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Greening SMEs towards Resource Efficiency :Experience of India

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Make in India : Role of MSMEs

- Vibrant and dynamic sector
- More than 46 million units
- More than 6000 products (traditional to hi-tech)
- More than 100 million jobs
- 38 % GDP contribution
- 40 % contribution to exports from the country
- 45 % contribution to manufacturing output



Zero Effect Zero Defect: Role of MSMEs

"Let's think about making our product which has 'zero defect'..... and 'zero effect' so that the manufacturing does not have an adverse effect on our environment"

- Hon'ble Prime Minister Shri Narendra Modi



Zero Effect Zero Defect: Role of MSMEs

The MSMEs will be assessed & rated on defined enabler & outcome parameters on operational level indicators. The organisational level indicators are useful pointers towards implementing a ZED Maturity Assessment Model at the operational level. These indicators may include:

- Manufacturing capabilities
- Design capabilities
- Quality/Environment/Safety assurance systems
- People development and engagement systems
- Standardization and measurement systems for quality and environment
- Learning and improvement systems
- Legal compliances (hygiene factor)



Zero Effect Zero Defect for MSMEs

The Zero Effect Zero Defect model is applicable for all sectors of manufacturing and services industries.

- It will focus on MSMEs and small businesses.
- It will address the quality and ecological needs of domestic and overseas customers, society, employees, partners, regulators, and investors.



Zero Effect Zero Defect for MSMEs

Zero Effect Zero Defect is an Integrated and holistic approach that will account for

- 3Rs,
- Waste management
- Quality,
- Productivity,
- Energy efficiency,
- Pollution mitigation,
- Financial status,
- Human resource
- Technological aspects



Zero Effect Zero Defect for MSMEs

It includes:

- Quality planning,
- Product and process designing,
- Optimum processes,
- Efficient resource management,
- Effective outsources activities

Equal emphasis on the elimination of impact on the environment through various stages of process and maintenance activities, post production (disposal after use) and outcome of environment performance.

Overall, the net result is sustainable development.





Zero Effect Zero Defect Process Flow





Smart Cities Mission

ILLUSTRATIVE LIST

Smart Solutions

E-Governance and Citizen Services

- 1 Public Information, Grievance Redressal
- 2 Electronic Service Delivery
- 3 Citizen Engagement
- 4 Citizens - City's Eyes and Ears
- 5 Video Crime Monitoring



Waste Management

- 6 Waste to Energy & fuel
- 7 Waste to Compost
- 8 Waste Water to be Treated
- 9 Recycling and Reduction of C&D Waste



Water Management

- 10 Smart Meters & Management
- 11 Leakage Identification, Preventive Maint.
- 12 Water Quality Monitoring



Energy Management

- 13 Smart Meters & Management
- 14 Renewable Sources of Energy
- 15 Energy Efficient & Green Buildings



Urban Mobility

- 16 Smart Parking
- 17 Intelligent Traffic Management
- 18 Integrated Multi-Modal Transport



Others

- 19 Tele-Medicine & Tele Education
- 20 Incubation/Trade Facilitation Centers
- 21 Skill Development Centers





Clean Technology Initiative for MSMEs

- Demonstration Projects for Development of Cleaner Technologies
- Creation of Database for Clean Technologies
- Development of Clean Technology Park
- Capacity Building Programs for Adoption of Clean Technologies



National Manufacturing Competitiveness Program for MSMEs

NMCP focuses on

- Technology and quality upgrades to sensitize MSMEs
- Use of renewable energy,
- Energy-efficient technologies and reduction in GHG emissions.
- The major activities planned under this program include initiatives such as “Capacity Building of MSME Clusters for Energy Efficiency/Clean Development Interventions”, “Implementation of Energy-efficient Technologies in MSME Sector





National Manufacturing Competitiveness Program for MSMEs

The National Manufacturing Policy of India stresses on three strategic paths

- Mainstreaming and promoting green business,
- Protecting natural resources and
- Addressing clean innovative technology



National Manufacturing Competitiveness Program for MSMEs

- Government of India aims to increase share of Manufacturing in GDP from 14 % to 25 %.
- National Manufacturing Policy established.
- National Manufacturing Competitiveness Programme (NMCP) developed for SMEs.
- NMCP focuses on improving Productivity, Quality, ICT applications, IPR, Design capability etc of SMEs.
- Lean Manufacturing Competitiveness Programme is one of the schemes of NMCP.
- LMCS was launched in July 2009 on pilot basis in 100 clusters.
- LMCS has been up-scaled for 500 more clusters
- NPC is entrusted with the task of Monitoring and Implementation Agency.





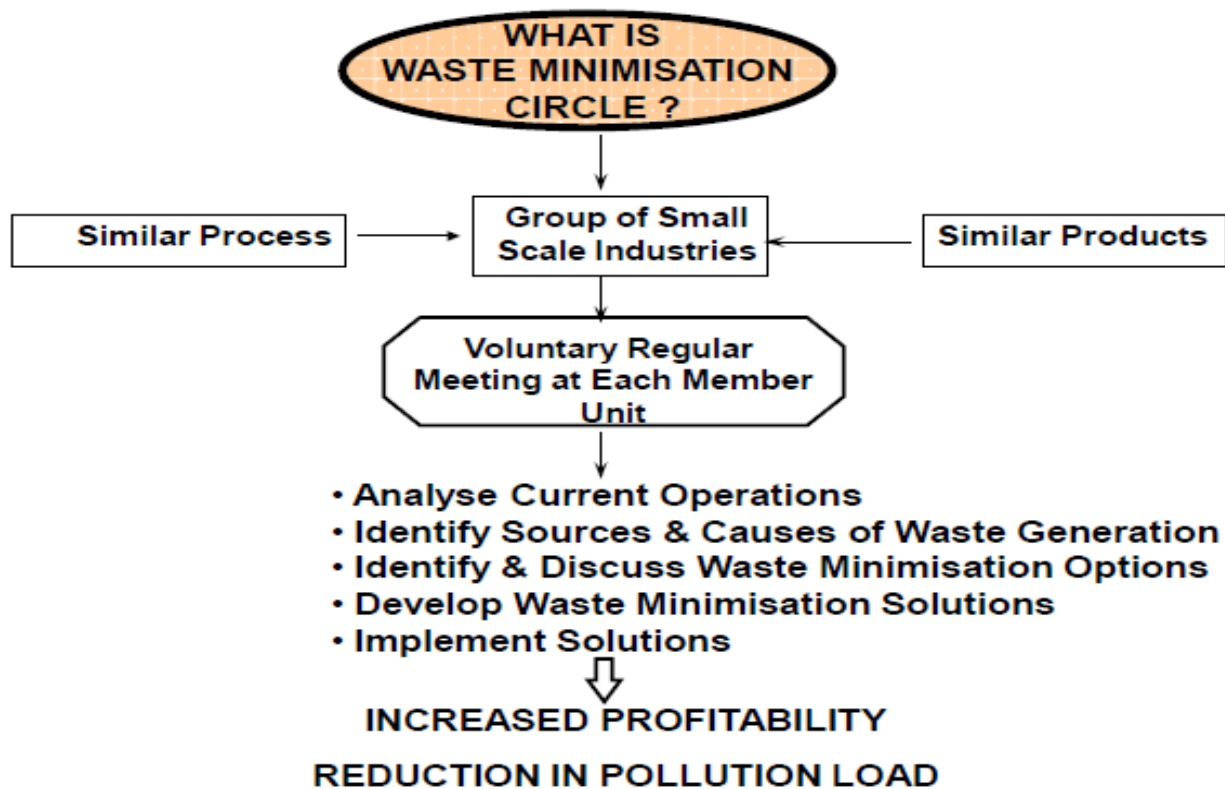
Lean Manufacturing Competitiveness Programme

No. of SMEs participating in LMCS	900
Annual Savings from LM	₹ 60 Cr
Salvage Value of Scrap from 5S implementation	₹ 3 Cr
Increase in Production capacity without CAPEX	10 %
Space reclaimed for productive work	10%
Increase in Inventory turnover	25 %
Reduction in Manufacturing Lead Time	5-30 %
Improvement in OEE (Model Machines)	15%
No. of Kaizens generated	>7500





Waste Minimization Circles





Waste Minimization Circles

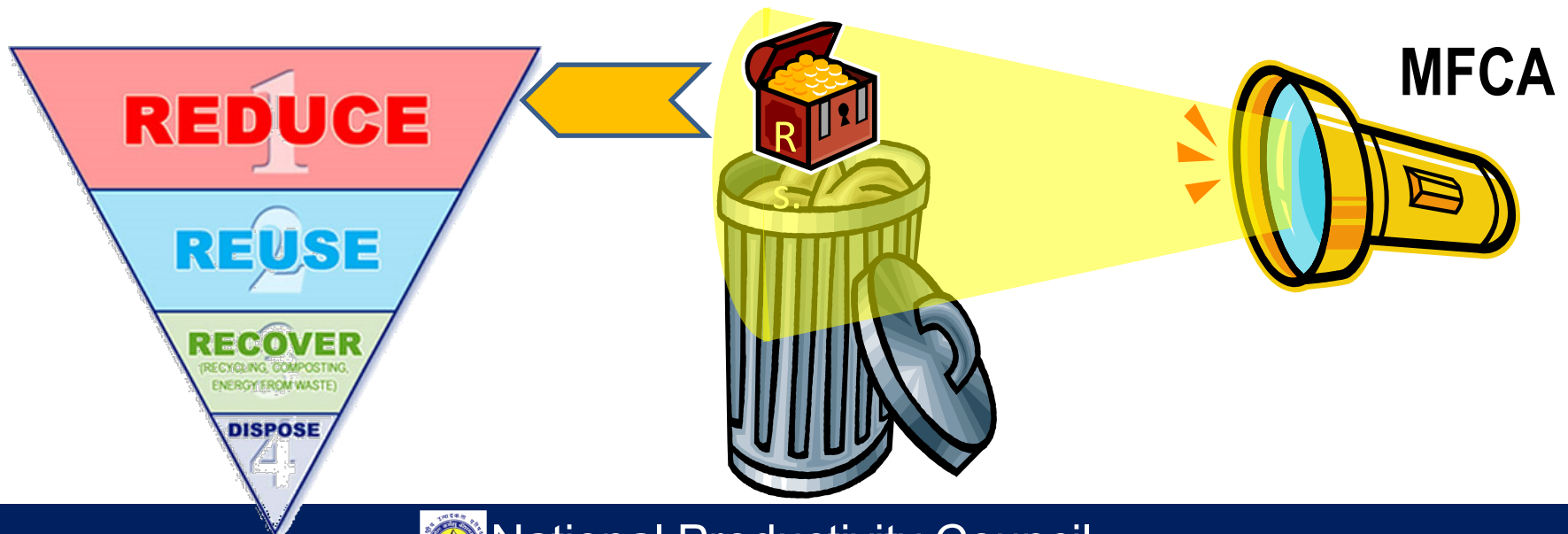
No. of circles established	158
No. of WM Options generated	1000 +
No. of WM options implemented	400 +
Investments by SME units	> Rs 8.5 Crores
Savings	> Rs. 5.0 Crores p.a.
<u>Environmental Benefits achieved</u>	
○ Reduction in water consumption	5-35%
○ Reduction in electricity consumption	5-20%
○ Reduction in fossil fuel consumption	3-15%
○ Reduction in raw material use	2-20%
○ Reduction in waste water generation	5-30%
○ Reduction in Air Emissions (GHG)	5-10%
○ Reduction in solid waste generation	5-20%
○ Yield improvement	1-5%



Material Flow Cost Accounting for MSMEs

FOCUS OF MFCA

- MFCA focuses on material loss (REDUCE)
- Profit is hidden in material loss
- MFCA finds out the hidden profit





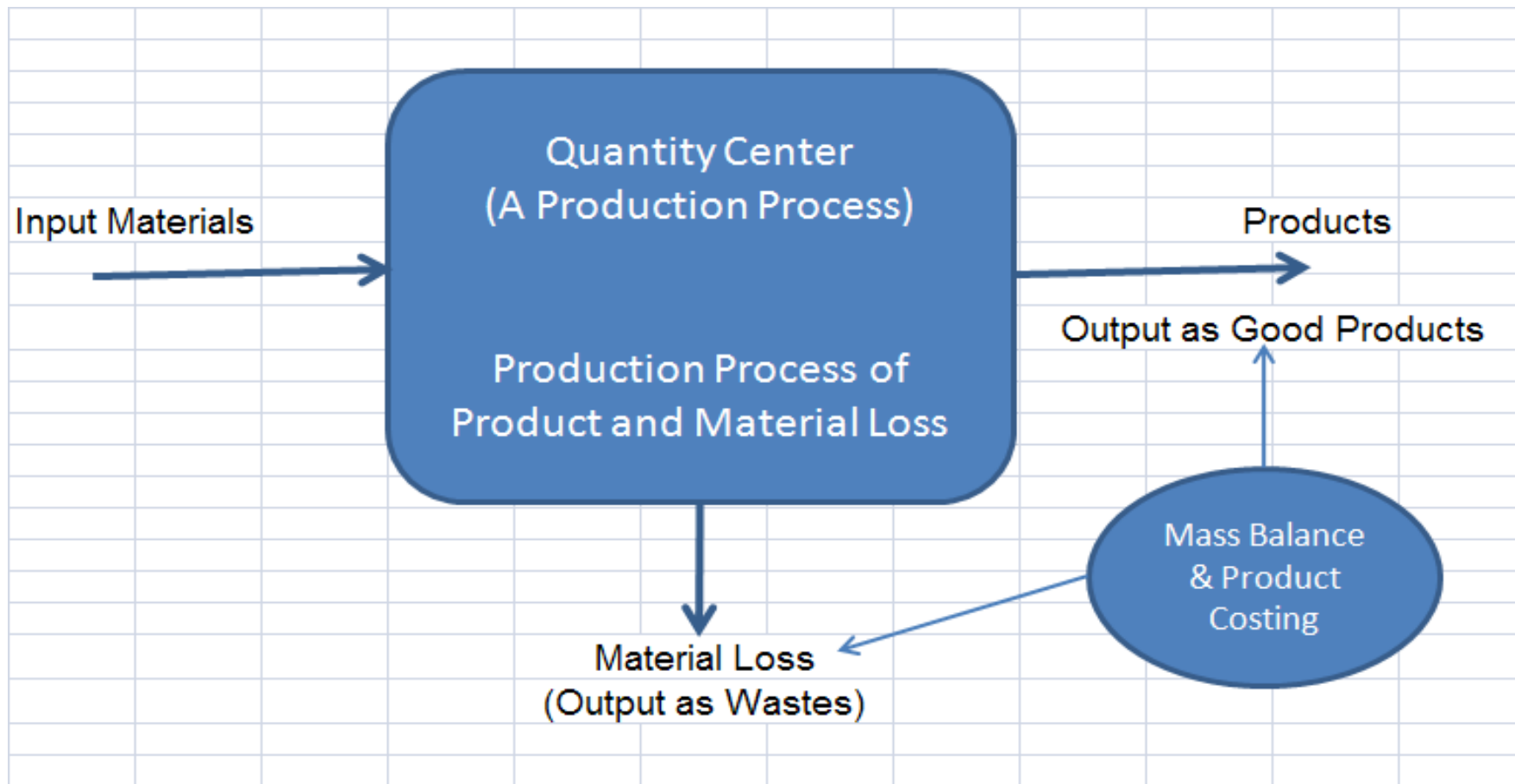
Material Flow Cost Accounting for MSMEs

Cost Elements

- 1. Material:** Input Value of Material
- 2. Energy:** Input Value of Energy
- 3. System:** Labor, Depreciation etc.,
- 4. Disposal:** Waste Management Cost



Material Flow Cost Accounting for MSMEs





Material Flow Cost Accounting for MSMEs

Name of Model Company in Gujarat where MFCA was implemented	Investment (Rs.)	Annual Monetary Savings (Rs.)	Simple Payback Period
M/s Somany Ceramics Ltd.	2,00,000/-	35,00,000/-	Immediate
M/s Sainest Tubes Pvt. Ltd.	4,95,000/-	2,09,43,924/-	09 days
M/s Bhagwati Spherocast Pvt. Ltd.	1,00,00,000/-	1,74,17,496/-	About 1Year
M/s Baroda Molds and Dies	2,00,00,000/-	2,47,00,000/-	About 1Year





Let noble thoughts come to us
from all sides.

- Rig Veda