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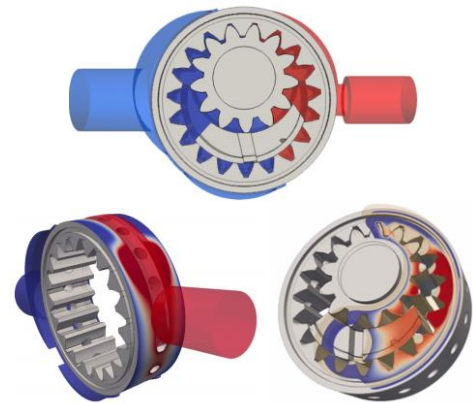
Modeling aspects in High-pressure internal gear pumps

By: Dinghao Pan (PhD, Maha Fluid Power Research Center)

Abstract

High-pressure Compensated Internal gear pumps (CIGP) offer excellent efficiency as well as low flow pulsation for a broad range of fluid viscosity and operating speed*, thanks to the machines prolonged gear meshing stroke of fluid displacement. Key operating aspects in the machine include (i) the fluid displacing action which is defined by the gear geometry and (ii) proper functioning of the fluid film lubricating interfaces under various operating conditions.

Effective efficiency predictions of CIGPs require to involve the film losses (leakage & friction) with the fluid dynamics simulation in the displacement volumes. Additionally, the film geometries are determined by body dynamics of the moving components under different operating conditions, requiring proper coupling modeling considerations.



Displacement volumes (top) and fluid films (bottom) in CIGP

This webinar covers the key modeling aspects in the simulation tool (Multics-IGP) developed inside the research center for studying CIGPs . The simulation model features its flexible acceptance of gear profile, and its fast speed when simulating the flow-film-body coupled dynamics. Commercial unit test -based validations will be discussed, highlighting the simulation tools' efficacy in volumetric and mechanical prediction. Additionally, the webinar discusses the fluid incomplete filling prediction in the machine which is a key operational & design aspect for high-speed applications.

Join this webinar to learn more about the modeling aspects in Compensated Internal Gear pumps.

(*) CIGP sound pressure level about 10 dB lower than spur-type single-flank external gear pump, accepting 10~300 cSt fluid displacement at shaft speed 200 to 4000 rpm. Source: online datasheets of Rexroth PGP and AZPF pumps.