



**Asia-Pacific
Economic Cooperation**

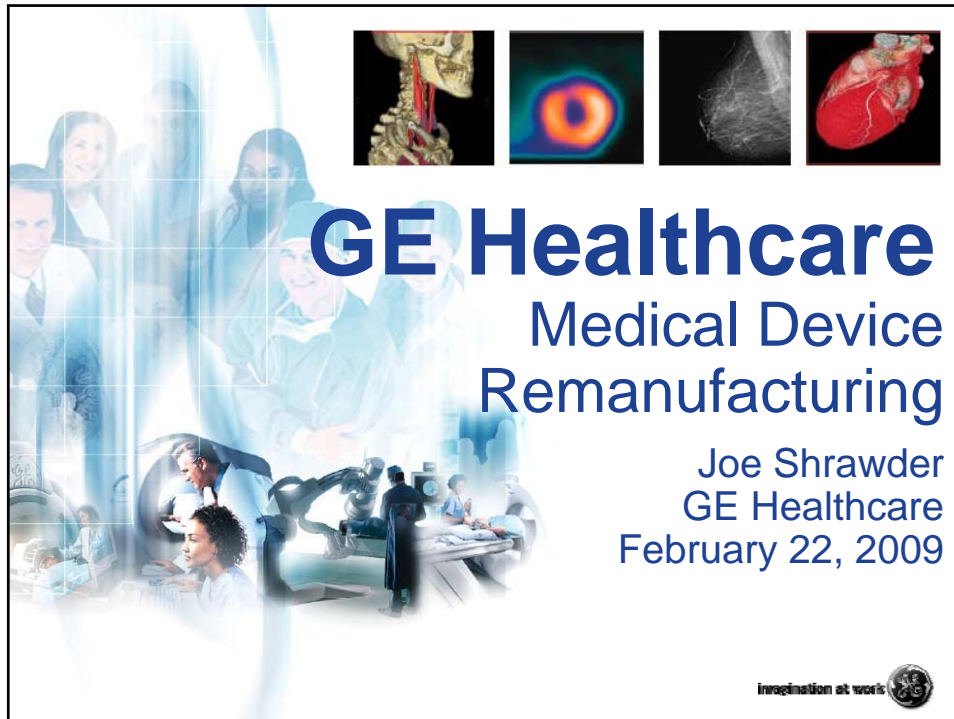
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Medical Device Remanufacturing

Submitted by: GE Healthcare




**Remanufacturing Workshop
Singapore
21 February 2009**



GE Healthcare

Medical Device Remanufacturing

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GE Healthcare
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imagination at work 

Medical device remanufacturing is a relevant opportunity for customers and governments



Recycling Economy

Chinese Vice Premier Zeng Peivan pledged that the country will strive to build an environment-friendly society... and strongly promote a recycling economy.

"China's economic and social development is facing increasingly heavy pressure from environment and nature resources, marked by pollution and environmental degradation."

Quote from Embassy of the People's Republic of China web site
<http://www.china-embassy.org/eng/xw/t168583.htm>



Regulation

Directive on Waste Electrical and Electronic Equipment (WEEE)

The Waste Electrical and Electronic Equipment Directive (WEEE Directive) aims to minimize the impact of electrical and electronic goods on the environment. It seeks to achieve this by making producers responsible for financing the collection, treatment, and recovery of waste electrical equipment, and by obliging distributors to allow consumers to return their waste equipment free of charge.

Medical Device Remanufacturing

Good for the environment ... Good for people

Enabling:

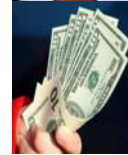
Re-use of key metals & materials



Increased clinical capability



Lower cost of acquisition



Supercon MR Makeup

Each 1.5T MR magnet contains **15 miles** of superconducting wire



Magnet Material	lbs
Superconducting Wire	1830
Copper	1600
Niobium Titanium	230
Stainless Steel	1490
Low Carbon Steel	1150
Aluminum	6600
Fiberglass Reinforced Epoxy	2100
Total	13170

MR Electronics

Component	Weight (lbs)
Opp Console	660
IPS Cabinet	946
Scan Room Unit	484
Cables	340

Permanent MR Magnet & Electronics



Profile magnets are permanent, made up of Iron and Neodymium Iron Boron (NdFeB).

Magnet Weight = 22,000 lbs

- 3,000 lbs NdFeB
- 19,000 Iron

Electronics

Component	Weight (lbs)
Opp Console	660
IPS Cabinet	946
Scan Room Unit	484
Cables	340

The Eco-Impact of Remanufactured MR is profound.
Reusing MR Magnets prevents landfill and recycling expense.



2006 GE magnets saved

- 9 tons of Niobium Titanium (Nb3Ti)
- 61 tons of Copper
- 57 tons of Stainless Steel
- 60 tons of Low Carbon Steel
- 254 tons of Aluminum
- 111 tons of Fiberglass Reinforced Epoxy
- 228 tons of Iron
- 41 tons of Neodymium Iron Boron (NdFeB)

>1.6 Million lbs

Eco-Impact MR - Remanufacturing and Reusing Electronics prevents landfill and recycling burdens

2006 GE MR Electronics saved



•Printed Circuit Boards

- 412,000 lbs of PCBs and cables
- 60 lbs of Gold = \$628k
- 200 lbs of Silver = \$42k



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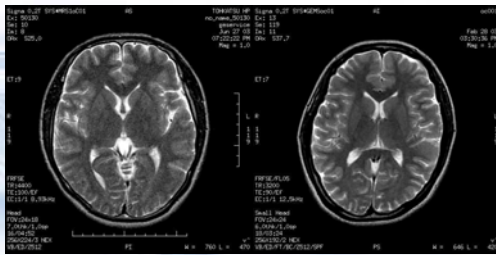


Lower cost of acquisition



MR remanufacturing provides clinical gains for healthcare providers

- Increased Pediatric capabilities
- Higher quality brain scans



Medical Device Remanufacturing

Good for the environment ... Good for people

Enabling:

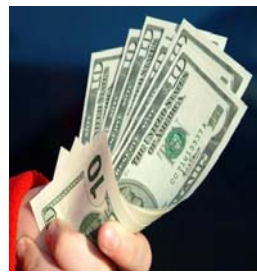
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Lost Opportunity

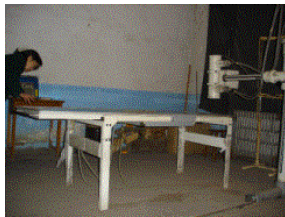
Improving global equity in health care access



imagination at work

Healthcare in Developing Regions Today X-ray Example

X-Ray Table



Tube Stand



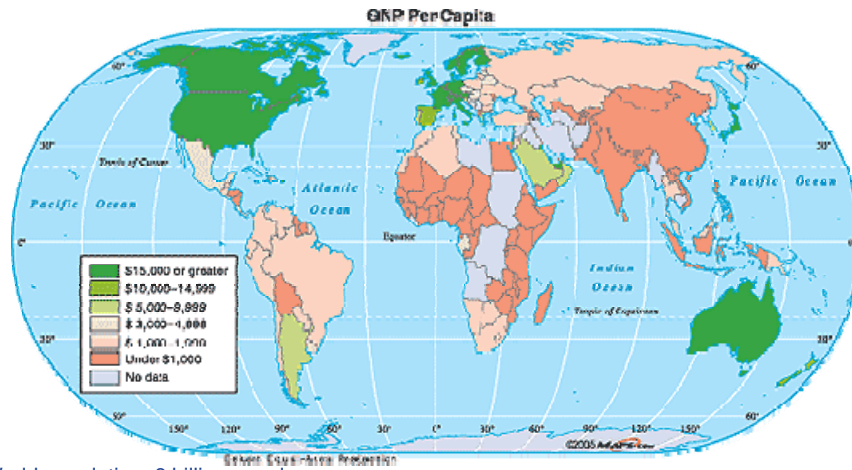
Exposed cable



Film



Underserved Populations

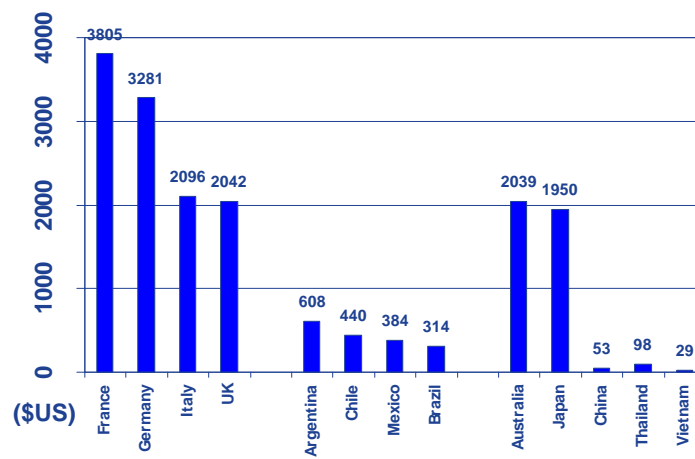


- World population: 6 billion people
- >1.2 billion live on less than \$1 a day. Two billion more people are only marginally better off.
- Development and globalization is driving higher expectations for healthcare access and quality

Significant inequity in health care exists

...

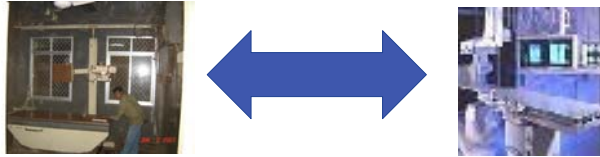
Per Capita Health Care Expenditure, 2006



Source: Espicom

Developing Countries' Problem

As health care capabilities advance, so do costs of technology.



The equity gap in access often gets wider.

Technology evolution dilemma

Advanced medical devices are designed and built to last 20+ years, with manufacturer support for parts, service, and updates.

But technology evolves much faster ... leading-edge users want to upgrade to newer products in 2-3 years.

Solution: Original user trades used system for new technology; manufacturer remanufactures and provides like-new quality at a fraction of the cost.

Expanding Healthcare Affordability

Remanufacturing supports technology upgrade and value needs

Customer upgrades
to newer system ...
Trade-in used system



Original
System



Remanufacture & sale to
Value Customer

- ✓ Trade-in Payment Allows Existing Customers to Upgrade
- ✓ Returned system remanufactured and re-certified to current new specification
- ✓ Backed by full service support and new warranty
- ✓ 20-50% Less than new pricing
- ✓ Ecologically Friendly
 - Reduce, Reuse, Recycle

Quality is Key ... Safety is #1 priority



- Remanufactured medical devices fall under FDA supervision ... as-is used systems do not
- Manufacturers guarantee same quality, warranty, performance as new

Why Remanufacture Medical

Devices?

Save Money

→ Advanced technology at reduced cost

Save Resources

→ Reduce energy and natural resource usage

→ Minimize disposal and pollution burden

SAVE LIVES

→ Access to life saving technology

→ “Good-as-new” quality

Need non-discriminatory trade treatment ... “same as new”
... with identical quality and safety requirements

Market acceptance and adoption

OEM-remanufactured diagnostic imaging device penetration

USA >10%

EU 5-8%

Latin America 10-12%



Regulation in major remanufactured medical device markets

USA: *Devices and remanufacturers must be FDA-registered*

EU: *Devices must be CE-marked and meet same requirements as new devices*

Some countries that prohibit remanufactured medical devices

China: *Imports prohibited from 1998, unclear Domestic trade regulation*

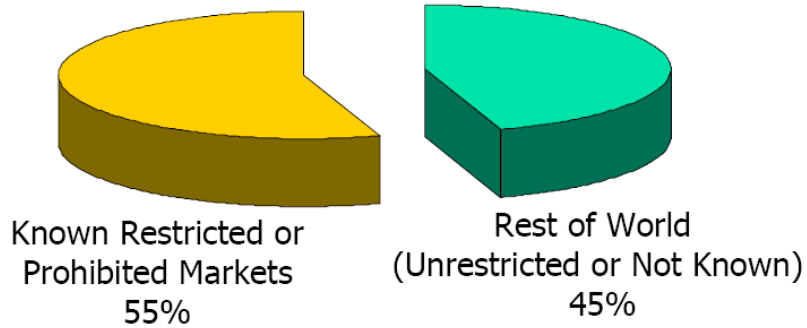
Thailand: *Imports prohibited Domestic resales permitted*

Viet Nam: *Imports restricted*

Egypt: *Imports prohibited*

Impact of restrictions on access to lower-cost remanufactured devices

Percent of World Population



Consequences of remanufacturing prohibitions

- Ethical suppliers are blocked
- Non-compliant 3rd parties circumvent rules
- Patients face daunting quality and safety risk
- Access denied to hundreds of millions

Solution

Devices remanufactured by the original manufacturer should be treated “same as new”, with identical requirements, in all trade policy

Save the Environment ... Save Lives

THANK YOU