Continuous Reciprocating Air Filter

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During my work experience at Astrium, Poynton in Manchester I was introduced to equipment and rack manufacture for use in hostile environments. In particular, much of the equipment was for use in military applications (mobile satcoms) in desert environments. The problem that they had was that there was no air cleaning systems on the equipment and that cooling fans and equipment failed as a result of the abrasive force of dust and dirt. Initially, dust would become attracted to electronic components inside the equipment because of static electrical attraction. This would build up and, due to humidity changes become damp. Eventually this would lead to short circuits and equipment failure. This was overcome by sectioning off the electrical components and a large heat sink was implemented onto the electrical system. This resulted in the air passing over the heat sink and not over the electrical components themselves. However the sand and dust filled air still passes through the intake and exhaust fans. This destroyed the bearings and therefore they need replacing. This proposal was initially targeted at transportable satcoms equipment where it was impractical to have a dedicated dust extraction facility although it has multiple potential applications as it is fully integrated with the equipment cooling system. Other industrial applications could include mining and processing of coal and minerals, foodstuffs and vehicles travelling in dusty environments (e.g. Army vehicles).

Awards Won:

Fourth Award of $500