

## Hybrid drives

A2.7.2.2  
Experiment stand  
hybrid drives



Experiment stand hybrid drives (A2.7.2.2)

Cat. No.	Description	A2.7.2.2
739 945	Experiment set hybride drives	1
727 10	RMS Meter	1
727 11	Power Meter	1
524 013S	Sensor-CASSY 2 Starter	1
524 013	Sensor-CASSY 2	1
775 072EN	LIT: A2.7.2.2 Demonstration Hybrid Drive	1
524 0621	UIP-Sensor S	1

Study of the fundamentals of hybrid drive requires basic knowledge of the construction and function of electric machines. Thus, each of

- the direct current machines
- the alternating and induction machines, and
- the servomotor is among the motor and generator operation modes.

Additional knowledge of power electronics and energy storage technology allows comprehension of the new "hybrid drive technology" system.

Teachers and students must also be trained for or made aware of exposure to high voltages and the risks involved. Only then can the students be trained to become professionals skilled in electrics.

The combination of combustion engine and electric motor in the power train enables new driving functions: start/stop function, purely electric driving, hybrid driving, generator operation, as well as regenerative brake operation. All these operation modes should ultimately have one aim: fuel economy and thereby reducing toxic emissions.

LEYBOLD here offers a demonstration plant that - completely run as a mobile experiment stand - precisely achieves the operation modes above as a parallel hybrid system with two couplings in the 300 W range. The electric drive uses a permanent-magnet synchronous machine (PMSM); a frequency converter motor adjusts the combustion engine, and the electrical machine test system raises the load (transmission, rolling friction, air resistance, etc.). The electric motor's central frequency converter can also be studied.

With parameterization of the drive and output components and by measuring the electric ( $V$ ,  $I$ ,  $P$ ) and mechanical ( $n$ ,  $T$ ) values, the energy flows can be determined in terms of magnitude and direction. This also enables precise initiation of the individual operation modes and studying them in the experiment.

The set includes a mobile experimental rack 724876 and can be set up as a demonstration experiment.