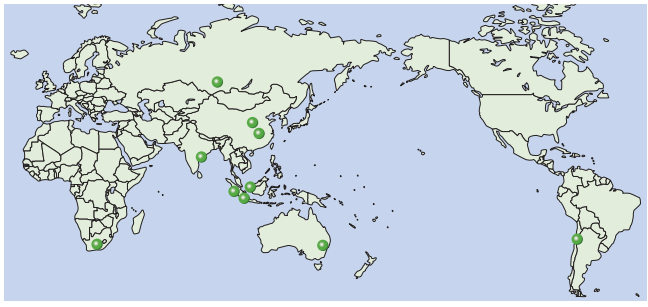
Creating a Resource Recycling Society

Komatsu is helping to create a resource recycling society by promoting the reuse and recycling of used components and by improving the recyclability rate of construction machinery through its Reman business. At the same time, the company is stepping up activities to attain zero emissions at Komatsu Group manufacturing facilities.

Promoting the Reman Business

Komatsu's "Reman" business remakes used engines, transmissions, and other key components (parts) of construction and mining equipment into "remanned" components. These components, which have the same quality as newly manufactured components, are then offered back onto the market. The Group is promoting the "Reman" business at ten Reman Centers around the world, with those in Indonesia and Chile serving as global centers.



"Reman," an abbreviation for "remanufacturing," offers the following advantages to customers:

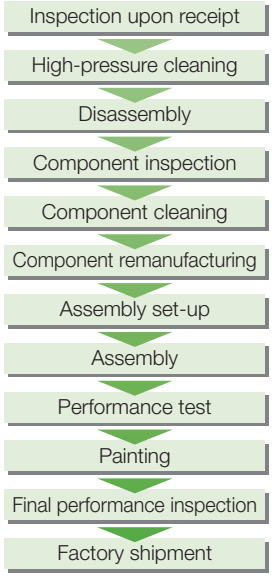
- **Quality and performance guaranteed to be the same as for new components**
- **Lower cost for "remanned" components**
- **Reduced idle time for construction equipment through sufficient inventory of "remanned" components**
- **Resource conservation and waste reduction through reuse and recycling of components**

The number of Reman Centers was expanded in 2010 by establishing a remanufacturing plant for general construction equipment engines and engine sub-components in Changzhou, China, and facilities in Russia and India for heavy-duty mining equipment component remanufacturing.

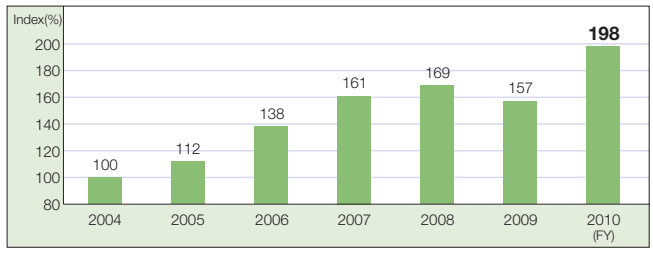
Providing Reman-related Information

The Komatsu Group has set up "Reman-Net" for networking Komatsu Reman Centers around the world. The Group is actively using this network to develop Reman operations for reuse and recycling of components at the global level. IC tags and two-dimensional codes are used to manage an item's remanufacturing history and track quality and durability information. This important information is fed back to the Group, to help develop components with appropriate life spans.

◆ **Reman Process**



◆ **Changes in Reman Ratios** (base 2004 = 100)



Upper left: KCIS Kuzbass Support Center (Russia) Upper right: Komatsu India Reman (India) Lower left: Komatsu Reman Indonesia (Indonesia) Lower right: Komatsu Changzhou Rebuild Center (China)

Acquiring ISO14001 Certification for Reman Centers

To further environmental conservation efforts, the ten Komatsu Reman Centers around the world have been pursuing ISO14001 certification. Three of the centers have already been certified and the remaining centers are working on obtaining certification. Certified Reman Centers are advancing environmental conservation through daily operations and through inspections for maintaining and renewing their certification.

Future Steps

To further increase the reuse rate of used components (parts), the Komatsu Group is reducing the number of disposed parts by:

- **developing parts with suitable sizes and designs exclusively for future remanufacturing**
- **developing recycling-related technologies (assessment, measurement, high-pressure cleaning, heat treatment, etc.)**

to reduce waste components, and thereby further step up reuse and recycling activities.

Improving Recyclability Rate

Komatsu is moving forward with its changeover from conventional rubber hoses to chlorine-free hydraulic hoses for its construction equipment. Conventional rubber hoses represented a bottleneck in Komatsu's efforts to raise its recyclability rate for construction equipment. This changeover opens the way to raising the recyclability rate to over 99% for hybrid vehicles and for newly developed vehicles that meet the Tier4-interim regulations. This exceeds the target value set by the Japan Construction Equipment Manufacturers Association (97%) and comes close to Komatsu's own voluntary target of 99.5%.