MTM Assignment 22-03-2017

Prob 1. $E_c = 10 J/mm^3$; $S = 0.1 mm/rev$; $t = 1 mm$.

Determine P_Z

Prob 2. $\phi = 90°$; $\phi_1 = 15°$, $\lambda = 0°$, $r = 1 mm$

$S = 0.2 mm/rev$; $t = 0.8 mm$

$P_x = 500 N$, Determine P_Y

Prob 3 $\phi = 75°$, $\phi_1 = 15°$, $\lambda = 0°$, $r = 1.2 mm$

$S = 0.2 mm/rev$; $t = 1.2 mm$

$P_x = 750 N$, Determine P_{xy}

Prob 4. $\phi = 85°$, $\phi_1 = 5°$, $\lambda = 0°$, $r = 0 mm$.

$S = 0.2 mm/rev$; $t = 0.8 mm$

$P_x = 600 N$, Determine P_Y.

Prob 5. $E_c = 10 J/mm^3$, $S = 0.1 mm/rev$; $t = 1 mm$.

$\gamma_0 = 0$, $\xi = 2$, Cutting mode: Orthogonal

Determine specific friction energy at the chip-tool interface

Prob 6. Cutting mode: orthogonal

$\gamma_0 = -5°$, $r = 0 mm$, $\phi = 75°$, $\phi_1 = 15°$, $\lambda = 0°$

$P_z = 1400 N$, ~~P_{xy}~~ $= P_x = 850 N$

Determine: friction force F and Normal force N

Prob 7. Determine plastic contact length under condition of orthogonal cutting and stagnant friction at the chip-tool interface. Given $\lambda = \gamma_x = 0°$ and $\xi = 2$, $a_1 = .2 mm$

Prob 8. $\phi = 45°$, $P_x = 400 N$ and $P_Y = 300 N$

Determine chip deviation angle

Prob 9. $\phi = 45°$, $\phi_1 = 45°$, $S = 0.1 mm$, $t = 2 mm$, $r = 0 mm$

$\gamma_y = 8°$

Determine γ_x, γ_0 so that cutting is orthogonal.