

Benefit from RECONDITIONING AND REMANUFACTURING



Reconditioning and remanufacturing are sustainable ways to keep equipment in good working condition, using fewer natural resources while generating less waste than buying new. Businesses are increasingly looking at reconditioning and remanufacturing for sustainability reasons, with the additional benefits of environmental protection, reduced raw materials costs, and more robust supply chains. Companies producing anything from consumer electronics to machines used for manufacturing should consider how to integrate these recycling processes into their business models.

WHAT ARE RECONDITIONING AND REMANUFACTURING?

Reconditioning and remanufacturing first became popular during World War II. The techniques helped save both steel and workers' time when supplies of both were short. Since then, remanufacturing and reconditioning have been mainly done by the automotive and aerospace industries and are becoming more common in the electronics industry.

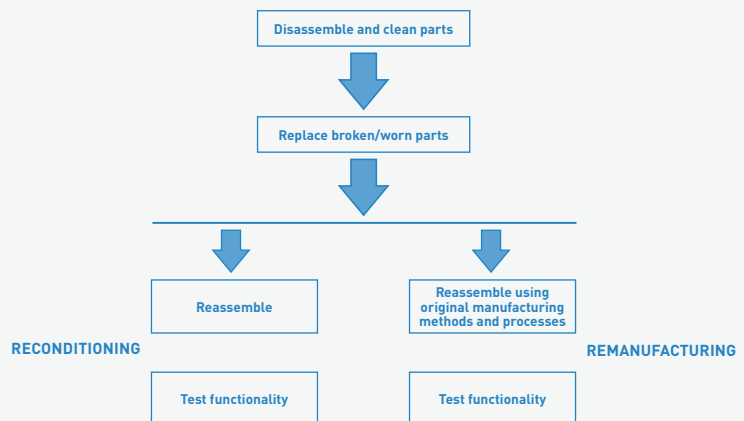
Reconditioning and remanufacturing are similar in nature but have slightly different implications. They both begin with a worn or broken product or machine. A business with the right expertise restores the item to working condition. It can then be resold or returned to the original owner for a fee.

But there are important differences between the two processes.

Guidelines for reconditioning are looser. Items are disassembled and cleaned, and broken parts are replaced. The equipment is then reassembled and tested for functionality before being returned to service. Technically, anyone can recondition an item. Results may vary according to the reconditioner's knowledge and skill.

Refurbishment Process

Reconditioning and remanufacturing follow similar steps but have a key difference. Remanufacturing involves the original production processes and tests to original factory specifications, while reconditioning is less stringent in its approach and testing.



The remanufacturing process is more stringent. Items are refurbished at the manufacturing plant that initially produced them. They go through essentially the same process as reconditioned items, but they are broken down and rebuilt by the original manufacturer with the same parts and processes used to make new products. The original manufacturer also tests remanufactured items to their original factory specifications.

Both methods have their merits. Reconditioning is often quicker and less expensive, while remanufacturing

consistently produces factory-original results. Either process can help a manufacturer improve its bottom line.

Reconditioning is best suited to equipment that has degraded due to age and normal use. Equipment that has suffered accidental damage, such as by impact or water immersion, may not be suitable for reconditioning. Expert evaluation using standards such as [NEMA GD 1-2019 \(Evaluating Water-Damaged Electrical Equipment\)](#) should precede any reconditioning attempt.

REMANUFACTURING AND RECONDITIONING IN PRACTICE

The techniques have long proven their value, and the remanufacturing market is thriving. The market has a projected [CAGR of 6.6%](#) over the period 2017 to 2025. Further, the last decade has seen the appearance of multiple [peer-reviewed publications](#) about remanufacturing and its benefits.

This is not an ad hoc industry. It is both reliable and organized, with professional industry associations that set standards, publish guidelines, and generally help companies recondition and remanufacture products. One such organization is the [Professional Electrical Apparatus Reconditioning League \(PEARL\)](#).



WHAT IS PEARL?

The first PEARL meeting was held in 1996 to discuss forming an organization for reconditioned equipment suppliers. Concerned with the lack of standards for reconditioned equipment, organizers created PEARL to protect both businesses and consumers from suppliers with ill intentions. The first annual conference took place in 1997, and PEARL has since become ANSI accredited. PEARL provides certified training courses for electrical equipment reconditioning technicians and serves as a regulatory body for the industry.





PEARL believes that remanufacturing is slated to grow in unison with emerging technologies such as AI, autonomous transport, and new sustainability efforts. The organization supports efforts to improve existing reconditioning and remanufacturing processes through new technologies.



Being able to completely break down and reconstruct an object allows manufacturers to recycle used and broken items rather than replacing them and creating waste. Not only is this cost-effective, but it allows a business owner to help the environment.

Organizations and engineers are exploring the use of 3D printing in reconditioning and remanufacturing. Almost anything, including metals, can be 3D printed. This technology allows items to be completely broken down and remanufactured cost-effectively, even if replacement parts are otherwise unavailable or expensive. Parts can be quickly and cost-effectively constructed on a 3D printer.

Additionally, 3D printing allows for the refurbishment of surfaces. High-pressure cold spray robots can deposit nanoparticles at supersonic speed onto any surface with precision. The approach produces superior adhesion in a low-heat environment, turning what might otherwise be scrap metal into a reusable item. This technology has been saving the surface of helicopters for years and could be retrofitted for almost any use.

DESIGN FOR MANUFACTURING

PEARL also supports design for remanufacturing. The approach uses the initial product design in the disassembly, reassembly, and testing processes needed for efficient remanufacturing. But this process can be problematic; some products might be better off being rebuilt in a way that differs from the initial assembly. At the very least, the initial assembly process needs to be reviewed to ensure that it allows for rebuilding a product well.

LAST THOUGHTS

The concept of remanufacturing is somewhat new for many industries, including electrical. But being able to completely break down and reconstruct an object allows manufacturers to recycle used and broken items rather than replacing them and creating waste. Not only is this cost-effective, but it allows a business owner to help the environment.

There are many ways to get involved in the refurbishment industry and to learn about reconditioning and remanufacturing products. Businesses in the electrical industry especially should consider joining an organization like PEARL.

When planning your reconditioning or remanufacturing effort, remember that [Electrical.com](https://www.electrical.com) is the world's number one place to find absolutely anything electrical. It keeps both outdated and new electrical parts in stock, and a friendly and knowledgeable staff helps customers get the best parts for the job. Don't waste good equipment; refurbish with the parts you need from Electrical.com.



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