

9th January 2017

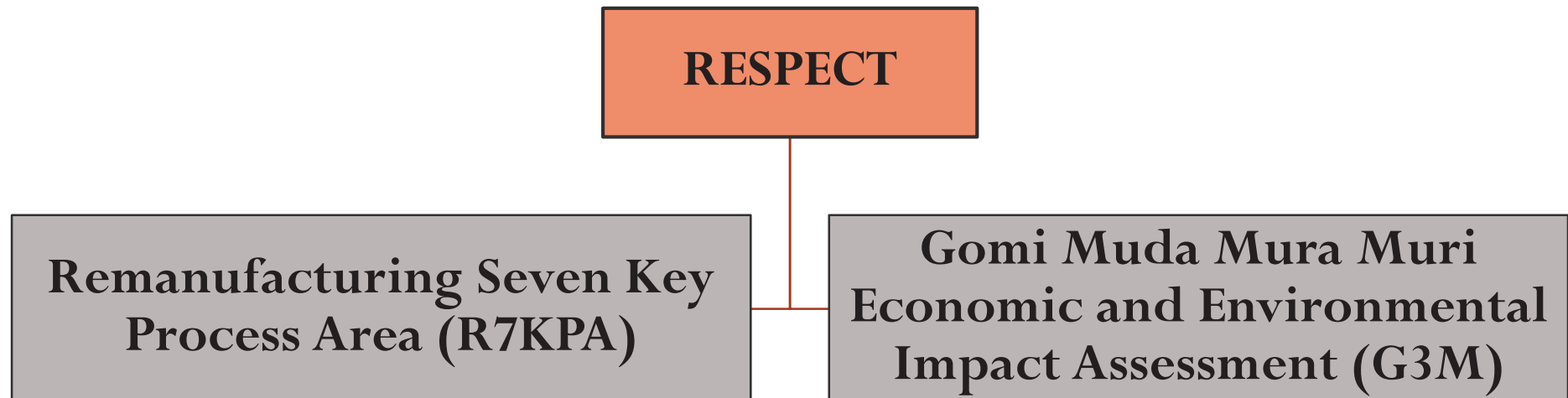
SUSTAINABLE REMANUFACTURING PROJECT



INTRODUCTION

The sustainable remanufacturing project was initiated by the Ministry of International Trade and Industry (MITI) with the goal to strategically develop Malaysian remanufacturers.

In achieving this goal, the Remanufacturing, Sustainable Production, and Sustainable Enterprise Centre of Technology (RESPECT) has performed a two-part activity:



WHAT IS REMANUFACTURING?

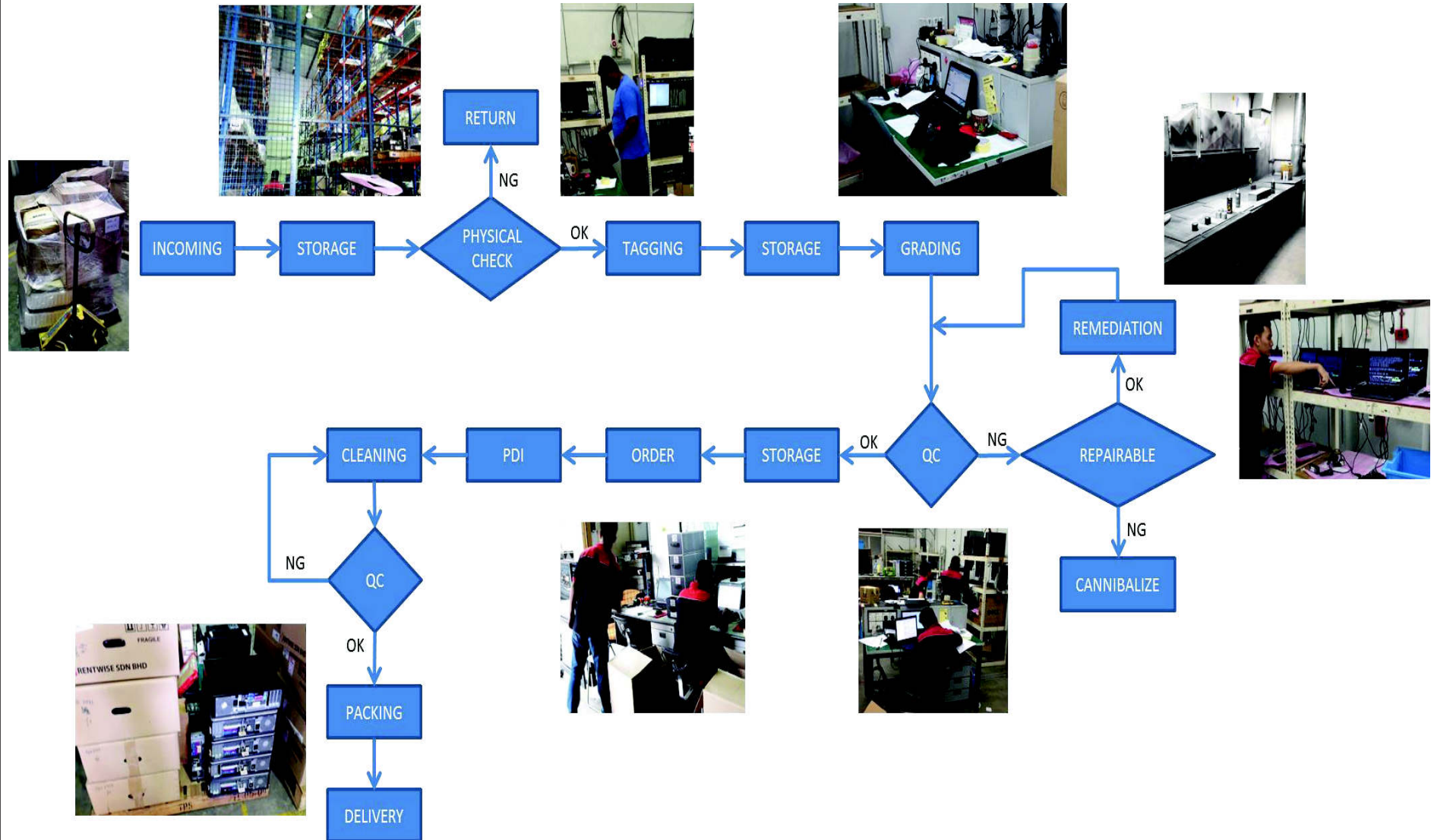
Remanufacturing as the process of **TRANSFORMING** a used product to **AS GOOD AS NEW** condition by rebuilding its component parts back to its functionality performance specifications and by **REPLACING UNBUILDABLE PARTS** with brand new components and carries an acceptable warranty period as to a brand new (similar) product manufactured by the Original Equipment Manufacturer (OEM).

Three Key Concepts of Remanufacturing

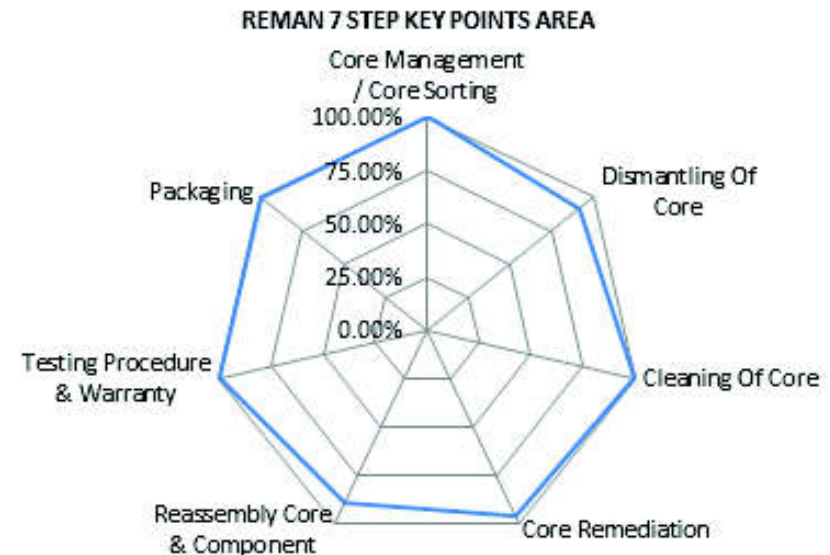
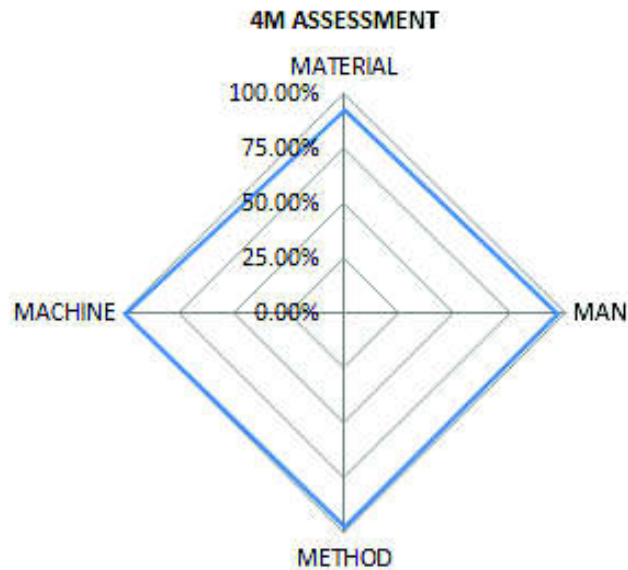
- i. Remanufacturing is the **epitome** of manufacturing
- ii. Remanufacturing requires the **latest evolution of management system**
- iii. A product can be **perpetually** remanufactured as remanufacturing may include addition of latest technologies into the product



PRODUCTION PROCESS FLOW



Remanufacturing Seven Key Process Audit (R7KPA)



4M ASSESSMENT		SCORE
[1]	MACHINE	100.0%
[2]	MATERIAL	92.9%
[3]	MAN	97.1%
[4]	METHOD	97.4%

OVERALL MARK = 97.0%

REMAN 7 STEP KEY POINTS AREA		SCORE
[1]	Core Management / Core Sorting	100.0%
[2]	Dismantling Of Core	91.7%
[3]	Cleaning Of Core	100.0%
[4]	Core Remediation	96.9%
[5]	Reassembly Core & Component	90.0%
[6]	Testing Procedure & Warranty	100.0%
[7]	Packaging	100.0%

OVERALL MARK = 96.9

Deliberation of finding of R7KPA: 4M Assessment

Machine – 100.0%

- i. Operating System Image and programs are installed and controlled via online database to ensure proper licensing is managed and practiced. This is also to track and match ID tag with license number together with serial numbers.
- ii. Using proper system that enabled to run long process (e.g. burn test) in batch processing and at one control center.
- iii. Proper segregation (plastic curtain, caging, etc.) and allocation of part storage and high value part storage.
- iv. Proper spraying booth (for cosmetic remedy) with effective effusion control.

Deliberation of finding of R7KPA: 4M Assessment

Material – 92.9%

- i. Cores availability only local only due to restriction of Basil Treaty to import cores aging more than 3 years.
- ii. Parts are tagged, recorded and tracked with unique tag number for easy tracking and control.
- iii. Parts and WIPs (Work-In-Progress Part) are stored in designated storage area and are monitored via ERP system.
- iv. Waste management is done properly by having ducting for spraying process (approved by DOE) and scrap parts are allocated and collected by licensed e-scrap collector

Deliberation of finding of R7KPA: 4M Assessment

Man – 97.1%

- i. All employees are trained and skilled to perform own task.
- ii. All employees acknowledged their respective tasks and responsibility.

Method – 97.4%

- i. Proper SOP are established and controlled for every process.
- ii. Remanufacturing process is being outlined accordingly and in proper process flow.
- iii. Actively participate to attain Green-IT Company.

Business Maturity Level Deliberation

Remanufacturing Activity

- i. Remanufacturing is treated as a serious business
 - Products of remanufacturing were supplied for both business of rental and retails.
 - Customers ranging from home-users, big organizations and retailers.
 - The business market was done both via online and their marketing office.

Human Resources Assigned to Remanufacturing

- i. Specific manpower for remanufacturing, training program established
 - The manpower was properly trained and assigned specific task.

Business Maturity Level Deliberation

Production Type for Remanufacturing

- i. Mass Produced
 - Production is scheduled daily and derived from both demand from customer (picking, ordering and packing), and also cores supplied and after-grading availability (refurbish and remanufacturing).

Management System for Remanufacturing

- i. Total Quality Management-like activities
 - Attained and practice Green-IT policy. To move into Lean Manufacturing.

Business Maturity Level Deliberation

Core Availability

- i. Core is acquired on a sustained, high volume basis.
 - Core is acquired from local customers, mainly from big organizations, periodically.
 - The limitation is due to Basil Treaty in which prohibited them from importing and exporting cores and products that aging more than 3 years.

Productivity Indicator for Remanufacturing

- i. Established, KPI set, and Improvement Plans
 - Everyday production output was monitored for both productivity and quality

Business Maturity Level Deliberation

Strategy Prepared for Remanufacturing

i. Medium Term

- To adopt ERP (Enterprise Resource Planning) for planning and production control.

Business Maturity Level

