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RECIPROCATING ENGINES, PUMPS AND COMPRESSORS REDESIGN FOR ENERGY SAVING

S. S. Arulappan

Retd. Associate Professor, N.I.T. Trichy, India

ABSTRACT: *Strating from Tiny to very large Vertical piston and connecting rod movement and V -Type piston-connecting rod movements are commonly used designs in reciprocating Pumps, Engines and Compressors.*
The Present New Proposal is aimed at saving Effort by keeping the movement of Piston-Connecting rod pair into HorizontalDirection.
Working always against gravity is avoided by changing the piston and connecting rod movement into horizontal direction.
Cylinder is oriented horizontally whereas crank case can be vertically placed with suitable lubrication method adapted.
Gas tight inlet and outlet Valves can be retained as they are in the usual design.

Key words: *Piston, Cylinder, Connecting rod, Ball Joint, Crank Case, Lubrication.*

INTRODUCTION

Horizontal forward and reverse movement of piston and connecting rod can save energy by reducing the effort and energy consumed by Piston and connecting rod in Up and Down movement. Vertical or inclined V Engine cases of movement are working Against Gravity in the Earthly applications.

1.2 Crank Case Position Alteration:

Vertically positioned crank case is suitable in the present case where lubricants can be stored for circulation. Lubricant pump can lift the lubricant from the vertically placed crank case and make the lubricant to circulate around the piston and piston ringswhch are proposed to move in the horizontal direction.

1.3 Ball Joint between Piston and Connecting Rod:

The ball joint connection between the piston and connecting rod can make the piston to rotate around ball joint so that uniform wear of piston rings are expected which are sufficiently lubricated. The big end of the connecting rod is as usual connected to the crank shaft. Single multicylinder, small medium and large piston and connecting rod with the proposed ball joint can make considerable energy saving.

QUALITATIVE EXPERIMENTAL AND MODEL STUDY

Qualitative experiments with model Engines, Pumps and Compressors of the reciprocating type can be conducted without combustion and fluids inside the cylinder.
While executing the testing / model experiment the piston pin is to be replaced by a ball joint to permit the piston to move and rotate inside the respective cylinder and move horizontally.
Software modellingand computer simulation experiment can be conducted before conducting the physical model study. Both the studies can confirm the power saving.

CONCLUSION

Tiny Drone engines, other Small, Mediumand Large single and multicylinder reciprocating action systems will have their own energy savings by adapting the proposal mentioned.

Energy saving will get multiplied with higherTotal mass and speed of the reciprocating system. Kinetic energy=(1/2) m (V square). m is the total reciprocating mass and V is the Velocity / Speed of the reciprocating masses.

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