

New Technology Report (NTR)

Technology Title: **Cam-and-Groove Hose Coupling Halves Safety Modification**

Inventors: **Paul Schwindt and Alan Littlefield**

Case #: **KSC-12713**

What it is: The technology is a modification in the mating halves of a cam-and-groove hose coupling to prevent rapid separation of the halves in the event that the cam levers are released while the fluid in the hose is pressurized. This modification can be duplicated on almost any commercially available cam and groove hose coupling halves and does not interfere with most vendors' locks that prevent accidental actuation of the cam levers. The modification forces the installation and orientation to ensure proper engagement of the coupling halves before the cam levers can be locked into position. If released under pressure, the modification captures the coupling halves so they will not rotate and disengage. Once pressure in the delivery system is sufficiently low, the couplings halves can be safely disconnected. This modification can be retro-fitted to existing cam and groove coupling halves and does not interfere with most vendors' cam lever locks that prevent accidental cam lever actuation.

Why it was needed: The innovators needed this modification at the time because commercial off-the-shelf cam-and-groove hose coupling halves did not incorporate safety features to prevent separation in the pressurized state. When the pressurized fluid was compressible (e.g., steam or compressed air), the separated halves could be propelled with considerable energy, causing personal injury and/or property damage.

History: This technology was reported in 2004 and a story was published in NASA Tech Briefs in 2008. In 2010, PT Coupling signed a Technology Transfer Agreement with Kennedy Space Center for a free transfer of the technology. They are now making commercial versions of the safety modification. The company is calling it the "pressure safe line." They started making production runs in September 2010 and are currently offering the coupling in the 2-inch and 3-inch sizes. Work is underway to develop more sizes. Currently, the NASA version of the technology is featured in the company's 2010 catalogue and listed as the "PT Pressure Safe." ■

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With the new pressure safe technology the PT Coupling Company can now offer its customers a passive safety feature that protects the operator from personal injury in the event the quick release cam arms are opened under pressure. This technology could help prevent future accidents and help to improve the hazardous working conditions of operators in the field.

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– Kyle Eckhardt
Design Engineer



Modified Type A Adapter



Paul Schwindt and Alan Littlefield



Modified Dust Cap