Self Lubricating composites (SLCs)

Self lubricating composites are offering a specific advantage whenever moving parts have to be lubricated under changing and extreme conditions or where no lubrication by an oil or grease is allowed (due to evaporation or outgassing).

The SLC developed at the AIT are prepared by a powder metallugrical process and combines an excellent tribological performance in Air and Vacuum as well as at room temperature and at high temerpatures (up to 300°C). The material is characterised by a high mechanical stiffness and a high electrical conductivity. Within a certain range these properties can be adjusted by a variation of the filler content, the matrix composition or the choice of the filler material.

The SLC material is composed of a Cu based matrix which is filled by different self lubricating fillers such as MoS_2, WS_2 or carbon fibers. Specific grades have been developed for the European Space Agency (ESA). These materials are actually evaluated for different applications such as:

- Oil-free bearings for actuators or in engines up to 300°C
- Journal bearings or cages for roller bearings
- Slip rings