

Description of the respective parameter or the individual columns in the “Simulation\_Parameters.xlsx” file.

Details see: [https://github.com/PHM-Hochschule-Esslingen/bearing\\_simulation\\_model](https://github.com/PHM-Hochschule-Esslingen/bearing_simulation_model)

Parameter / column	Unit	Description
<b>number</b>	1	Consecutive number to assist the user, no effect on the simulation
<b>simulation_name</b>	-	Name of each individual simulated bearing, part of the name of the saved data file
<b>BP_name</b>	-	Name of the simulated bearing type
<b>BP_d</b>	mm	Roller diameter of the respective bearing
<b>BP_D</b>	mm	Pitch circle diameter of the respective bearing
<b>BP_n_roller</b>	1	Number of rolling elements of the respective bearing
<b>BP_alpha</b>	° (degree)	Contact angle of the respective bearing
<b>BP_C</b>	N	Dynamic load rating (provided by the bearing manufacturer)
<b>BP_p</b>	1	Exponent of the $L_{10m}$ rating life equation ( $p_{ball} = 3, p_{roller} = 10/3$ )
<b>BP_b_form</b>	1	Shape parameter of the three-parameter Weibull distribution ( $b_{ball} = 1.1, b_{roller} = 1.35$ )
<b>OC_load_mean</b>	N	Expected load ( $E[L]$ ) during operation of the bearing
<b>OC_load_std</b>	N	Standard deviation of the load ( $\sqrt{\text{Var}[L]}$ )
<b>OC_a_ISO</b>	1	Life modification factor (see ISO 281:2007), when bearing is operated in accordance with established guidelines: $a_{ISO} = 1$
<b>OC_f_set</b>	Hz	Set (expected) rotational frequency of the inner race
<b>OC_f_d</b>	Hz	Frequency deviation with respect to $f_{rot}$
<b>OC_f_m</b>	1	Number of deviations per revolution of the inner race
<b>OC_f_sampling</b>	Hz	Sampling frequency of the simulated vibration signal (i.e., sampling frequency of the acceleration sensor)
<b>OC_T_measure_deg</b>	min	Time between the acquisition of the degradation, i.e., the time interval between the vibration measurement
<b>OC_T_measure_acc</b>	s	Measurement duration of a simulated vibration measurement
<b>SD_degradation_progression</b>	-	Predefined progression function, selection one of the following: “linear_increasing”, “progressively_increasing”, “step_like”, “gamma”  Please note: correct spelling!
<b>SD_gamma_alpha</b>	1	Corresponds to $\alpha_\gamma$ , only required for SD_degradation_progression=gamma
<b>SD_gamma_beta</b>	1	Corresponds to $\beta_\gamma$ , only required for SD_degradation_progression=gamma
<b>SD_slip_mean</b>	1	Constant deviation between two consecutive impacts, multiple of the theoretical inter-arrival time (e.g., 0.01 means 1 % deviation)
<b>SD_SDOF_m</b>	kg	Mass of the single-degree-of-freedom (SDOF) oscillating system
<b>SD_SDOF_k</b>	N/m	Stiffness of the SDOF oscillating system
<b>SD_SDOF_c</b>	Ns/m	Damping coefficient of the SDOF oscillating system
<b>SD_SNR</b>	dB	Signal-to-noise ratio for the simulation of measurement noise