Program for Design of Belt Drive, Problem 2.

Problem Statement: Two pulleys 200mm in diameter and other 150mm in diameter are connected by means of a crossbeltdrive, 2m apart. Find the length of belt required and lap angle between each pulley and belt. If the larger pulley rotates at 300 rpm, find power transmitted assuming maximum tension in belt as 1kN and coeffecient of friction between belt and pulley as 0.3.

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clc;

clear all;

Intializing the diameters, distance between the centers, tensions and coeffecients of frictions.

D1 = 200

D2 = 150

N1 = 300

C = 2e3

T1 = 1e3

mu = 0.3

Finding the length of the belt:

[L] = Eqn14\_2\_c(D1,D2,C)

Finding the angle of contact and velocity:

[tt] = Eqn14\_2\_a(D1,D2,C)

v=(pi\*D1\*N1)/(1000\*60)

Finding the power:

T2=T1/exp(mu\*tt)

P=((T1-T2)\*v)/1000