

zeroG[®] for Overhead Sanding

Case Study

Significant Annual Savings for Major U.S. Airline



PROJECT ROI SUMMARY

TOTAL COST SAVINGS	\$181,500
Less Depreciation	- \$ 17,500
Less Annual Maintenance	- \$ 750
Total Net Savings	\$163,250

TOTAL zeroG[®] ACQUISITION COST \$ 70,000

ROI 259%

Payback Period 0.43 years

A major U.S. Airline has a large dedicated team that performs sanding in their aircraft refurbishment facilities. Traditionally, this area has been one of the most labor-intensive operations and an area with major production bottlenecks. zeroG[®] was installed to improve throughput while allowing the full range of movement needed to perform the task to the customer's stringent quality standards. zeroG[®] reduced the total hours required to sand an aircraft by over 50%.

Sanding is a standard process for aircraft painting and refurbishment. Typically, handheld palm sanders are used to allow navigation of tight spaces and provide a high quality surface finish. But this process poses numerous risk factors: the large surface areas involved, the need to sand overhead, awkward arm positions, the long duration of the activity, and tool vibration. The result is high injury rates and reduced productivity.

The zeroG[®] from Equipois offers a proven solution for overhead sanding that both reduces injuries and boosts productivity. The patented system eliminates the weight of the sander while still preserving the complete freedom of motion required to do the job. zeroG[®] sanding systems provide considerable costs savings and a compelling annual ROI. Satisfied users include companies such as Boeing and Delta Airlines. As a result of their success, many zeroG[®] customers have gone on to implement the technology as a best practice.

Return-on-Investment

Productivity Enhancement — The consistent upward force provided by zeroG[®] allows users to sand a larger surface area in less time. Many users report throughput improvements of up to 50%. With zeroG[®], operators can choose heavier and more powerful sanders, further increasing productivity creating the potential for even greater productivity gain.



"The difference is just tremendous. Using this arm allows me to just guide the tool and get the job done faster."

— SANDING TECHNICIAN

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Return-on-Investment (*continued*)

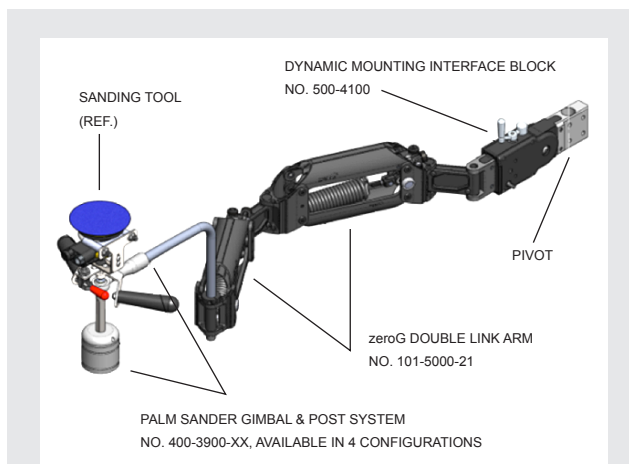
Injury Costs — zeroG[®] sanding systems reduce operator fatigue and the potential for strain injury. For a typical shoulder injury, the direct medical costs alone can exceed US\$20,000. Indirect costs associated with lost time, retraining, etc. can be a multiple of direct costs, with total injury costs reaching US\$80,000 or above.

Tool Damage — Sanders can be dropped or damaged during use. zeroG[®] constantly supports the tool, preventing it from being dropped. Tool repair costs are thereby reduced.

Abrasive Usage — zeroG[®] holds sanders in an optimal position, enabling proper pressure and use of more of the surface area of the sanding pad. As a result, sanding disc usage can be reduced by up to 40%. Customers can enjoy costs savings of US\$500 to US\$1,000 per year or more from material savings alone.

Quality — The need to support a heavy tool compromises precision. zeroG[®] allows worker to utilize their fine motor skills without supporting the weight of the tool, thus improving precision and quality.

Employee Satisfaction — Sanding is a difficult, uncomfortable job with high risk of injury. Customers using zeroG[®] systems have seen immediate improvements in employee satisfaction. In some cases, customers have been able to return restricted-duty employees to work using zeroG[®].



zeroG[®] Solution

zeroG[®] Arm: zeroG4 Double Link Arm suitable for payloads 8 lbs to 36 lbs (2.72 kg to 16.33 kg) - Part Number 101-5000-20

- Arm Cover Kit, Disposable Polycy - Part Number 300-2100

Gimbal and Post System: Palm Sander Gimbal, Handle Bars - Part Number 400-3900-01; or Multi-Axis Gimbal - Part Number 400-3404-XX for approved sanders

- Docking Kit for securing the tool and arm when not in use - Part Number 400-6200-02

Mounting Solutions: Both fixed and portable mounting solutions are available:

- Fixed Mount 2-Axis Dynamic Interface Mounting Block - Part Number 500-4100
- Static Link Component Reach Extension - Part Number 200-5210-02
- UMS Mini-Stand Portable Cart - Part Number 500-5530
- UMS Telescoping Stand - Part Number 500-55XX.

Specifications

- Provides the full dynamic range of motion necessary for effective sanding.
- Zero power consumption - no electrical, pneumatic or hydraulic power source is required.
- Supports sanding tools weighing between 3 lbs (1.33 kg) and 10 lbs (2.72kg). The lift assist will provide enough additional force to lift tools weighing between 8 lbs (3.63 kg) and 36 lbs (16.33 kg).
- Supported sanding tools include random orbital sanders, palm sanders and certain right angle sanders (see Approved Tools List for a complete listing of supported tools).
- Standard system provides a working range of at least 55.13 inches (1400mm) from the mount.
- Optional Static Link Component; Universal Mounting System™ (UMS) Mini-Stand and UMS Telescoping Stand provide additional reach. A fully mobile cart is also available to cover large work areas.
- Cabling such as pneumatic air lines, power cords, hydraulic hose or sensor wiring can be routed along the length of the system.
- Mounts to a structure that can support the moment of the full system and payload. Maximum moment load considerations are set forth on the system installation drawing.
- Includes protective covers suitable for paint shops and refurbishment facilities to prevent corrosion and shield any pinch points.

Approved Tools List

Palm and Right Angle Sanders from the following manufacturers:

- 3M
- Dynabrade
- Ingersoll-Rand
- DeWalt Tool
- Porter-Cable
- Clayton
- Chicago Pneumatic