

ASPECTS CONCERNING DEVELOPING PROJECTS ON MACHINE ELEMENTS SUBJECTS AIDED BY MDESIGN SOFTWARE

MOGAN Gheorghe¹, KUCCHAR Peter²

¹Transilvania University of Brasov, ²University of Applied Science Konstanz

mogan@unitbv.ro, kuchar@fh-konstanz.de

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ABSTRACT

MDESIGN is one of the famous packages in calculation of machine elements and subassemblies for mechanical construction [3] and contain a comprehensive range of methods for dimensioning and verification calculus associated with the reference Roloff/Matek book [1, 2]. Thus, the users of MDESIGN explorer system can use simultaneously a strong mechanical engineering library, a various theoretical aspects formulary and a complex graphical supports (see fig.) that assure complete information and tools for mechanical design engineers. Furthermore, MDESIGN include detailed information on manufacturers and their products. On the other hand, MDESIGN establishes a “mechanical teachnet” [3] for further education in the basics of mechanical engineering.

In this paper are presented aspects concerning using MDESIGN in training of undergraduate students in developing really abilities in practice of mechanical systems design. The proposed training projects on machine elements are with modular and flexible structure. Thus, the students can develop various projects that use more than 100 different calculation basics engineering procedures that covering practical knowledge on mechanics, strength of materials, mechanisms, tolerances and machine elements basics subjects.

The large scale of calculations (e.g. shafts, screws, bolts, pins, belts, gears, shafts, bearings, seals, clutches etc.) make MDESIGN an essential tool to become a basic standard in teaching and training on design of various technical products.

Input Page

Narrow V-Belts		
Operational Factor	c2 =	1.2
For Transmitting Performa	P =	3 kW
Driving Velocity	n1 :	3000 1/min
Driven Velocity	n2 :	0 1/min
Max. Pulley Diameter	dmax =	200 mm
Approximate Axis Position	e' :	0 mm
Translation Ratio	i :	2

Output Page

Results:

Data Depends on the Belt Profile:
 Belt Profile accord. to DIN 7753 SPZ
 Standard Performance of the Belt PN = 4.45 kW
 Required Belt Number z = 1
 Outer Length La = 1263 mm
 Face Width of the Belt Pulley lbr = 16.00 mm

Operation Factor

Examples for drives:

Driven machine	A.C. & D.C. motors with normal start. torque (to 2 * norm. moment) internal comb. and turbines RPM > 600			A.C. & D.C. motors with high start. torque (> 2 * norm moment) internal comb. and turbines RPM < 600		
	<10	10-16	>16	<10	10-16	>16
light	1	1.1	1.2	1.1	1.2	1.3
middle-heavy	1.1	1.2	1.3	1.2	1.3	1.4
heavy	1.2	1.3	1.4	1.4	1.5	1.4
very heavy	1.3	1.4	1.5	1.5	1.6	1.8

Narrow V-Belts

Diagram illustrating the belt drive configuration with pulleys and belt.

REFERENCES

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