

KISSsoft evaluation

File

Name : VBelt 1
 Description: KISSsoft example
 Changed by: kspl on: 07.03.2016 at: 10:55:35

V-Belt calculation

Basis: According manufacturer data

V-belt

| | | | |
|--|---|----------|----------|
| Type | SPZ-narrow V-Belt-DIN 7753:1988/ISO 4184:1992-(CONTI-V) | | |
| Elasticity (N) | [E] | 44308.00 | |
| Weight per length (kg/m) | [w] | 0.0720 | |
| Length (mm) | [l] | 1400.00 | |
| Max. perm. Belt speed. (m/s) | [vmax] | 50.00 | |
| Number of belts | [neff] | 1 | |
| Theoretical no of belts | [nth] | 0.76 | |
| Sheave width (mm) | [b] | 16.00 | |
| Nominal power (kW) | [Pn] | 2.00 | |
| Operating factor | [f1] | 1.00 | |
| Operating power (kW) | [Pmax] | 2.00 | |
| | | Sheave 1 | Sheave 2 |
| | | ----- | ----- |
| Effective diameter (mm) | [d _{wk}] | 100.00 | 200.00 |
| Loop (°) | | 167.57 | 192.43 |
| Speed (1/min) | [n] | 1500.00 | 750.00 |
| Service torque (Nm) | [T] | 12.73 | 25.47 |
| Ratio | [n] | 2.000 | |
| Center distance (mm) | [a] | 461.670 | |
| Angle factor | [c1] | 0.970 | |
| Length factor | [c3] | 0.980 | |
| Load coefficient for input to the fast | [f2] | 1.000 | |
| Nominal power acc. catalogue (kW) | [P] | 2.560 | |
| Additional power due to ratio (kW) | [dP] | 0.213 | |

| | | |
|---|------|--------|
| Belt speed (m/s) | [v] | 7.85 |
| Frequency of bending (Hz) | [fB] | 11.22 |
| Slip (%) | [s] | 0.57 |
| Circumferential force (from torque) (N) | [Fu] | 254.67 |
| Centrifugal force (N) | [Ff] | 4.44 |

PRETENSION ACCORDING CATALOGUE

| | | |
|---|---------|----------------|
| Test force (N) | [Fe] | 25.00 |
| Slack (mm) | [te] | 10.65 |
| End of rope force in stand (N) | [Fstat] | 204.94 |
| End of rope force in no load / load (N) | [Ft] | 73.17 / 327.83 |
| Critical speed for no load / load (m/s) | [vcrit] | 32.83 / 67.93 |
| Tension distance (mm) | [sw] | 3.26 |

| | | | |
|-----------------------------|-------|----------|----------|
| | | Sheave 1 | Sheave 2 |
| | | ----- | ----- |
| Radial force in service (N) | [Fab] | 399.59 | 399.59 |
| Radial force standing. (N) | [Fas] | 407.47 | 407.47 |

PRETENSION ACCORDING CALCULATION WITH COEF. OF FRICTION (MIN: VALUES)

(Calculation according Niemann, Book III, with rope friction law)

| | | |
|---|---------|---------------|
| Coefficient. of friction | [my] | 1.30 |
| End of rope force in stand (N) | [Fstat] | 137.59 |
| End of rope force in no load / load (N) | [Ft] | 5.82 / 260.48 |
| Critical speed for no load / load (m/s) | [vcrit] | 11.94 / 60.66 |
| Tension distance (mm) | [sw] | 2.19 |

| | | | |
|-----------------------------|-------|----------|----------|
| | | Sheave 1 | Sheave 2 |
| | | ----- | ----- |
| Radial force in service (N) | [Fab] | 266.17 | 266.17 |
| Radial force standing. (N) | [Fas] | 273.56 | 273.56 |

| | | |
|------------------|-----|-------|
| Utilization: (%) | [A] | 75.86 |
|------------------|-----|-------|

Formula: $A = \text{belt.nth} / \text{belt.neff} * 100$

End of Report lines:
85

