Chandubhai S Patel Institute of Technology





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M 203 – THEORY OF MACHINES

Mr. Punit Patel Assistant Professor, Dept. of Mechanical Engineering, Faculty of Technology & Engineering, Charotar University of Science and Technology - Changa Lecture Series Complying the Course Curriculum of B.TECH (MECHANICAL)

According to peripheral velocity of the gears

- Low velocity -Less them 3m/s = 42
- PreviMedipragelocity
 - •Between 3m/s to 15m/s
 - •High velocity
 - More than 15m/s
 - According to position of teeth
 - Straight
 - Inclined
 - curved

- A cycloid is the allow traced by a point on the rim of an incular wheel as the wheel rolls along a previe Naight lipe20
 - A epicycloid is the locus of a point on the circumference of the circle that rolls without slipping outside on the circumference of the another circle.
 - A hypocycloid is the locu: circumference of the circle slipping inside on the ci another circle.



- the locus of a point considered as the end of a taut string being upwound from a given curve in the plane is called as involute curve.
- The circle on which the straight line rolls or from which the cord is unwound is known as base circle
 - At the start, the tracing point is at A, path ABC traced out by the point A is called as Involute
 - BD is tangent to the base circle, the involutes is tangent to the base circle
 - EF is one side involute profile teet
 - HI has been taken from G in rever



- Gear 1 rotate in CW, point C on involute GCH pushes involute DC along line CF. path of contact is along the common tangent of base circle.
- This common targeon is common normal to the two involutes at revine pointact at all positions.
 - Also fulfill the statement of LAW OF GEARING.
 - Pressure angle is angle between pressure line(line of action) and common tangent of the pitch circle.



Minimum number of teeth to avoid interference

- Minimum value of the sedendum of the wheel can be equal to BE- pitch micle radius A2 $Preview \begin{bmatrix} 1 & 2 & 0 \\ 1 & -1 & -1 \end{bmatrix} \begin{bmatrix} \sqrt{1 + \frac{1}{G}(\frac{1}{G} + 2)\sin^2\phi} \end{bmatrix} 1$

$$T_{\min} \ge \frac{2}{\left[\left[\sqrt{1+3}\sin^2\phi\right] - 1\right]}$$

 $T_{\rm min} \approx 13$



What we Discussed??

- Gear Tetrinology of Pleaw of gearing
- Velocity of sliding
- Forms of teeth
- Cycloidal and involute profile teeth

Classification Notesale. CO. Path of contact and arc of contact

- Interference
- Minimum number of teeth
- Undercutting
- Efficiency of helical gear
- Efficiency of worm and worm gear
- Efficiency of bevel gear