



Gas Pumps and Dispensers Get a Second Life

Can the “4 Rs” save petroleum equipment owners money? George Anderson describes how rebuilding, refurbishing, recycling and remanufacturing give old equipment a new lease on life.

The booming business of remanufacturing



Rebuilt equipment ranges from older models, like the Gilbarco Highline (left), to current products like the Gilbarco Advantage (right). The white Highline test box mounted on the wall (left background) is used for testing consoles and POS systems. Courtesy of Gulf Coast Equipment Company.

Did you know that between 10,000 and 20,000 used gas pumps and dispensers are installed every year? This is news to most people even though it's done all across the country. Most of the equipment is sold and installed by distributor members of the Petroleum Equipment Institute (see Photo 1 on page 10). Also, much of the equipment comes from specialist businesses that deal in used, refurbished or remanufactured equipment.

Gas pump recycling doesn't get much visibility because there's nobody publicizing it to the press. And, of course, manufacturers of new gas pumps aren't too interested in drawing their customers' attention to this alternative.

Who buys this equipment? You might guess that it goes primarily to small operators, probably people with one or two locations and a tight budget. However, you would be wrong. Actually, rebuilt equipment is used across the spectrum of company sizes up to and including the major oil companies. The key factor is typically not a company's size, but rather the financial performance of a particular retail location.

Photo 1: The rebuilding shop at Northwest Pump & Equipment Company is another example of a neat, clean and well organized PEI distributor facility.



What it is and how it works

Rebuilding? Refurbishing? Remanufacturing? What do these words mean, anyway?

Unfortunately, as of yet, these terms have no standard definitions. For the purposes of this article, I am using the word rebuilt to refer to any gas pump or dispenser that is being re-installed, wherever it

is in the range from “previously owned” used equipment to fully factory remanufactured.

Typically, the word refurbished refers primarily to cosmetic work. Rebuilding and remanufacturing typically refer to higher levels of investment in the equipment. Both Gilbarco and DurEquip reserve the word remanufactured for equipment that is stripped and reassembled beginning with a bare frame, but this is not necessarily the case for other suppliers.

Defining these terms is difficult and can be misleading. In fact, the National Conference on Weights and Measure (NCWM) uses the phrase the “R words” in order to encompass the scope of options covered by the words. (See “The Great Debate Over Six W&M Issues” by F. Michael Belue in the May/June 1998 issue.)

Given the ambiguity of the “R words,” I think that the best way to think about refurbishing, rebuilding and remanufacturing (the “R words”) is to recognize them all as custom processes (see Photo 2). The buyer and seller must discuss and agree on the scope of work best suited to the customer’s needs. In some cases, this may tend toward cosmetic refurbishment while, in others, a fully remanufactured product may be best.



Photo 2: Rebuilding is essentially a “customs and specials” process, but large batch sizes can enhance efficiency and reduce costs. Courtesy of DurEquip, Inc.

Probably 80 percent of all rebuilt equipment is purchased outright by the end user. In almost all cases (Gilbarco’s standard remanufactured equipment is the main exception), the user will be able to specify the degree of refurbishing or remanufacturing to be done. Typical specifications include new exterior sheet metal and trim; 100 percent testing with replacement or repair of faulty components; and, for some brands, 100 percent meter replacement. Warranties are also negotiable, with parts-only warranties being most common.

In the remaining 20 percent of all situations, the customers are having their own equipment refurbished or remanufactured. Usually these are larger companies that maintain a continuous construction and upgrade program. These programs typically include a flowdown strategy in which equipment from premier high-volume locations is transferred to the customer’s next tier of locations, then possibly transferred once more before being scrapped. In the past, several of the major oil companies (e.g., Sun Oil and Marathon Oil) maintained their own shops for this purpose. Now, they use outside sources.

Customers who recycle their own equipment have a formal or informal “keeper” list for evaluating equipment as it is removed from locations. Equipment in the “keeper” category is either shipped directly to the refurbisher or is held for future shipment.

Photo 3: A damaged and deteriorated Wayne 395 dispenser is removed from a Sun location and shipped to the rebuilder.



When a location needing equipment is identified, then the specific equipment is either requisitioned from inventory or shipped to the refurbisher for completion and reshipment. As is the case for outright

purchase of equipment, the end user is able to specify exactly what is to be done and, therefore, can negotiate the most cost-effective warranty for his situation.

In a variation on the theme of refurbishing customer-owned equipment, Dresser Wayne recently conducted a successful program for Sun Oil in which several hundred older dispensers were refurbished and upgraded to the latest Vista technology (see Photos 3, 4 and 5). In addition to the recycling and equipment benefits on its return on investment (ROI), Sun was able to conduct this major upgrade program without doing any concrete work or electrical replacement at the stores since the footprint and wiring for the refurbished dispensers did not change from what was already in place.



Photo 4 : During rebuilding, the chassis is converted from a two-hose (5+1) to a single-hose per side configuration. A UL-listed kit was used in the conversion process.

Satisfying codes and regulations

There are two major regulatory activities that affect gas pumps and dispensers: weights-and-measures regulations and fire codes. Weights-and-measures regulations are typically based on the rules of the National Type Evaluation Program (NTEP), while the fire codes are typically based on the rules of the National Fire Protection Association (NFPA) or the Uniform Fire Code (UFC).


According to NTEP rules, a remanufactured (hence, the “R word” discussions on its meaning) pump or dispenser may be installed and used under its original Certificate of Conformance (CC) as long as the “metrological” (measurement) characteristics of the unit have not been altered by refurbishing or remanufacturing. Thus, all that is necessary to comply with weights-and-measures requirements is to avoid creative “conversions.” To retain traceability to the CC, though, the original manufacturer’s model identification plate must remain on the equipment.

The fire code requirement (for example, NFPA 30A 4.2.2) is that the equipment be “listed” by an approved organization. The listing mark, usually Underwriters Laboratories (UL), is either included on the Original Equipment Manufacturers’ (OEM) serial number plate or provided as a separate marking.

The UL mark certifies that a representative sample of that product has successfully completed a rigorous test program, that subsequent manufacturing processes are done according to specific safety-related construction requirements, and that such processes are monitored by periodic on-site inspections involving UL staff.

In my experience, when dispensing devices are taken out of service, rebuilt and then put back into service with the original OEM plate and listing mark in place, the equipment is routinely accepted by local authorities on the basis of the original markings. However, UL has indicated that listing marks were never meant to imply that a product was safe as long as the mark remained in place. UL’s position is that any number of field events can render a listed product out of compliance with the listing agency’s requirements, including rebuilding. Thus, UL prefers that remanufacturers of dispensing devices remove the original listing mark, and replace it, under a UL supervised program, with a “REBUILT” label.

My belief is that original manufacturers' markings will continue to be used on rebuilt equipment. This long-standing practice seems to be well accepted by regulatory officials and, to my knowledge, has not resulted in problems in the field.

Photo 5: After refurbishing, the dispenser is essentially a new Dresser Wayne Vista model, but it can be reinstalled on the island with existing wiring and piping. 

Environmental benefits

Simple material recycling (aluminum, stainless steel, etc.) reduces the quantity of waste headed for landfills and adds multiple lives for the earth's raw materials; however, it recovers only a tiny percentage of the original cost of the product that the materials came from.

Higher level recycling, such as refurbishing and remanufacturing of gas pumps, makes a much greater economic and ecological contribution because it also includes the value added from the original equipment manufacturer. This additional value added includes the cost of labor, energy and manufacturing operations that were added to the basic cost of raw materials.

The only study of which I am aware on this type of recycling was done by the Massachusetts Institute of Technology in 1981 on the remanufacturing of automobile components; however, I believe its findings are noteworthy even today. Approximately 85 percent of the energy expended in the manufacture of the original product was preserved in the remanufactured product. My experience leads me to believe that the numbers are probably similar for gasoline pumps and dispensers.

First, the business decision

For an end user of gasoline dispensers, use of rebuilt equipment is initially an economic decision. Will this approach improve the financial performance of the location where the equipment would be installed?

Return on investment (ROI) is a fairly simple calculation: return divided by investment. You can cut investment by just 33 percent to add 50 percent to ROI, or you can cut your investment in half to double your ROI.

In a nutshell, it is this arithmetic that causes companies to choose rebuilt equipment. With used equipment costing less than half of new equipment—and even fully remanufactured equipment costing less than 75 percent of new—the ROI impact can be significant.

Another way many companies, especially larger ones, maximize ROI is to have their own equipment refurbished or remanufactured. With equipment that's already fully depreciated, the total investment to put a like-new pump on an island can easily be under 25 percent when compared to new equipment.

In my opinion, the initial decision to use rebuilt pumps is the hardest tradeoff for the end user. This kind of decision always feels risky since it is a matter of changing the way a company does business.

The prospect of using rebuilt pumps is an unquantifiable risk that can't be put into a spreadsheet. The

decision maker is a hero if the new idea works out, but he or she may be in trouble with their employer if it doesn't. In contrast, sticking with expensive new pumps feels safe; however, once the business decision is made and the company begins to gain experience, the vast majority of users find that rebuilt equipment plays an important role in their construction programs.



Photo 6: Fluid testing of rebuilt dispensers not only verifies calibration, but also helps minimize leaks at installation time. Courtesy of DurEquip, Inc.

Then, the technical details

In comparison to the tough initial decision, the technical decisions are fairly easy to make. The second decision concerns the degree of cosmetic refurbishment. Generally, users want a new-looking pump. This requires replacement of all exterior sheet metal, new graphics overlays or panels and repainting of exposed chassis elements like top covers.

Internally, the major tradeoff is whether meters should be replaced 100 percent. This question depends on the pump manufacturer. One manufacturer's reliability record may be significantly better than another's.

Electronic boards should never be replaced as a routine matter, but certain types of displays have limited lifetimes. A user may choose 100 percent replacement for these display types. An experienced supplier can discuss these and other functional and cosmetic items and tradeoffs to help the user come to an informed decision.

Fluid testing is another important consideration (see Photo 6). Many companies have fluid testing capabilities in their shops. When extensive refurbishing or remanufacturing is performed, this final quality step is an important one that verifies correct operation and minimizes spill and startup problems at the installation site.

Contract negotiations

The main tradeoff in negotiating a warranty is whether the warranty will cover only parts or replacement labor. Here, the end-user's maintenance philosophy will usually drive the decision. A customer who does his own maintenance will usually find a parts-only warranty to be the most cost-effective, particularly if he is buying from an out-of-town supplier. A customer who outsources maintenance will probably choose a warranty that covers labor.

Where the equipment supplier is a local distributor/ installer, however, he may offer a very cost-effective warranty that includes labor costs. In fact, the ability to provide an inexpensive labor warranty is an advantage that should be considered in comparing the local supplier to the national one.

Customers' tax accounting treatment of rebuilt equipment varies. In some cases, a company will expense the cost while in other cases it is capitalized. It is probably worthwhile for an end user to consult his tax advisor as part of determining an "R" specification. For a customer who is having his

own equipment refurbished, there is another tradeoff with possible tax accounting consequences.

I have described the simplest option in which the customer purchases services from the remanufacturer. An alternative approach is to set the program up using a trade-in mechanism where the customer purchases refurbished equipment on an outright basis and receives “core” credit for his used equipment.

In the first case, the equipment ownership remains with the customer. In the second, the equipment (core) ownership passes to the refurbisher, and the customer may or may not receive that exact unit when he purchases the refurbished piece of equipment. From an accounting standpoint, this approach is simply asset sale and a separate asset purchase.

Finally, the customer always faces the question of supplier trust. In many cases, it is impossible to tell by visual examination whether a pump component is new, rebuilt or just a used one with a coat of paint. The customer must always consider the vendor’s reputation for quality and honesty in making his purchase decision. This is especially true where it is difficult or impossible for a customer to make a site visit as part of evaluating a potential supplier.



Photo 7: Aftermarket suppliers of rebuilt components frequently incorporate improvements on the OEM designs. Shown above is a meter before (left) and after (right) remanufacturing. Courtesy of PMP Corporation.

Trade-offs for suppliers

First, it is important that the supplier coordinate the refurbishing or remanufacturing specification with the warranty and with the price charged. For example, a supplier might not recommend replacement of an expensive pumping unit, but instead might price its probability of failure into his estimated warranty expense.

Alternatively, he may feel the risk of customer displeasure argues for more extensive component replacement than the customer has initially requested. Both the customer and the supplier have a stake in negotiating the specification and the warranty.

Once the specification is determined, the supplier must choose his component suppliers. Many parts are available only from the OEMs. Components such as rebuilt meters and electronic boards, however, are available from third party suppliers. The markets for rebuilt components are very competitive, and our experience is that many good alternatives for high quality components exist (see Photo 7).

Similarly, it is possible to purchase third-party sheet metal and trim products. Even though these are relatively low-tech products, quality levels are more uneven than they are in the electronics and meter area. It is important to make sure that any third-party products are equal to, or better than, OEM specifications for material, thickness (gauge) and tolerances. Generally a direct physical comparison between the OEM and the third-party product (e.g., a magnet will stick to an inferior

grade of stainless steel) is necessary to ensure good quality control.

For painted parts, the OEM standard is electrostatically-applied baked, powder paint. This rugged coating should be required from aftermarket suppliers as well. Some OEM painted parts (for example, panels from Dresser Wayne) utilize special corrosion-resistant steels. Again, aftermarket suppliers should be held to this standard.

Finally, the supplier must determine his appropriate level of testing. When a pump or dispenser is originally manufactured, it is either fluid- or air-pressure-tested on the production line. In my experience, leak checking is even more important for refurbished or remanufactured equipment and the supplier should be sure to test with high-pressure fluid, possibly supplementing it with high pressure air as well.

Used and rebuilt equipment is good business for suppliers. Often a local distributor or service company can offer a trade-in price to a customer who is buying new equipment, then turn around and sell the trade-in to a customer who would otherwise not have purchased anything. By doing a bit of refurbishing, then backing the equipment with a warranty and local service, the distributor is able to help himself, the trade-in customer and the rebuilt equipment purchaser.

Where an end-user wants to purchase used or rebuilt equipment that his local distributor does not have, either one of them can go to the national market to make a purchase (see Photo 8). Here, suppliers such as Gilbarco and DurEquip offer fully remanufactured equipment. And, of course, many more companies offer used equipment and will refurbish equipment to varying degrees, as well.

Again, the end user receives the ROI benefit of using rebuilt equipment and the distributor/ installer has business that he would not otherwise have had. Also, the distributor/installer's percentage margin in selling the used or rebuilt equipment will normally exceed what he can achieve in the highly competitive new equipment arena.

Finally, some distributors have been able to support the rebuilding programs of large customers by installing kits provided by the OEMs or by setting up their own custom rebuilding businesses.

Photo 8: Most major suppliers maintain an inventory of "cores" that can be rebuilt to order for a customer. This equipment can either be purchased on an outright basis or exchanged for a customer-supplied core. Courtesy of DurEquip, Inc.

What's ahead?

Dispensers and pumps are becoming increasingly rebuildable due to longer-lived chassis, more reliable electronics systems and more modular designs. The OEMs are making chassis from rust-resistant materials like galvanized steel and reinforced thermoset plastics. The electronics systems are becoming more compact and will probably soon be down to only one circuit board. Both the chassis and the electronics are being designed in a modular fashion, allowing easy upgrades for feature changes and technology improvements.

These trends will substantially increase the service lifetime of the equipment. Thus, an end-user should be able to easily and inexpensively double the service lifetime of his equipment with only a mid-life cosmetic refurbishing and, possibly, some feature upgrades.

Software is becoming a significant factor as well. Different versions for different oil company networks are common. Issues also exist with software version control and software copyrights for electronic board suppliers who are doing upgrades. It is increasingly important for rebuilders to understand the technical and legal issues in this area—and for end users to understand what they are buying.

For example, a customer probably does not want to purchase a pump with illegal software installed! As gas pump and dispenser recycling has become more visible over the past few years, it has drawn increased attention from the National Conference on Weights & Measures (NCWM). (See Mike Belue's column in this issue, "A Status Report on Weights and Measures Matters," page 32.) NCWM manages the National Type Evaluation Program.

As this article is being written, it appears that NCWM will develop some type of national requirement for labeling of "R word" equipment. This requirement will probably become effective on January 1, 2002 and is intended to protect customers by ensuring that the equipment is properly identified.

Both the Petroleum Equipment Institute and the recently-formed Gasoline Equipment Rebuilders' Association are working closely with NCWM to ensure that any labeling requirements meet the legitimate needs of regulators and users without raising the cost of rebuilt equipment or having an anticompetitive effect.

The Bottom Line

Rebuilt equipment has a place in almost everybody's program. It is a good business opportunity for distributors and service companies, either through rebuilding for themselves or through buying and reselling quality rebuilt equipment. All around, it just makes good financial sense.

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