HORIBA
Automotive Test Systems

LEADING SOLUTIONS FOR DYNAMIC ENGINE TESTING

DYNAS3

DYNAS$_3$
Best-in-class AC dynamometers

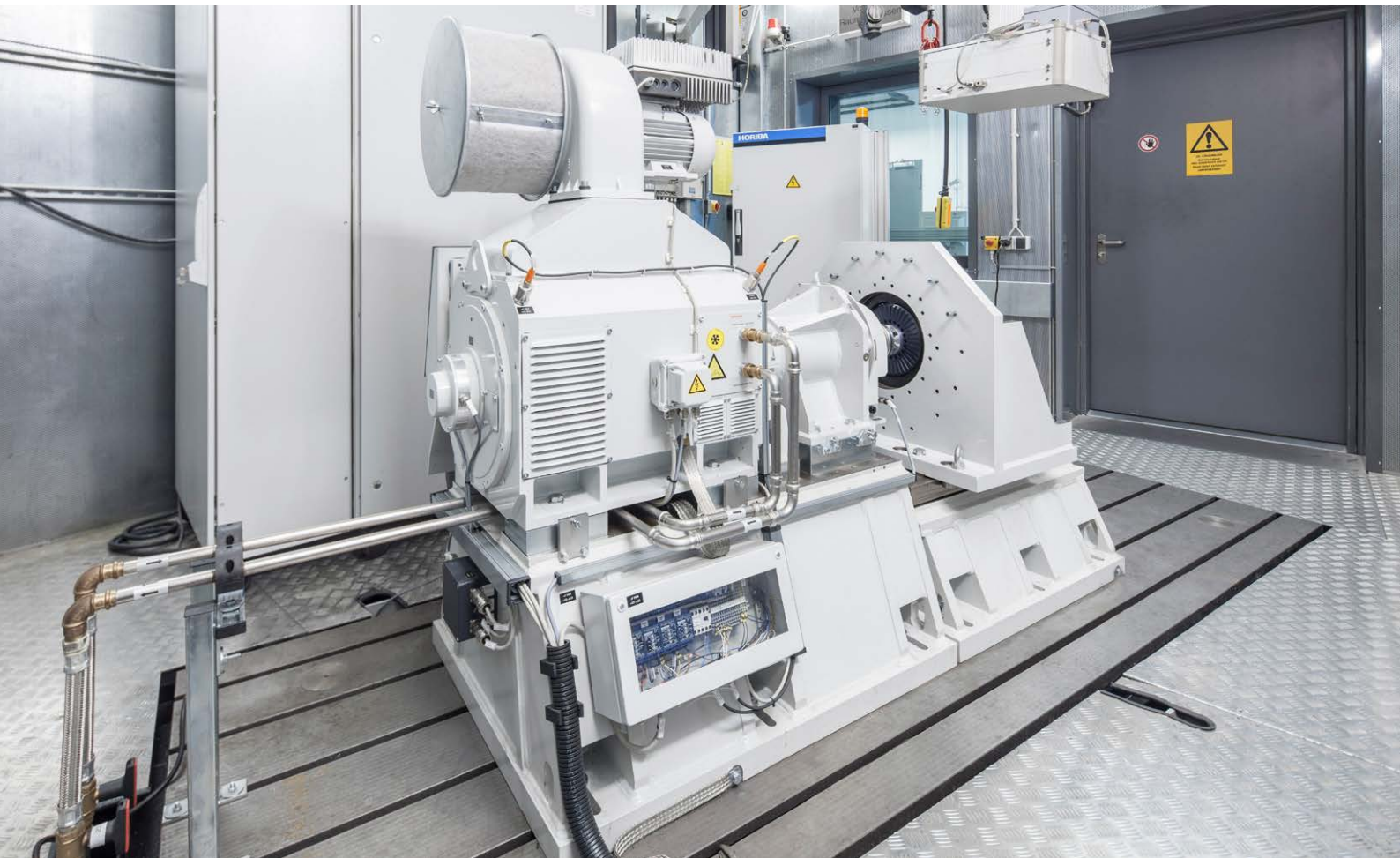
The HORIBA DYNAS$_3$ range of universal dynamometers was developed to meet all demands for engine testing created by the automotive and supplier industries.

The significant advantages and continuous enhancement of the system has enabled HORIBA to take a commanding lead in this field.

THE RIGHT CHOICE FOR YOUR ENGINE TESTING REQUIREMENTS

DYNAS$_3$ machines are specially designed for use in engine test stands. The combination of powerful DYNAS AC machine with a variable frequency drive, fine-tuned test stand controller, and proven safety module is producing reliable, accurate results in test labs around the world. It can be used in any type of development and function test stand.

The applications range from simple test stands for steady-state operation to sophisticated test stands for dynamic test cycles. Nearly every application in the field of engine testing can be performed on a test stand with DYNAS$_3$. Legislative test cycles can be simulated as well as road load simulation including driver and vehicle simulation.



ADVANCED SOLUTIONS FOR EVERY APPLICATION

State-of-the-art and future-oriented technology

DYNAS3 dynamometers are universally suited to all steady-state, transient and dynamic testing applications. Our systems are primarily intended for the development and testing of engines and powertrain assemblies. Power ranges are consistent with the torque characteristics of petrol or diesel engines used in cars or commercial vehicles.

Our advanced, future-oriented technology provides reliable, long-term solutions and optimizes the return on investment.

$DYNAS_3$ High Speed (HS) series

$DYNAS_3$ HS dynamometers are intended for high speed applications such as light- and medium duty electric motors or hybrid vehicles.

$DYNAS_3$ Low Inertia (LI) series

$DYNAS_3$ LI dynamometers provide high speed gradients; they are especially suitable for highly dynamic testing of petrol engines.

$DYNAS_3$ High Torque (HT) series

$DYNAS_3$ HT dynamometers are universal machines with high nominal torque capacities for testing petrol and diesel engines.

$DYNAS_3$ Heavy Duty (HD) series

$DYNAS_3$ HD dynamometers are specially designed for heavy-duty applications such as medium and high-power commercial diesel engines.

BENEFITS

- Premium AC dynamometer made in Germany
- A suitable dynamometer type for every application
- Outstanding testing performance
- Excellent torque control and measuring accuracy
- Low total cost of ownership due to minimal maintenance requirements
- Environmentally-friendly operation through energy recovery

DYNAS$_3$ HIGH SPEED (HS) SERIES
The eMobility solution

The latest generation of DYNAS$_3$ HS asynchronous dynamometers are designed for high speeds of up to 20,000 rpm and the high starting torques of electric motors. Delivering a rated power of up to 210 kW, the DYNAS$_3$ HS series covers a wide range of testing options.

A frequency drive with an installed DC power supply (optional) is a further enhancement of the whole system, providing the specimen with a voltage of up to 700 VDC. In addition, a stand-alone version of the DC power supply provides voltages up to the limits of the medium-voltage range (available on request).

KEY FEATURES

- Designed to cover a wide range of test specimens
- Maximum speed up to 20,000 rpm
- High acceleration rate due to low-inertia
- Solution with constant power of 210 kW up to 16,000 rpm
- Compact motor design with radial fan and water cooling
- Torque flange mounted on specimen side of bearing support for highest torque measurement accuracy
- Bearing support allows attachment of higher coupling masses

DYNAS$_3$		HS 150	HS 180	HS 210
RATED POWER (absorbing)	[kW]	147	178	211
RATED SPEED (absorbing)	[rpm]	6,219	3,961	4,433
RATED TORQUE (absorbing)	[Nm]	226	429	455
RATED POWER (driving)	[kW]	140	169	200
RATED SPEED (driving)	[rpm]	6,081	3,839	4,327
RATED TORQUE (driving)	[Nm]	220	420	441
OVERLOAD FACTOR, ABSORBING		1.2	1.2	1.13
MAXIMUM SPEED n_{max}	[rpm]	20,000	16,000	16,000
POWER AT n_{max} (absorbing)	[kW]	82	81	211
MOMENT OF INERTIA, MACHINE WITHOUT ATTACHMENTS	[kgm^2]	0.13	0.2	0.23
MAX. SPEED GRADIENT UP TO RATED SPEED INCL. OVERLOAD	[rpm/s]	19,921	26,628	20,980

DYNAS$_3$ LOW INERTIA (LI) SERIES
The high-dynamic solution

The DYNAS$_3$ LI series is intended for all test applications in the field of high-dynamic engines. Low moments of inertia and high overload capacity in combination with superior speed gradients guarantee a highly dynamic response.

DYNAS$_3$ LI low-inertia dynamometers are air cooled via blowers to simplify installation and to eliminate connection to cooling systems within the test cell. The state-of-the-art and future-oriented technology of the DYNAS$_3$ series guarantees a long-term dynamometer solution at a good benefit-cost ratio.

KEY FEATURES

- Designed to cover a wide range of test specimen
- High acceleration rate due to low-inertia
- Compact motor design with power range up to 460 kW
- Air-cooled dynamometer for easy installation and upgrading of existing test cells
- Measuring flange for highest torque measurement accuracy of real shaft torque

DYNAS$_3$		LI 145	LI 225	LI 250	LI 350	LI 460
RATED POWER (absorbing)	[kW]	145	225	250	350	460
RATED SPEED (absorbing)	[rpm]	4,500	4,130	4,980	4,480	4,410
RATED TORQUE (absorbing)	[Nm]	308	308	480	750	1,000
RATED POWER (driving)	[kW]	135	215	225	336	440
RATED SPEED (driving)	[rpm]	4,380	4,030	4,860	4,400	4,350
RATED TORQUE (driving)	[Nm]	294	510	442	729	966
OVERLOAD FACTOR, ABSORBING		1.2	1.2	1.2	1.2	1.2
MAXIMUM SPEED n_{max}	[rpm]	10,000	8,500	10,000	10,000	10,000
POWER AT n_{max} (absorbing)	[kW]	125	203	200	282	350
MOMENT OF INERTIA, MACHINE WITHOUT ATTACHMENTS	[kgm^2]	0.25	0.36	0.33	0.68	0.92
MAX. SPEED GRADIENT UP TO RATED SPEED INCL. OVERLOAD	[rpm/s]	13,950	16,600	16,580	12,480	12,300

DYNAS$_3$ HIGH TORQUE (HT) SERIES
The universal solution

High rated torques make DYNAS$_3$ HT dynamometers optimally suitable for testing small and medium-size diesel engines. The wide speed range also permits the testing of spark-ignition engines. The torque behaviour – in combination with high speed gradients – provides the dynamic response required for sophisticated simulation tasks.

The DYNAS3 HT series of dynamometers are universal driving and absorption units. The components of the system have been optimized through many years of experience. The DYNAS3 has defined and standardized interfaces which significantly simplify the engineering process involved in setting up the dynamometer to run with your test specimen.

KEY FEATURES

- Unique combination of speed and torque characteristics for a wide range of test applications
- Providing a torque range up to 1,484 Nm in combination with high speeds and dynamic behaviour
- Compact motor design with power range up to 460 kW
- Air-cooled dynamometer for easy installation and upgrading of existing test cells
- Measuring flange for highest torque measurement accuracy of real shaft torque

DYNAS$_3$		HT 250	HT 350	HT 460
RATED POWER (absorbing)	[kW]	250	350	460
RATED SPEED (absorbing)	[rpm]	3,328	3,325	2,960
RATED TORQUE (absorbing)	[Nm]	718	1,005	1,484
RATED POWER (driving)	[kW]	235	336	440
RATED SPEED (driving)	[rpm]	3,275	3,275	2,920
RATED TORQUE (driving)	[Nm]	685	985	1,439
OVERLOAD FACTOR, ABSORBING		1.2	1.2	1.2
MAXIMUM SPEED n_{max}	[rpm]	10,000	9,000	8,000
POWER AT n_{max} (absorbing)	[kW]	150	235	350
MOMENT OF INERTIA, MACHINE WITHOUT ATTACHMENT	[kgm^2]	0.84	1.3	1.62
MAX. SPEED GRADIENT UP TO RATED SPEED INCL. OVERLOAD	[rpm/s]	9,710	8,780	10,360

DYNAS$_3$ HEAVY DUTY (HD) SERIES
The heavy-duty solution

The DYNAS$_3$ HD series of heavy-duty dynamometers is intended for diesel engines. These machines feature extremely large torques, making them ideal for the output range that characterizes the medium and heavy diesel engines used in the commercial vehicle industry.

The HD product family is available with various cooling concepts. Pure air cooling allows easy installation on low-power machines of the HD product range. The high power AC machines are equipped with water cooling as well as a radial fan.

The HD LC (Heavy Duty Liquid Cooled) series of loading units feature especially powerful torques. They benefit from low noise levels as a result of liquid cooling. In addition, they generate less heat in test rooms due to heat dissipation via the coolant.

KEY FEATURES

- Wide power range from 255 kW up to 1,000 kW for all kinds of heavy-duty test applications
- Highest rated torques up to 5,150 Nm
- Lower power dynamometers are air cooled for easy installation and upgrading of existing test cells
- High power motors are equipped with a radial fan combined with water cooling
- LC version with heat exchanger for better heat dissipation and for noise sensitive applications (NVH)
- Measuring flange for highest torque measurement accuracy of real shaft torque

DYNAS$_3$ (HD)		HD 255	HD 380	HD 460 (LC)	HD 600 (LC)	HD 670 LC	HD 700 LC	HD 890	HD 1000
RATED POWER (absorbing)	[kW]	255	380	462	600	670	700	895	1026
RATED SPEED (absorbing)	[rpm]	2,032	1,913	1,645	1,449	1,807	1,419	1,660	1,958
RATED TORQUE (absorbing)	[Nm]	1,200	1,898	2,680	3,957	3,542	4,710	5,150	5,001
RATED POWER (driving)	[kW]	215	330	445	576	665	671	781	988
RATED SPEED (driving)	[rpm]	1,988	1,869	1,625	1,431	1,793	1,401	1,490	1,942
RATED TORQUE (driving)	[Nm]	1,033	1,686	2,600	3,840	3,542	4,573	5,000	4,856
OVERLOAD FACTOR, ABSORBING, IN THE BASIC SPEED RANGE		1.2	1.2	1.2	1.3	1.19	1.2	1.2	1.16
MAXIMUM SPEED n_{max}	[rpm]	5,015	5,070	5,010	4,500	4,500	4,500	4,500	4,480
POWER AT n_{max} (absorbing)	[kW]	143	192	296	419	584	440	560	777
MOMENT OF INERTIA, MACHINE WITHOUT ATTACHMENTS	[kgm^2]	1.3	1.78	6.31	8.84	9.58	10.21	17.55	16.75
MAX. SPEED GRADIENT UP TO RATED SPEED INCL. OVERLOAD	[rpm/s]	10,450	12,080	4,880	5,520	4,130	5,220	3,320	3,260

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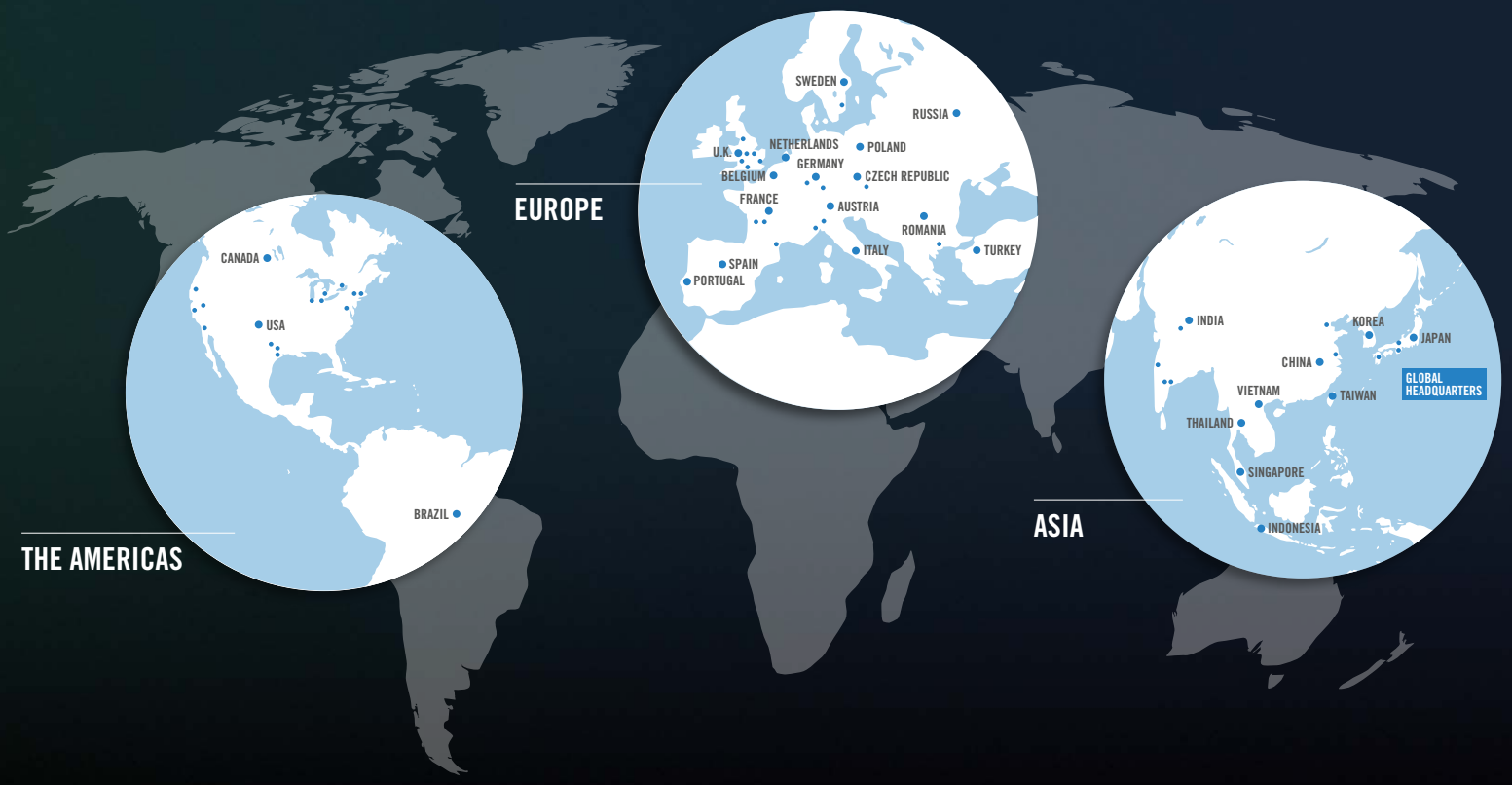

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