



You and Xerox: Enabling a Circular Economy

In the 1980's, Xerox introduced the concept of a circular economy long before the term was coined.

Our vision was to transform Xerox manufacturing, operations, offices and facilities into waste-free workplaces. We had this same vision for our customers' workplaces: A world where electronics and supplies at the end of their useful life would come full circle to become the raw materials of tomorrow.

Where quality is not compromised, precious natural resources are conserved and waste becomes an obsolete term. More than three decades later, we continue to demonstrate that a circular economy delivers environmental, economic and societal benefits.

WHAT ARE THE ENVIRONMENTAL, ECONOMIC AND SOCIETAL BENEFITS OF A CIRCULAR ECONOMY?

Environmental benefits include natural resource conservation, waste reduction and lower energy consumption because fewer parts are manufactured. Lower energy use leads to fewer GHG emissions. Both the manufacturer and the customer reap economic benefits. Reused parts can be a cost effective option for the manufacturer, particularly when the natural resources needed to make the parts are scarce. Scarcity of natural resources drives price increases, making it difficult to keep production costs stable. Stable costs for the manufacturer often translate to stable prices for the consumer. Societal benefits may include job creation and improved economic conditions such as for those employed in the jobs needed to support a circular economy.

DO XEROX® DEVICES CONTAIN BOTH NEW AND REUSED PARTS?

They may, since we strive for sustainable business practices and the goal of waste-free. If a device is a new product launch with a unique platform, it is likely that the percentage of reused parts is low. Opportunity for reuse increases as devices come off lease, therefore the percentage of reused parts in a device is likely to increase as well. Reused parts must meet the same Xerox specifications for quality, reliability and performance as newly manufactured parts.

DOES XEROX EVALUATE COMPONENTS FOR REUSE?

Our unique processes and technologies ensure that all of our equipment - no matter the percentage of new and reused parts - meet the same

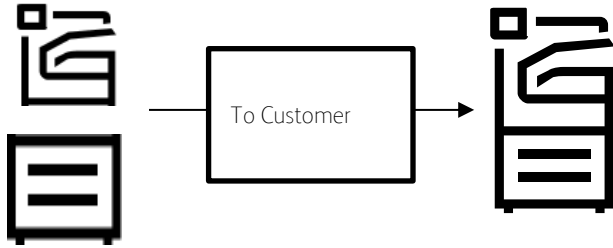
stringent quality specifications for performance, appearance and reliability. One such technology, called signature analysis, determines the noise, heat and vibration properties (the "signature") of the part to confirm that it falls in the range characteristic of a "new" part during operation. Parts with acceptable signatures move to the next step while parts without are recycled for use in another process. The Green Electronic Council (GEC) presented its Catalyst Award to Xerox for the analytical approach of our signature analysis, lending credibility to reuse, and providing a quantitative metric to support the claim that reused parts meet the same quality specifications as new.

WHAT IS NECESSARY TO SUPPORT A CIRCULAR ECONOMY?

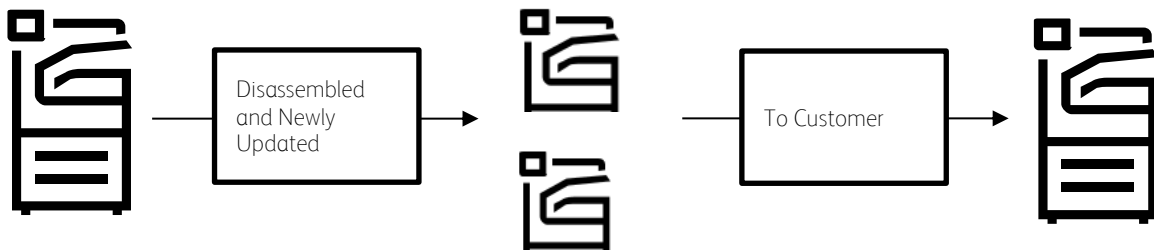
Supporting a circular economy starts with forward thinking that considers reuse upfront in the design process and throughout the entire product lifecycle. This approach is commonly called "Design for the Environment". At Xerox, we prefer to call it "Design for Sustainability" because the benefits are economic and societal, in addition to environmental. As early as the concept phase, we consider the "what, when, where, why and how" of product development and delivery, from material selection, product design, manufacturing, and transportation to end of life/reuse. The benefits, effort and costs across the product lifecycle are estimated. If favorable, the design process commences and efficient return processes convenient for the customer and cost effective for the manufacturer are developed. The customer's acceptance of products containing reused parts is a critical factor. That is why we conduct the same extensive quality testing as for newly manufactured.

WHAT DO THE “NEWLY MANUFACTURED” AND “FACTORY PRODUCED NEW MODEL” TERMS MEAN?

Currently, most Xerox® products are classified as Newly Manufactured, while a few products are classified as Factory Produced New Model. Here is what these manufacturing definitions mean:



- **Newly Manufactured Equipment:** These machines are assembled on the manufacturing line and include products that contain new parts as well as those that may contain a limited number of reused parts, such as internal frames, covers or glass used inside the imaging unit of a device. Xerox has placed significant effort and made substantial investments to meet corporate sustainability goals and the expectations of our customers and other stakeholders. Our quality manufacturing process ensures that every Xerox® machine complies with all product performance and reliability specifications, as confirmed by results of final testing. Each of these machines comes with a new serial number and you, our customer, are the first user of this new equipment.



- **Factory Produced New Equipment:** This is a Xerox classification for equipment containing parts from a device previously in a customer location that has since been restored to meet Xerox Product Specifications. The process starts with reverse logistics to return the equipment directly to a Xerox manufacturing site or its designated third party. From there, it's a rigorous, multi-step process that starts with an evaluation of the equipment to confirm it is in acceptable condition to feasibly and economically return it to "like new" condition and meet the highest quality standards set by Xerox as well as internationally accepted standards including Underwriters Laboratories (UL), EPA's ENERGY STAR® and EPEAT®. If so, the equipment is disassembled and routed to manufacturing where it may be significantly updated to the next generation, per predetermined standards. If required, new software and/or firmware will be installed. This equipment may contain new and reused components that meet Xerox new product specifications, as confirmed in results of final testing. As is the case with Newly Manufactured Equipment, each of these machines comes with a new serial number and you, our customer, are the first user of this new equipment.

WHAT DOES THE CIRCULAR PROCESS INVOLVE?

The process starts with reverse logistics that return the equipment to the manufacturer or its designated third party. From there, it's a rigorous, multi-step process beginning with an evaluation of the equipment to ensure it is in acceptable condition to return it to "like new" state and meets the highest quality standards set by Xerox as well as internationally accepted standards.

The key steps include:

- Disassembly to our predetermined standards. The processes prevent the unnecessary disposal of reusable components. Xerox certified to third party standards for responsible recycling (R2). This certification demonstrates our commitment to integrating sustainability into operations, actively working to encourage the responsible management of used electronics, and providing customers and employees with access to information about responsible recycling practices. When selecting a third party to assist in recycling, we give preference to companies that are also R2 certified.
- Cleaning components using a process that eliminates hazardous chemicals and waste, reducing process cycle time and costs.
- Matching the appearance and performance of new parts.
- Inspection to new-machine test standards.

ARE PRODUCTS WITH REUSED PARTS TESTED THE SAME WAY AS OTHER PRODUCTS?

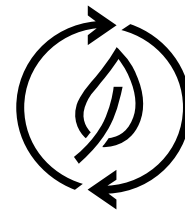
Yes. All parts are tested to confirm they meet Xerox standard quality performance specifications and are certified by appropriate product safety agencies, such as Underwriters Laboratories (UL). In some cases, we ask Buyers Lab Inc. to provide particular certifications for specific products, including tests that measure productivity and performance. These tests go beyond our standard certifications. Devices also have ecolabels such as ENERGY STAR®, ECOLOGO® and/or EPEAT®. In fact, EPEAT® includes criteria pertaining to reuse and recycle.

WHAT IS MY ROLE IN THE ELECTRONIC CIRCULAR ECONOMY?

By choosing Factory Produced New and returning spent cartridges and parts, you play a vital part in keeping the circular economy functioning and allowing the cycle to continue.

"It is likely in the next twenty-five years fundamental change in consumer expectations, natural resource constraints will remake every aspect of business. One approach for staying ahead of these changes is circular economy thinking."

Aron Cramer
President and CEO
Business for Social Responsibility



Since 1991, Xerox has diverted more than 2 billion pounds of waste from landfills. That is just one way we are demonstrating our commitment to sustainability.

For additional information about environmental sustainability at Xerox, see our [Report on Global Citizenship](#).