



Abstract

Session 35: Design & Engineering III

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Title

35-1: Hydrodynamic calculation method for crosshead pin bearings especially under less rod load reversal loading

Summary

Contrary to main and crank pin bearings of reciprocating compressors, the hydrodynamic working mechanisms of crosshead pin bearings are not fully understood so far. While for the rotating bearings the hydrodynamic pressure build-up both by tangential and radial movement of the journal takes place the crosshead pin bearing can only make use of the hydrodynamic pressure build-up by radial movement due to the lack of a real tangential movement. Since this pressure build-up needs a radial movement the API 618 e.g. demands a certain amount of rod load reversal.

Due to authors' experiences the allowable loading of the crosshead pin bearing depends on the amount of rod load reversal. A bearing with a close to perfect rod load reversal loading can handle much more loading than the same bearing under a load with the same peak load but a marginal rod load reversal according to API 618 restrictions.

This paper explains by description of the theory and by some exemplary calculations the reason for the mechanism. Some influencing design parameters are given to improve or worsen the load capability. Generally, an optimum bearing design depends on the loading.