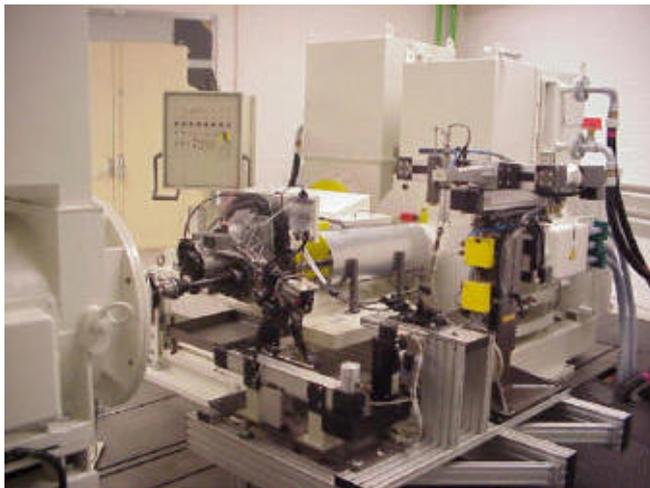


FORD Gearbox Test Station

The stress on gearboxes and a car's other power train components is very high in city road traffic. To detect weak spots and to gain insight into gearbox life cycles, FORD Germany devotes maximum effort to gearbox tests. For its newly equipped automatic test rigs, FORD in Cologne has chosen imc technology to acquire and to evaluate measurement data.

The requirements for a test stand are very high. Up to 10 channels with a sampling rate of 500 Hz have to be acquired. Out of these, up to 64 class-counting matrixes have to be calculated at the same time in response to particular signal events.

One μ -MUSYCS measurement system for each test stand was specially prepared to meet the specifications. A software adaptation with a particular dialog enables parameterisation of the Class-counting procedure as well as of the matrices.

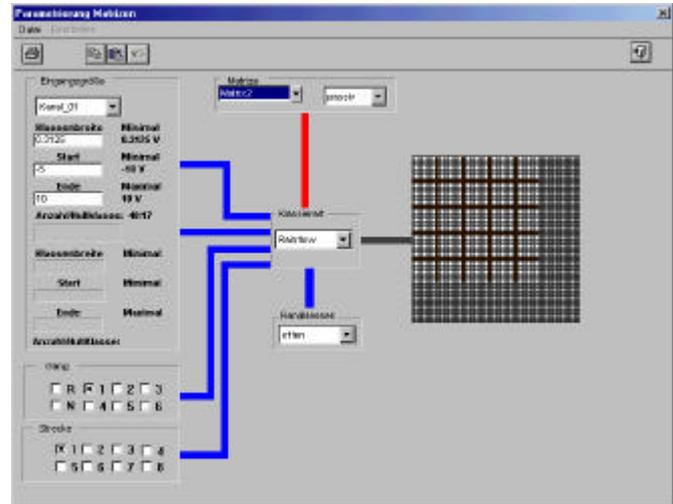


FORD test rig for gear boxes incl. load machine and control unit

The result matrices, in turn, provide basic information according to Rainflow (Level Distribution Classification –LDC) or other class counting procedures. In addition to these data, the gear used and the selected stress-profile are indicated because different gears and different stress-profiles cause the accumulation of different matrices.

Information like the gear currently used comes directly from the test stand control system or, if not available, the gear also can be derived directly from the input/output RPM ratio of the gearbox.

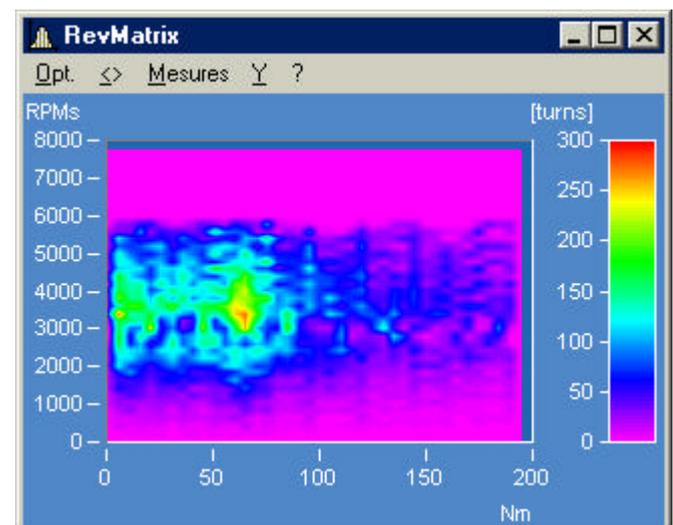
All the calculations have to be performed online. As a result, data monitoring with 'live' curves gives FORD



The data flow diagram shows the relation between channels, events calculation procedures and result matrices

engineers a view of the test's progress. Live reporting based on the imc Report Generator is easily accomplished. The results are automatically stored in a database and off-line data evaluation can be provided by FAMOS, imc's off-line data evaluation program.

Finally, the entire measurement system can be used in an independent, stand-alone mode, or it can be completely controlled by the test rig control system. Therefore long-term tests lasting up to several weeks or even months can be performed unattended.



Two dimensional LDC result of a RPM and a torque signal (Color-map)

