

System calculation

06a EV Transmission (Forced response)

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Description	KISSsoft example
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Non commercial version for demo and support purposes only ! (914)
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Contents

1	Messages	3
2	Model Overview	3
2.1	Kinematics	3
2.2	Ratio	3
3	Strength results	3
3.1	Results Gears	3
3.2	Results Bearings	3
3.3	Reliability	4
4	Auxillary Results	5
4.1	Systemspiel und Systemtorsion	5
4.2	Systemträgheitsmomente	5
4.3	Weitere Daten	5
5	Further information	5

1 Messages

 Calculation is consistent.

2 Model Overview

2.1 Kinematics

Boundary condition	Element	Torque (Nm)	Speed (1/min)	Power (kW)
Input	cin	150.0000	15000.0000	235.6194
output	cout	-1866.8571	1205.2342	-235.6194

2.2 Ratio

Calculation	Element	Torque (Nm)	Speed (1/min)	Speed ratio
z1z2	z1 (/ z2)	-150.0000	15000.0000	-3.5200
z3z4	z3 (/ z4)	528.0000	-4261.3636	-3.5357

3 Strength results

3.1 Results Gears

Calculation	Element	SF	SH	SFF	SSint	SB	Sλ
z1z2	z1	1.808	1.016				
z1z2	z2	1.659	1.056				
z1z2	z1 - z2				3.310	4.330	
z3z4	z3	1.653	1.037				
z3z4	z4	1.527	1.078				
z3z4	z3 - z4				3.573	4.958	

3.2 Results Bearings

Calculation, shaft	Element	S0	Lnh (h)	Lnmh (h)	Lnrh (h)	Lnmrh (h)	D (%)= 5000 h
sm_calc -> sm	b1 (SKF 6308)	>99	>1000000		>1000000		0.1 ↔ Lnrh
sm_calc -> sm	b2 (SKF 6308)	41.7 4	18139		22505		22.2 ↔ Lnrh
sm_calc -> s1	b3 (SKF 6308)	7.75	1053		1755		285.0 ↔ Lnrh
sm_calc -> s1	b4 (SKF NU 308 ECP)	19.1 5	37492		75399		6.6 ↔

						Lnrh
s2_calc -> s2	b5 (SKF 30209)	5.47	1395		5018	99.6 ↔ Lnrh
s2_calc -> s2	b6 (SKF 30209)	11.3 0	15690		28649	17.5 ↔ Lnrh
saxle_calc -> sc	b8 (FAG 32011-X-XL)	7.85	3955		14526	34.4 ↔ Lnrh
saxle_calc -> sc	b7 (FAG 32011-X-XL)	18.9 1	125189		292384	1.7 ↔ Lnrh

$S_0 < 1$ and $L_h < L_{req}$ → shown in red..

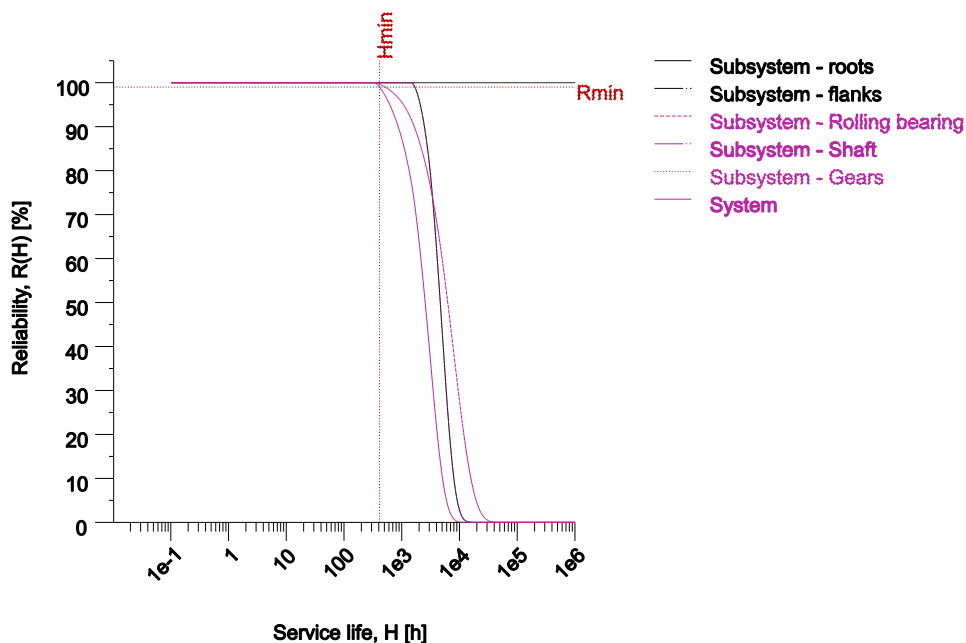
SKF → results provided by SKF cloud.

SKF(LnGM) → SKF generalized rating life model (GBLM) for hybrid bearing

TMK → internal geometry data provided by TIMKEN Online services.

Other bearing results are listed in additional reports in the "Report" section.

3.3 Reliability



Calculation of reliability according to Bertsche

Required reliability: 99 %

Required service life: 5000 h

Reliability curves 99.0 % : Service life system 412 h

Rolling bearing

Reliability curves 99.0 % : Service life subsystem 517 h

Shafts

sm_calc: At least one cross section must be specified so that the reliability can be calculated.

s2_calc: At least one cross section must be specified so that the reliability can be calculated.

saxle_calc: At least one cross section must be specified so that the reliability can be calculated.

Gears

Reliability curves 99.0 % : Service life subsystem 1688 h

Figure: Reliability curves

4 Auxillary Results

4.1 Systemspiel und Systemtorsion

Bezugsrandbedingung	Randbedingung	Max (°)	Min (°)	Torsion (°)
Input	output	0.112	0.191	-0.070
output	Input	1.398	2.372	0.871

4.2 Systemträgheitsmomente

Bezugsrandbedingung	Zahnräder	Wellen	Lager	Andere	Total
Input (kg*mm ²)	1085.592	54188.620	744.898	0.000	56019.110
output (kg*m ²)	0.168	8.394	0.115	0.000	8.677

4.3 Weitere Daten

	Zahnräder	Wellen	Lager	Andere	Total
Mass (kg)	6.512	27.971	1.750	0.000	36.233
Kinetische Energie (kJ)	1.339	66.853	0.919	0.000	69.111

5 Further information

More reports about power flows, gears, bearings and shafts are available under "Report".

End of report (lines: 345)