

Reduction of Equivalent System Mass of a Trash Compaction Processing System with an Emphasis on Improved Thermal Efficiency

Gregory S. Pace[1] and Janine Young[2]
KBR, Houston, TX. 7702

Serena Trieu[3]
Logyx LLC, Mountain View, CA. 94043

and

Steven A. Sepka[4], Tra-My Justine Richardson[5], Kevin R. Martin[6]
NASA Ames Research Center, Moffett Field, CA, 94035

A device known as the Trash Compaction Processing System or TCPS has been under development at NASA as part of the Advanced Life Support and Logistics Reduction Program Waste Management element. The TCPS processes trash that includes a variety of components such as plastic pouches that contain wet food and drinks, used cloth towels and t-shirts, adhesive tapes, deodorant, and many other items. The TCPS uses heat and pressure to compact the waste composite into a sturdy and well-defined shape designed to fit in a storage area on a spacecraft. The TCPS removes water from the trash and renders it safe against microbial activity. The focus of this paper is on methods for reducing the Equivalent System Mass of a TCPS with an emphasis on increasing the thermal efficiency of the system.

[1] Senior Mechanical Engineer, BioengineeringBranch, M/S 239-15, NASA ARC, Moffett Field, CA 94035.
[2] Chemical Engineer, Bioengineering Branch, M/S 239-15, NASA ARC, Moffett Field, CA 94035.
[3] Engineer, Bioengineering Branch, M/S 239-15, NASA ARC, Moffett Field, CA 94035.
[4] Solid Waste Management Lead, Bioengineering Branch, M/S 239-15, NASA ARC, Moffett Field, CA 94035.
[5] Research Physical Scientist, Bioengineering Branch, M/S 239-15, NASA ARC, Moffett Field, CA 94035.
[6] Science Payload Project Manager, Flight Systems Implementation Branch, M/S 240A-3, NASA ARC, Moffett Field, CA 94035.