

Applications of Compliant Mechanisms

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Every day we interact with compliant mechanisms (CMs), whether you realise it or not. They are present in light switches, zippers, and even your plastic takeaway container. A compliant mechanism is a mechanism that uses one or more flexing features to achieve a mechanical outcome. We use them frequently at the AITC as substitutes for traditional mechanisms, such as bearings, slides, and hinges, which often don't meet the design requirements associated with high accuracy, repeatability, sensitivity, and especially cryogenic environments.

CMs have many benefits such as being backlash-free, oil-free, small in size, low maintenance, and cheap. They really tick many boxes and can be implemented in almost any engineering design requiring moving components. The challenge I found, when starting to use CMs, was determining when to implement them and being able to imagine all the ways a CM could be designed and used to suit many applications. But with more exposure to CMs, this became easier and creative solutions started to flow.

This presentation is a show and tells of the many applications of CMs designed at the AITC, with the hope that it may inspire others during their design process.

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