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To: Chuck Nelson
Subject: Benefits of Knoll Recycling at JPL

Four years ago, NASA's Jet Propulsion Laboratory (JPL) Facilities implemented an innovative recycling asset management program resulting in a 66% cost savings, compared to buying new modular furniture directly from KNOLL using GSA pricing. In general, the individual components were *"not good enough to reuse but too good to throw away"*. The modular furniture inventory was stockpiled in an unmanaged 20,000 square foot warehouse where furniture installers would feverishly search often in vain, for the necessary modular furniture component. How to refurbish nearly 400 different modular furniture line items, consisting of nearly 60,000 individual modular furniture components was at the center of establishing an on-line inventory system, and we are in the process of standardizing our inventory from nearly 400 different components to less than 100. By recycling our old Knoll modular furniture components, JPL Facilities reduced to zero the over 180 tons of waste previously sent annually to landfills, while minimizing the use of new raw materials.

By shifting most of our yearly budget allocated for purchasing new Knoll furniture into recycling, the schedule to remodel approximately 7,000 work space areas in over 150 separate buildings in a campus style environment was expedited threefold. The most significant improvement from our employee's perspective is that their 30 year old gray metal desks and tables are replaced with newly recycled KNOLL Equity product line currently used in modern "office buildings", thus contributing to NASA's goal to make the agency an "Employer of Choice" for Scientists and Engineers. Employees significantly appreciate their newly remodeled work areas, efficient new office design, and especially the ergonomic qualities of the recycled furniture.

We worked with our refurbisher, SOURCE WEST, to continuously improve the quality of the recycled product to be indistinguishable from new product received directly from the KNOLL factory. By partnering directly with KNOLL Textiles, we were able to purchase fabric to refurbish panels to match the Knoll fabric new product line. We also installed new electrical retrofit kits to correct electrical circuit overloading deficiencies identified in earlier generations of panels. Cost analysis shows that refurbished components can be stored in inventory an average of seven years before the total cost of refurbishment plus storage exceeds the cost of purchasing new KNOLL modular furniture components.

The significant cost savings realized to date, enabled JPL Facilities to triple our remodeling efforts of all 7,000 offices with an overall completion over the next five years. We decided also to install KNOLL modular product in hard wall offices to address ergonomic issues, since the panel base system allows work surfaces to be mounted at various heights to meet occupant's needs. SOURCE WEST was instrumental in recycling older soft panels and converting them into bottom access panels for hardwall and laboratory usage, negating the need to move electrical and networking circuits. Flight Projects managers report that by incorporating the modular furniture design layouts and collocating their staff, there is a significant increase in "teaming" so essential to the overall success of space flight mission operations.