehicle builder benefits from :

- Low cost motor technology requiring no further customer engineering – the first „Plug and Play“ drive
- Overload capabilities of the base product
- High product features

Operators benefits of HYBTEC products

- Availability and reliability due to simple integrated technology
- Reduced consumption of fuel up to 50% within simple
- Reduced of CO₂ emission – Certificate earnings

Product specifications & features

PRODUCT TYPES					
		Class 40	Class 80	Class 120	Class 160
Nominal Power	kW	40	80	120	160
Overload 0,5 Min	kW	120	240	360	480
Overload 2 Min	kW	80	160	240	320
Nom. Torque	Nm	515	800	1200	1600
Max. Torque	Nm	1545	2400	3600	4800

Technology & Performances

- Traction motor type – 4-phase Switched Reluctance Machine
- Nominal Supply Voltage 600 VDC
- Maximum Rotational Speed 3600 rpm
- Overloading Possibility 200% / 2 min
- Ambient Temperature 30 – 80oC

Control Unit

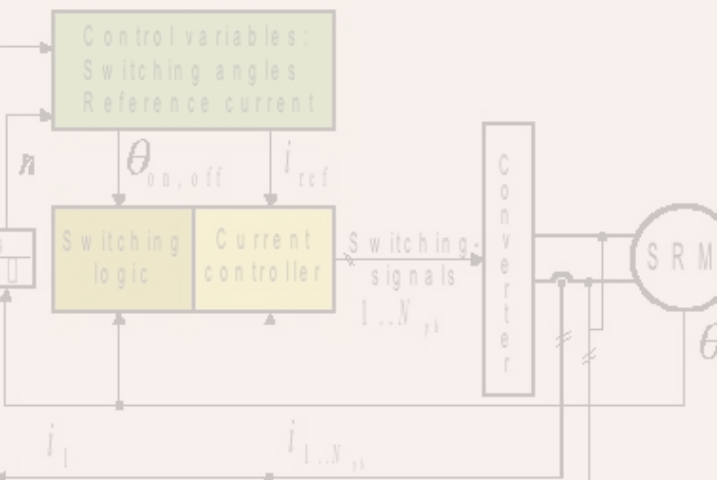
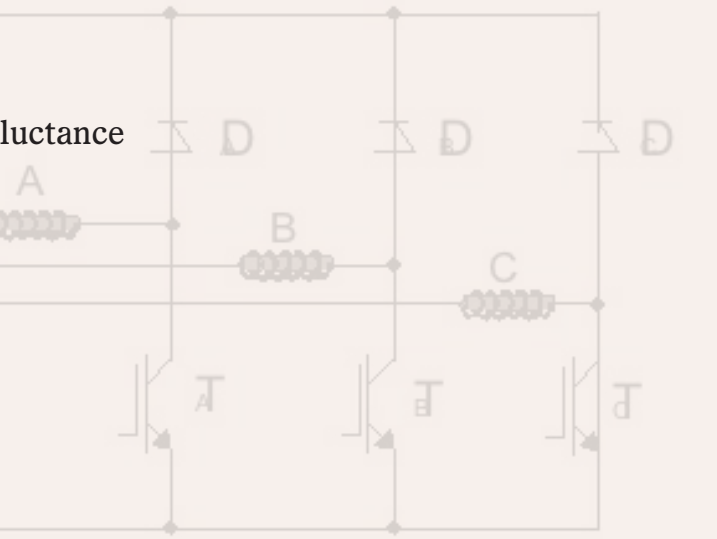
- Fully controlled IGBT 4 – phase half bridge converter
- Motor control unit – „Direct Average Torque Control“

Cooling system

- Cooler type LDC 011-B-C-50-000-P-0
- Nominal work temperature- 60oC
- Cooling pump type – CM10P7-1
- Pump supply voltage – 24 VDC

Option: Brake system (Knorr & Hanning)

- Brake disc assembled on motors shaft
- Brake actuator & Control as add on



Technical summery

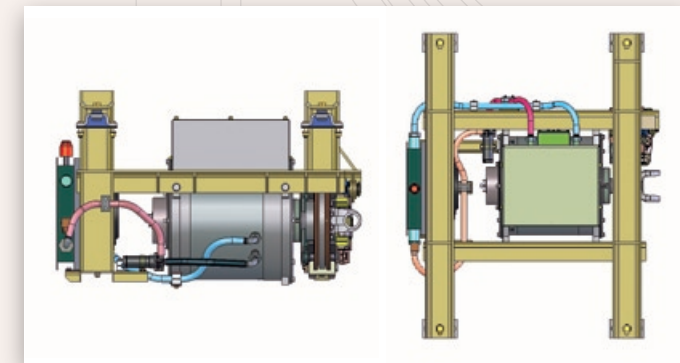
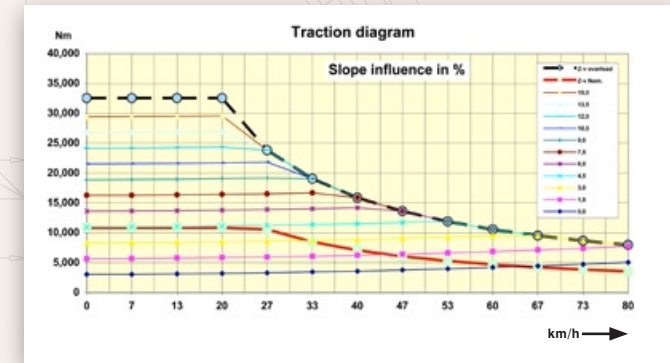
- Full integration of electro-mechanicals, cooling and control systems
- The reluctance Motor, a closed compact mechanical drive
- No copper (losses) within the rotor
- High efficiency (up to 91%)
- Highest availabilities > 98%
- Less complexity
- Highest product reliability
- 5 pole supply (600V,24V & CAN)

System Design Engineering

With the **HYBMOT** concept you benefit from a compact design, simple to integrate within your vehicle Engineering process as:

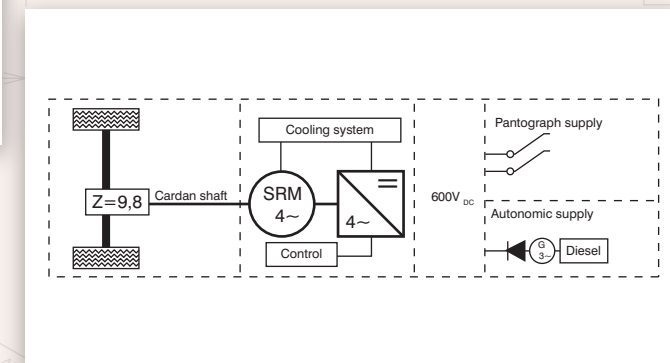
- **HYBMOT** dimensions are not much extended compared to actual electrical machines
- The weight of the entire product is smaller than for a comparable drive packages with individual components
- Standard axles can be used
- No additional wiring, cabling and interfaces within the vehicle required

The traction force is evaluated by experts and your application secured within 4 power ranges.



Example 80kW dimensions

Depending on your application, the **HYBMOT** as basic standard drive secures simple electrical circuit structures for all future targets... as hybrid solutions, trolleys or even electrical fuel cell driven vehicles.

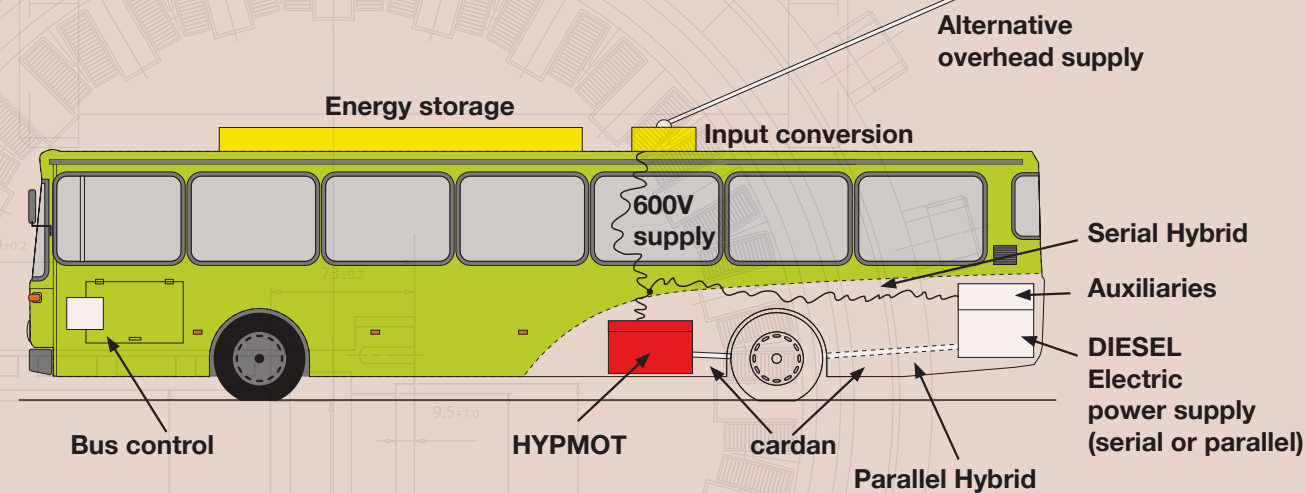


The Application

- Hybrid drives and solutions especially suited for serial-hybrid topologies
- Electrical busses and vehicles
- Trolley-busses

Vehicle integration

One HYBMOT...



... all applications!

And most efficient and robust solution



A company of the ITAPS group

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- Power trains
- Hybrid systems
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- Power supplies

For more information contact:



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