



A Cost-Effective Alternative to Traditional Sanding Labor

Transforming Woodworking
Operations with the PSA-80 PRO





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A Cost-Effective Alternative to Traditional Sanding Labor

In the modern manufacturing landscape, optimizing costs while maintaining high-quality output is key to staying competitive. For woodworking shops, manual sanding is one of the most time-consuming and costly operations. In this white paper, we will explore how integrating the PSA-80 PRO Sanding Robot into your production process can help cut labor costs, improve productivity, and increase overall profitability. By comparing the operational costs of the PSA-80 PRO with traditional sanding labor, we'll outline significant savings and long-term value for your business. This paper also includes referenced studies on the real cost of manual labor, providing a data-driven basis for decision-making.

Image source: Screenshot from AllStyle Cabinet Doors: Factory Tour video (1:24) accessed on November 4, 2024.

The Cost of Traditional Manual Sanding Labor

Let's start with a comprehensive breakdown of the costs associated with employing two full-time sanding workers in the United States. For accuracy, we'll rely on recent studies and labor reports.

Labor Cost Breakdown for Two Full-Time Workers (U.S. Figures)

\$41,600

per worker annually¹

BASE SALARY

According to the Bureau of Labor Statistics (BLS), the average wage for production workers in the woodworking industry is \$20/hour. Based on a standard 40-hour workweek, this results in an annual base salary of \$41,600 per worker¹.

\$7,800

per worker annually¹

OVERTIME

In many woodworking shops, overtime is required to meet deadlines. Assuming 5 hours of overtime per week at time-and-a-half pay, this adds approximately \$7,800 per worker annually¹.

\$12,480

per worker annually²

EMPLOYEE BENEFITS

Health insurance, retirement plans, and other benefits typically add an additional 30% to a worker's base salary. This brings benefits costs to around \$12,480 per worker annually².

\$2,000

per worker annually³

TURNOVER COSTS

High turnover is common in labor-intensive industries like woodworking. Estimates suggest that replacing a worker can cost as much as 33% of their salary, and with the industry turnover rate at about 20%, this can add \$2,000 - \$4,000 in hidden costs annually per worker³.

\$1,500

per worker annually⁴

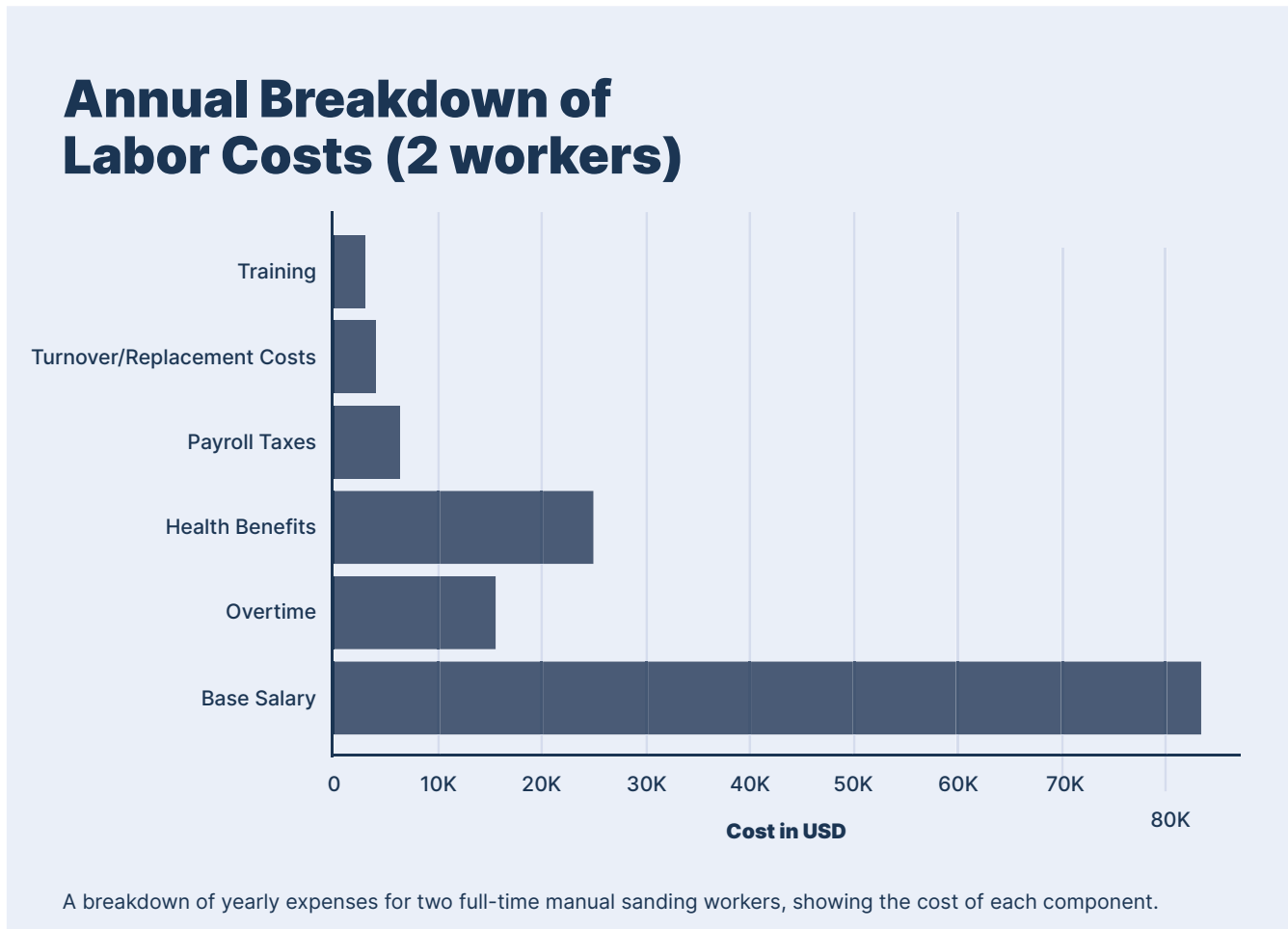
TRAINING

The cost of onboarding and training new employees is estimated to be around \$1,500 per worker annually⁴.

Total Annual Labor Cost for Two Workers:

Cost Component	Cost Per Worker	Cost for 2 Workers
Base Salary (\$20/hour)	\$41,600	\$83,200
Overtime (5 hours/week)	\$7,800	\$15,600
Health Benefits (30%)	\$12,480	\$24,960
Payroll Taxes (7.65%)	\$3,180	\$6,360
Turnover/Replacement Costs	\$2,000	\$4,000
Training & Development	\$1,500	\$3,000
Total Annual Cost	\$68,560	\$137,120

Over a 5-year period, the total cost of employing two sanding workers would be \$685,600¹⁻⁴.



The PSA-80 PRO: A More Efficient, Cost-Effective Solution

The PSA-80 PRO Sanding Robot offers a smarter and more cost-efficient alternative to manual labor. By automating your sanding operations, the PSA-80 PRO not only immediately cuts labor costs but also improves productivity, consistency, and quality.

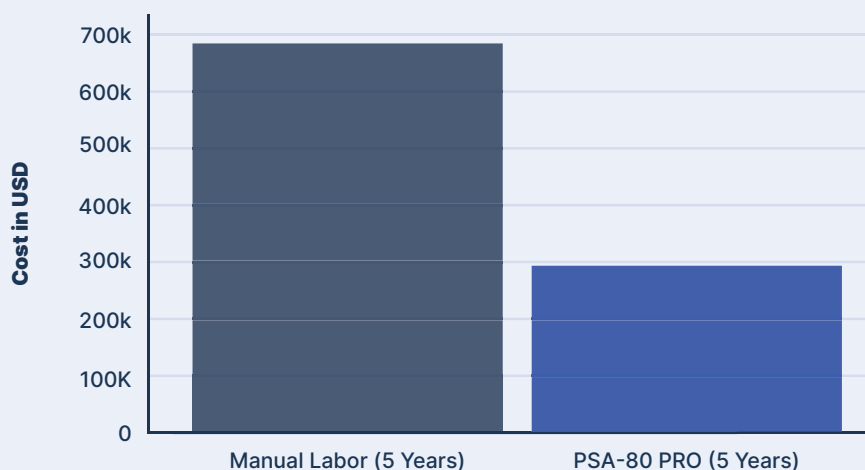
Cost of PSA-80 PRO Lease (5 Years terms)

- **Monthly Lease:** \$4,979 per month
- **Total Lease Cost Over 5 Years:** \$298,740

5-Year Cost Comparison

Cost Component	2 Workers (5-Year)	PSA-80 PRO (5-Year)
Labor Costs	\$685,600	\$298,740
Total Saving	N/A	\$386,860

5-Year Total Cost Comparison: Manual Labor vs. PSA-80 PRO



This bar chart shows the total costs of manual labor versus the PSA-80 PRO over five years.

Past the lease term, the PSA-80 PRO is fully paid and the **saving gets even bigger**.

Beyond Cost Savings: Increased Productivity & Quality

While the PSA-80 PRO offers significant cost reductions, its benefits extend beyond financial savings. It enables improved productivity, superior quality, and consistent performance that human labor can struggle to match.



INCREASED THROUGHPUT

Studies show that robots can work 20% to 150% faster than human labor in sanding operations⁵. The PSA-80 PRO is designed to sand 100% to 150% more panels per day than traditional manual workers, providing a clear competitive advantage for scaling production.



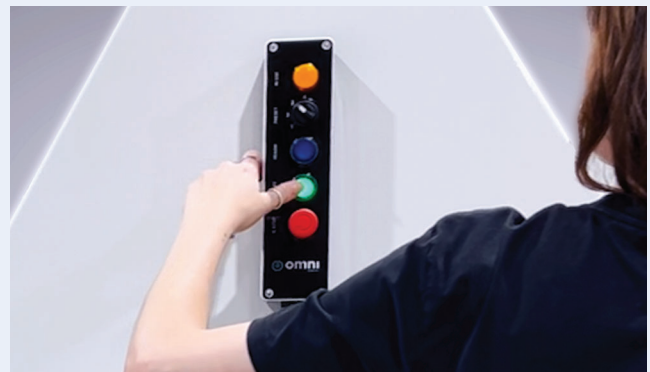
CONSISTENT QUALITY

Manual sanding often suffers from inconsistency due to variations in worker skill and fatigue, which can lead to costly rework and waste. The PSA-80 PRO, powered by Omnirobotic's AutonomyOS, ensures uniform sanding with laser probing accuracy of 0.1 mm, delivering a superior finish every time⁶.



REDUCED DOWNTIME

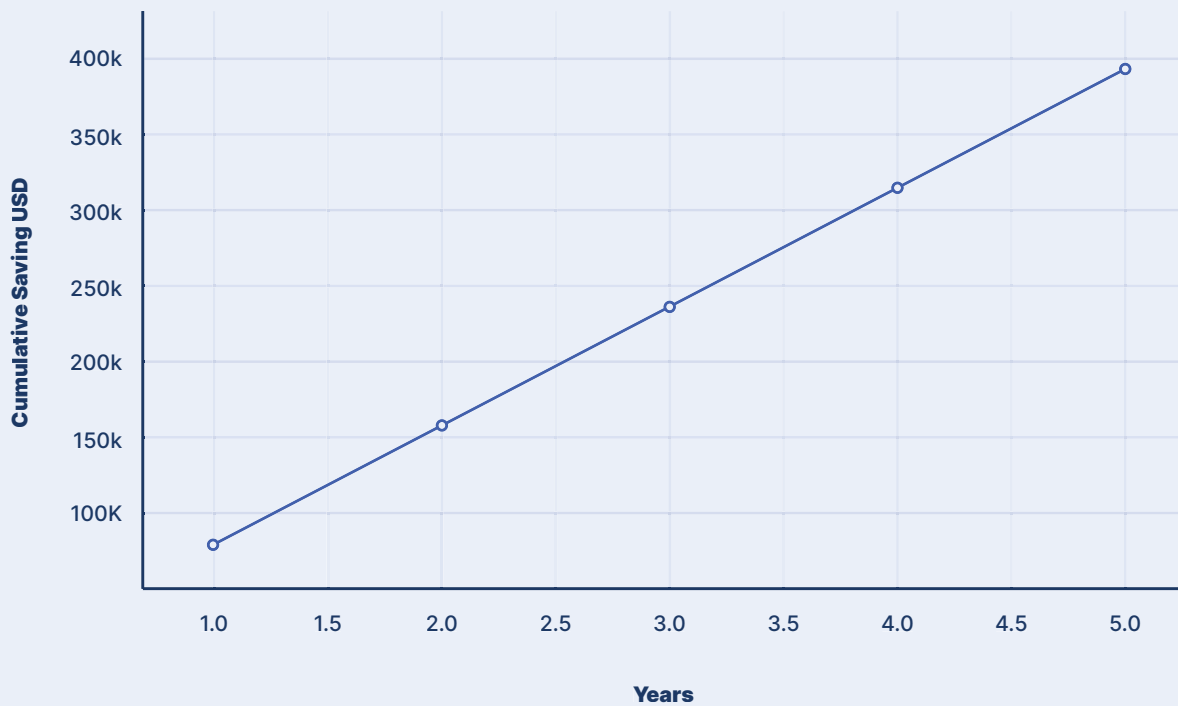
Humans need breaks, shift changes, and time off, but the PSA-80 PRO operates autonomously for 20-minute cycles without supervision. This autonomy allows the operator to focus on other critical tasks or take a break while the robot sands continuously, maximizing productivity.



MINIMAL TRAINING & TURNOVER COSTS

Training new employees can take weeks, but the PSA-80 PRO requires only 2 minutes of operator training, significantly reducing onboarding costs⁷.

Cumulative Savings with PSA-80 PRO Over 5 years



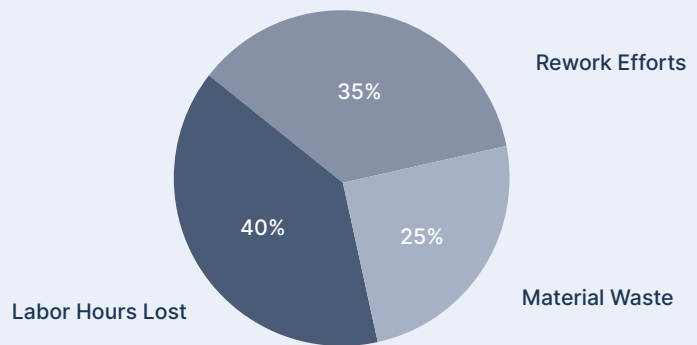
This line graph represents the cumulative savings each year when using the PSA-80 PRO instead of manual labor.

Hidden Costs of Human Error and Rework

In woodworking, human error during sanding can result in inconsistent finishes, which may require rework or, in severe cases, lead to scrapped materials. Studies show that rework can add as much as 20% to total production costs due to material waste and inefficiency⁸. Furthermore, inconsistent finishes can contribute to a 15% material waste rate on average⁹, making automation an increasingly appealing solution.

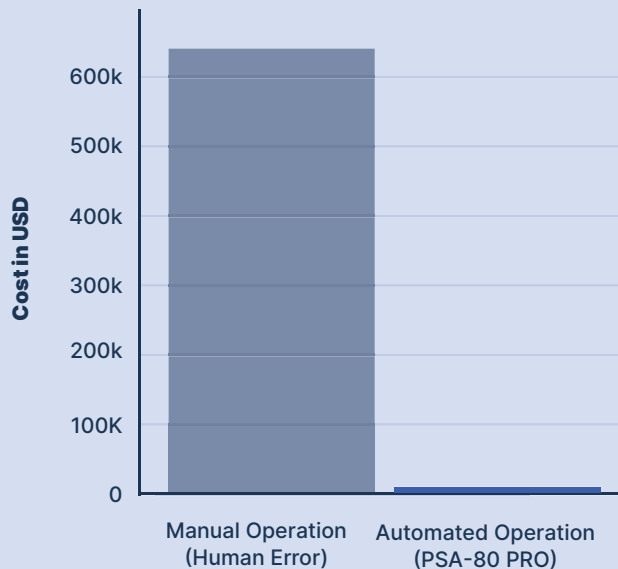
Hidden Costs of Human Error per Panel

The pie chart breaks down the costs per panel, highlighting the proportions of labor hours lost, material waste, and rework.



5-Year Total Cost Comparison: Human Error vs. Automated Precision PSA-80 PRO

This bar chart shows the total cost associated with manual rework due to human error compared to minimal rework costs with the PSA-80 PRO.

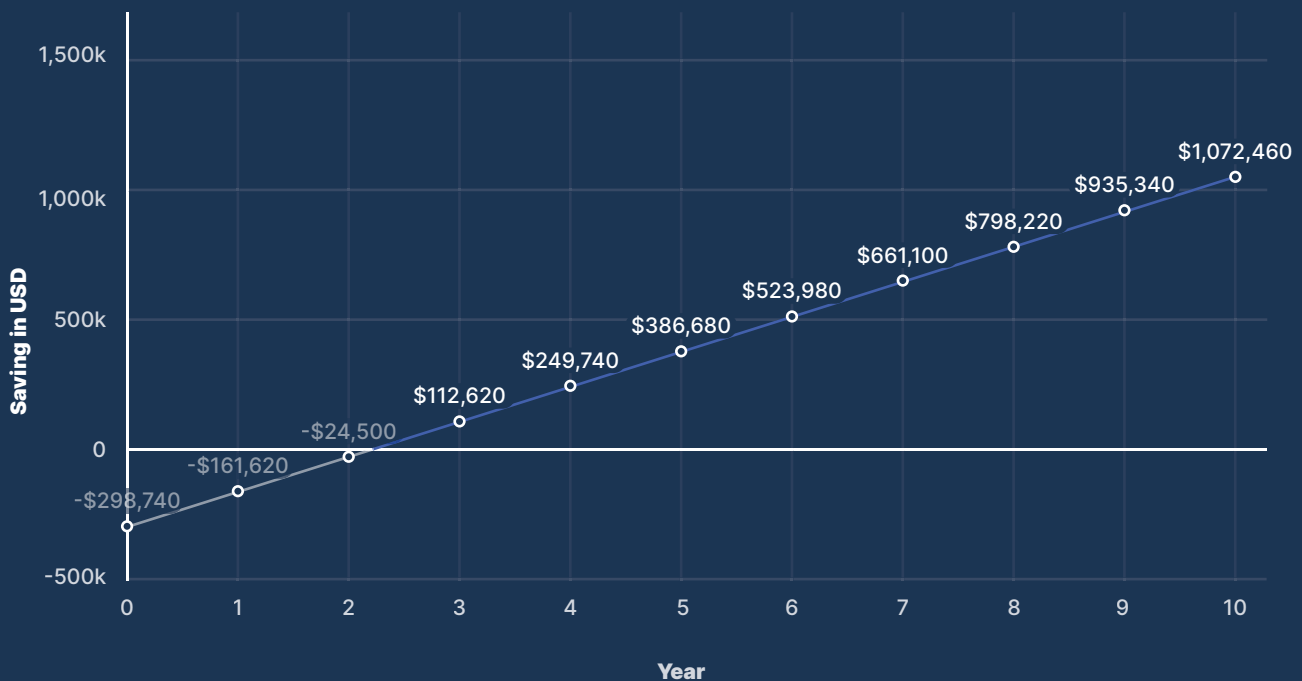


Calculating the ROI of the PSA-80 PRO

When considering automation, return on investment (ROI) is crucial. Based on the labor savings outlined above, the PSA-80 PRO delivers a payback period of under 2.2 years, including financing costs, with total savings exceeding \$1 million over 10 years.



ROI Return on Investment for the PSA-80 PRO





Real-Life Case Study: The Impact of Automation in Manufacturing

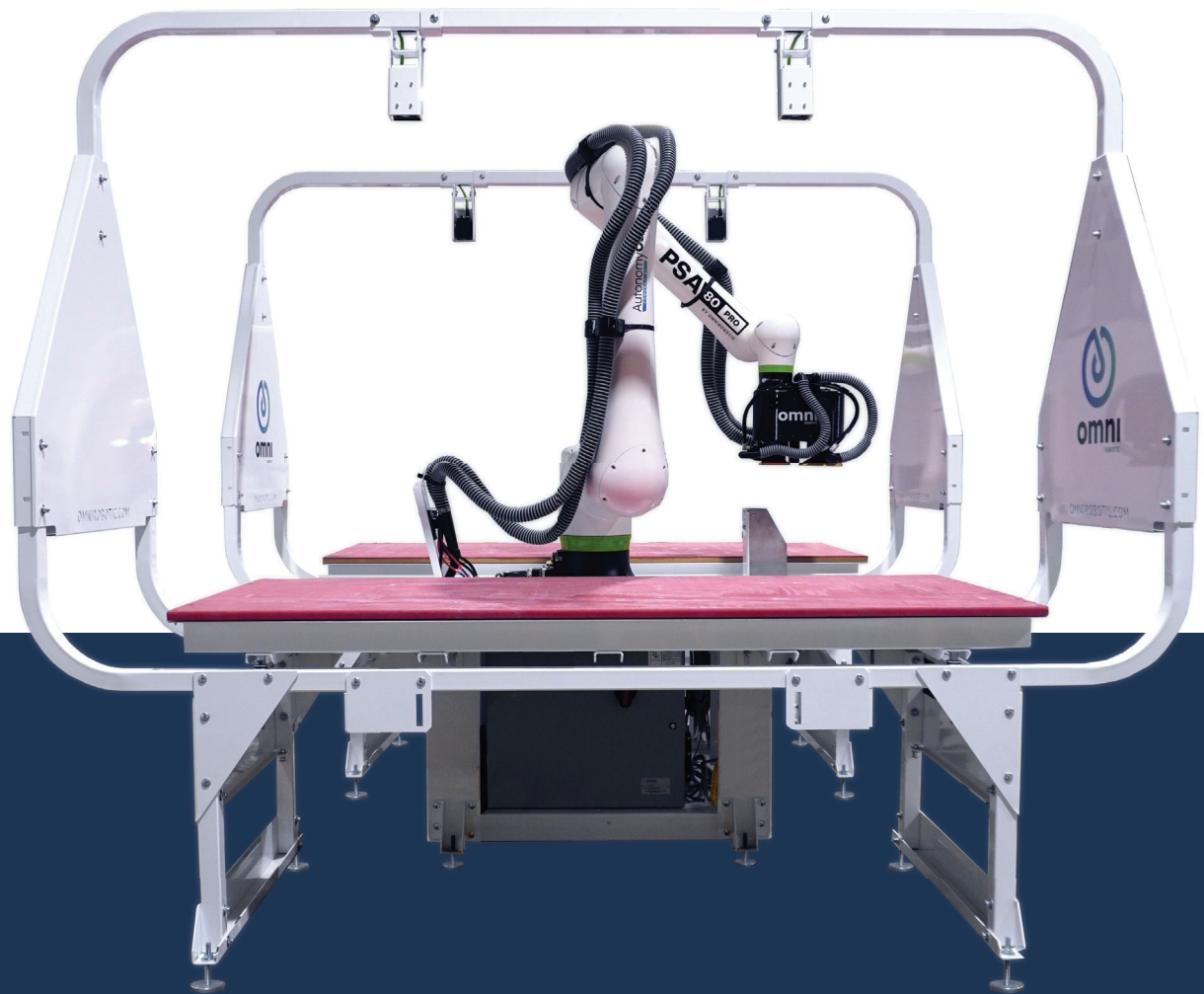
A recent study by the McKinsey Global Institute found that manufacturers who adopt automation can reduce labor costs by 30% to 50%, while increasing productivity by up to 50%¹⁰. In sanding, where consistency is crucial, the introduction of robotics can minimize human error and reduce costly rework. Moreover, automation helps businesses scale rapidly without the limitations imposed by manual labor.

Sources:

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3. National Association of Manufacturers. "The Cost of Human Error in Manufacturing," NAM Report, 2022.
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6. Wood Machinery Manufacturers of America (WMMA). "The Impact of Inconsistent Sanding on Material Costs," WMMA Study, 2023.
7. Deloitte Insights. "The Robots Are Ready, Are You? Untapped Advantage in Your Digital Workforce," 2023.
8. National Association of Manufacturers. "The Cost of Human Error in Manufacturing," NAM Report, 2022.
9. The Manufacturing Institute. "Rework and Quality Costs in U.S. Manufacturing," 2023.
10. Manufacturing.net. "How Automation Can Cut Costs and Improve Productivity in Manufacturing," 2023.

A Smart Investment for Sustainable Growth

The PSA-80 PRO offers an unmatched opportunity for U.S. cabinet manufacturers to optimize their operations by cutting labor costs, increasing efficiency, and maintaining high product quality. By addressing critical issues such as labor shortages and rising costs, the PSA-80 PRO provides a future-proof solution for manufacturers looking to stay competitive.



Ready to Make the Change?

For more information on how the PSA-80 PRO can revolutionize your manufacturing operations, contact us today. Get in touch to find out how the PSA-80 PRO can cut your labor costs and transform your business operations.

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Transform Your Manufacturing with the PSA-80 PRO

Discover how the PSA-80 PRO can elevate your manufacturing process, reduce labor costs, and enhance efficiency. Take the next step towards automation and excellence in your operations.

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