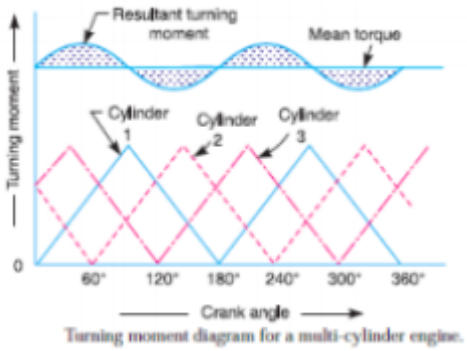
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Explain the working of flywheel with the help of turning moment diagram.

Question:
Explain the working of flywheel with the help of turning moment diagram.

Answer:
Working of Flywheel with the help of Turning moment diagram:

A flywheel used in machines serves as a reservoir, which stores energy during the period when the supply of energy is more than the requirement, and releases it during the period when the requirement of energy is more than the supply.



Turning moment diagram for a multi-cylinder engine.

The fluctuation of energy may be determined by the turning moment diagram for one complete cycle of operation. Consider

the turning moment diagram for a single cylinder double acting steam engine as shown in Fig. We see that the mean resisting torque line AF cuts the turning moment diagram at points B, C, D and E. When the crank moves from a to p, the work done by the engine is equal to the area aBp, whereas the energy required is represented by the area aABp. In other words, the engine has done less work (equal to the area a AB) than the requirement. This amount of energy is taken from the flywheel and hence the speed of the flywheel decreases. Now the crank moves from p to q, the work done by the engine is equal to the area pBbCq, whereas the requirement of energy is represented by the area pBCq. Therefore, the engine has done more work than the requirement. This excess work (equal to the area BbC) is stored in the flywheel and hence the speed of the flywheel increases while the crank moves from p to q.

Similarly, when the crank moves from q to r, more work is taken from the engine than is developed. This loss of work is represented by the area C c D. To supply this loss, the flywheel gives up some of its energy and thus the speed decreases while the crank moves from q to r. As the crank moves from r to s, excess energy is again developed given by the area D d E and the speed again increases. As the piston moves from s to e, again there is a loss of work and the speed decreases. The variations of energy above and below the mean resisting torque line are called fluctuations of energy. The areas BbC, CcD, DdE, etc. represent fluctuations of energy.