

# TECHNICAL UPDATE # 008

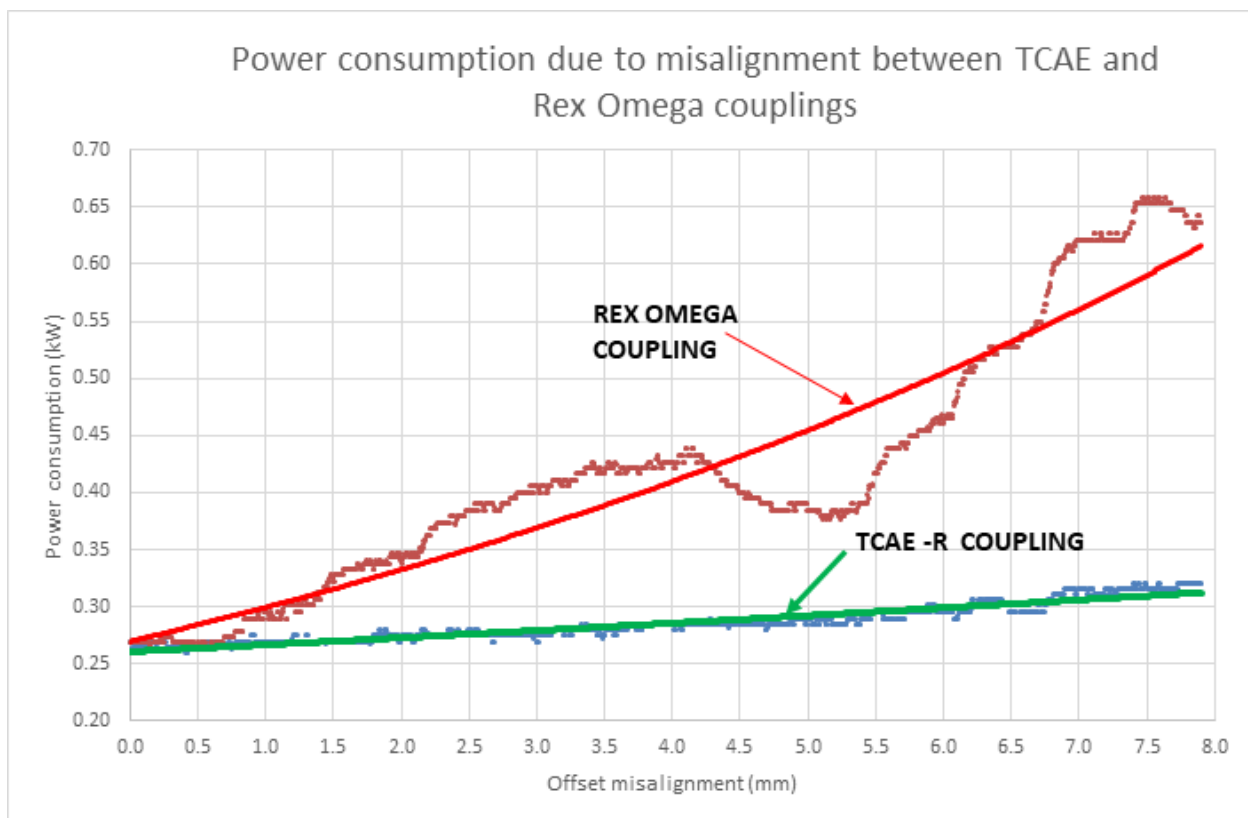
## Energy savings explained with TCAE™ shaft couplings

One of the key features of the TCAE-R series couplings is its unique double hinged mechanism that induces minimal radial load onto the connected shafts. In contrast flexible couplings of the elastomeric type produce significant power losses when the shafts are not perfectly aligned. Our company produced a series of experiments to quantify this fact.

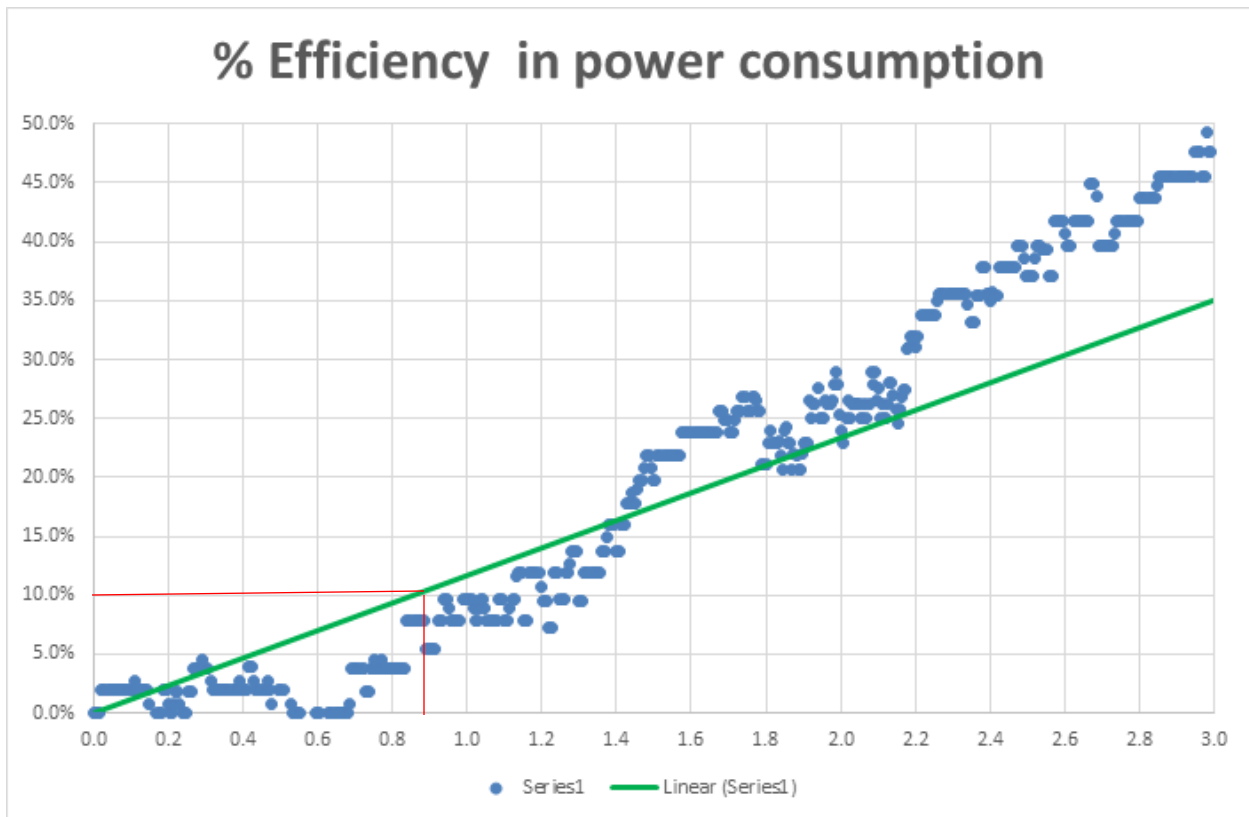
A 0.75kW electric motor was coupled to a generator mounted on a sliding frame. An electric actuator controlled the relative position of the 2 shaft centrelines to produce an adjustable parallel offset condition.

A Thompson TCAE-2-R coupling and a standard Rex Omega (30) elastomeric coupling were subjected to a series of tests by recording the power consumption of the driveline when the shaft centrelines were offset from 0 to 8mm. Normally the Rex Omega coupling would not be subjected to such a high amount of flex however at the maximum recommended offset of 1/8" (3mm) allowed the energy reduction was very apparent.

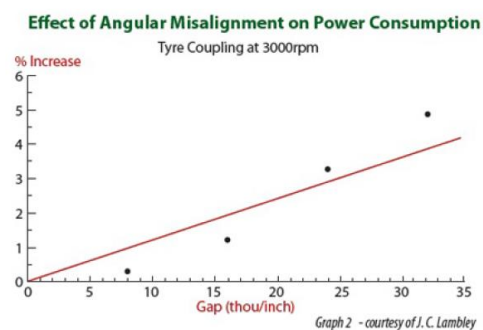
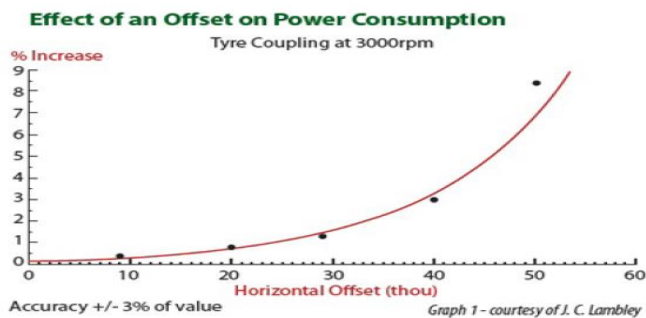
In contrast the TCAE coupling maintained a slight rise in power consumption over the large offset distance due to small losses within the coupling



When the results are converted to an energy loss percentage within the normal range of allowable alignment for the Omega coupling we can see quite significant differences. Moreover at a relatively minimal offset of 0.9mm (0.035") for this type of coupling losses of 10% energy can be observed.



The results are not unique and have been previously replicated by others including JC Lambley formerly of ICI Chemicals as shown below:



The TCAE – R coupling provides significant cost advantages in terms of energy savings and total cost of ownership through reduced power consumption, elimination of shaft alignments services, reduced wear on connected bearings and seals etc.

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*(David Farrell is Chief Engineer for Thompson Couplings - designers and manufacturers of The Thompson Constant Velocity Joint. David has more than 30 years as a professional mechanical engineer involved in a wide range of mechanical engineering designs and maintenance projects. He was one of the key founders of Thompson Couplings Ltd since 2001 and continues to design the range of TC products as well as support the engineering community with specific applications for power transmission and shaft couplings.) [www.thompsoncouplings.com](http://www.thompsoncouplings.com)*