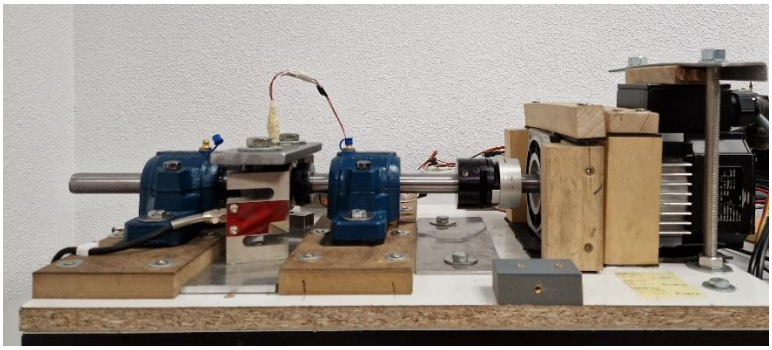
Bearing database - Evaluation of isolated cases

Induced failure test data on outer race (OR), inner race (IR) and rolling elements (RE) of a spherical roller bearing (FAG 22205E1KC3)

The test rig configuration uses two housings with spherical roller bearings (FAG 22205E1KC3), and a tightening tower (consisting of load cells) using three spherical bearings (SKF 6304-2R) for the 400kg load transmission. The development of component failures was generated on a FAG 22205E1KC3 bearing by milling the surface of the components under study.

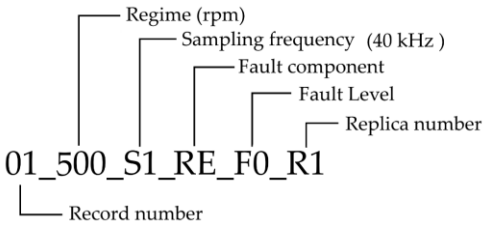


This database is the result of a "5 x 3 Factorial" experiment design, for the analysis of the 5 failure levels (F0, F1, F2, F3, F4) and three evaluated components (OR, IR and RE). These tests have been developed at an operating speed of 500 rpm. The failure level "F0" refers to the normal state of the bearing, from which three replicates have been obtained. The failure depth generated in each component (F1, F2, F3, F4), is expressed as an absolute magnitude of the difference between normal geometry and the induced failure, which are presented in the following table.

Study Factor		**Levels**					**Units**
		F1	**F2**	**F3**	**F4**	**F5**	
RE	Area	0	4.16	6.83	7.28	8.06	mm^2
	Depth	0	0.007	0.013	0.021	0.029	mm
IR	Area	0	15.84	17.64	21.24	22.68	mm^2
	Depth	0	0.007	0.016	0.024	0.031	mm
OR	Area	0	10.78	17.61	29.47	30.73	mm^2
	Depth	0	0.008	0.016	0.024	0.032	mm
Control Factor				**Level**			**Units**
Regime				500			rpm
Load				400			kg

The accelerometers were located in the load zone of the supports and the tightening tower. The length of the records is 58 seconds and under a sampling frequency of 40kHz. The records are presented in '.mat' format (Matlab®).

Each file contains the sampling frequency (Fs) and the data of the three accelerometers used in the test (Variable "Rod_1", "Rod_2", "Rod_3"); however, the variable "Rod_1" corresponds to the bearing with induced failures. The name of each file provides information on the conditions under which the records were obtained, as detailed below:



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