

Aerospace Pin Joint Testing

Pin Joint Wear is a MAJoR Problem

- \$20Bn lost through commercial maintenance downtime*
- 28 or 36 pin joints per gear, all under different loads and speeds, all require frequent inspection
- Investigate into wear mechanisms, COF, torque required, and behaviour under different loads & speeds
- Production of an Expert System to mathematically predict future performance & wear for a range of materials
- Produce real solutions to reduce downtime and work towards maintenance free landing gear.



* Data supplied by project sponsor regarding annual global commercial airline figures correct as of 2008

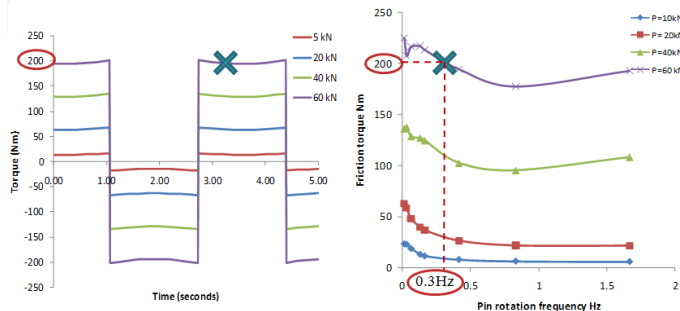


Figure 1) Frictional torque variation with time at frequencies ranging at 0.3Hz

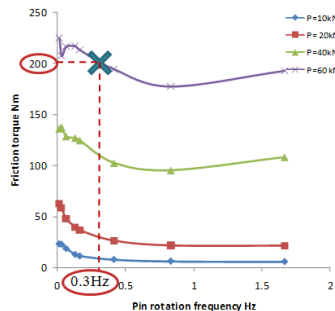


Figure 2) Experimental friction torque vs rotational speed (under different loads)



Conclusions

- Better commercial understanding of real aerospace wear mechanisms
- Findings enable the optimisation of pin, bush & lubricant selection
- Empirically validated Expert System
- Our Findings will reduce aircraft downtime on a global scale.