

Lean Food Production

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A Healthy Diet For Manufacturers

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Menu

Starters	<i>History of Lean Production</i>
Entre	<i>Explanation of Lean</i>
Mains	<i>Case studies</i>
Dessert	<i>Where to from here?</i>





A short history of lean

1913	Ford	Assembly Line
1950	Deming	System of Profound Knowledge Just in Time (JIT), Jidoka (Autonomation)
1960	Total Quality Control (TQC)	
1970	Total Productive Maintenance (TPM)	
1978	Toyota Production System (TPS)	
1980	Total Quality Management (TQM)	
1986	Six Sigma (Motorola)	
1988	Lean Production	



Elements of lean

- Systematic elimination of waste (“muda”)
- Value orientation
- Continuous flow
- Takt time
- Lot size of one
- Pull orientation
- Continuous improvement
- Respect for people



Lean tools I

7 Wastes

- Overproduction
- Motion
- Defects
- Waiting
- Inventory
- Transportation
- Extra, inappropriate processing

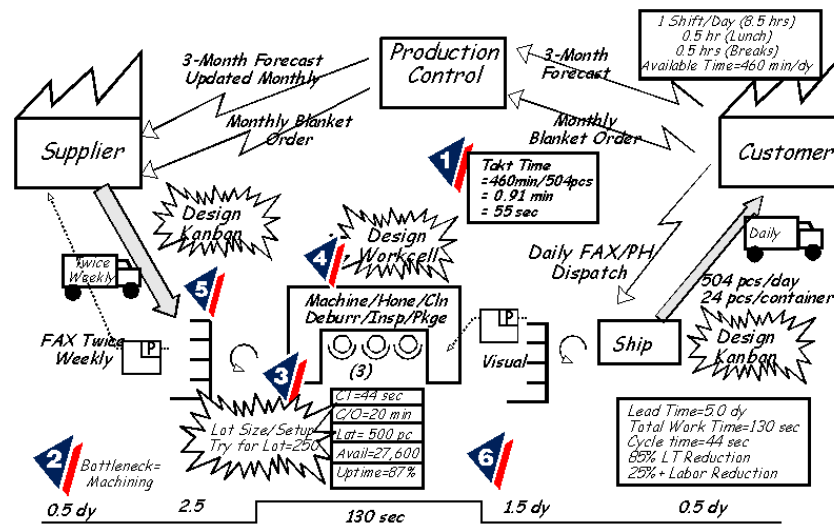
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- Sort (or discard)
- Streamline, straighten
- Sweep, scrub
- Standardise
- Sustain



Lean tools II

- Kanban
- Single minute exchange of die (SMED)
- Visual Management
- Value stream mapping
- Systematic problem solving (Lean six sigma)





Assembly vs. process industries

- Discrete vs. continuous processes
 - Process industry ends up with discrete operations (Roll of paper, carton of milk, block of cheese ...)
- Assembles 100+ parts vs. starts with 1 raw material
 - Process industry ends up with many products (e.g. dairy)
- Variety vs. volume
 - Hardly any car is the same amongst 6.5m Toyotas vs. Exxon's different products from 7000 kbd of oil
- Labour intensive vs. capital intensive
 - Labour productivity vs. asset productivity
- Labour constraint vs. capital constraint
 - Extra people make a difference vs. process improvements



Case studies I

Wise Foods, USA (Salty snacks)

- Trained senior management in Lean
- Introduced SMED, waste elimination, kaizen activities, increased efficiencies, improved inventory control
- Within 3 months US\$500,000 in savings documented
- Initial-year cost savings target US\$1.5m
- Starting with 75 people, becoming integrated enterprise-wide initiative



Business Wire, February 2003

Case studies II



Value Stream Mapping of Contract Manufacturer

Lethinen, Torkko, Journal of Food Distribution Research, 2005

Manufacturing ketchups, mustards, sauces and jams

60 employees serving 50 customers with 280 products

Findings:

Raw material stocks turned over 3 times p.a.

End product inventory turned over 28 times p.a.

Achievements:

More frequent and leveled production runs

Simple and visual production schedule

Value enhanced services through shorter lead-times

Case studies III



Survey of improvement programs in the Canadian food sector

Scott, Wilcock, Kanetkar, Food Control 20, 2009

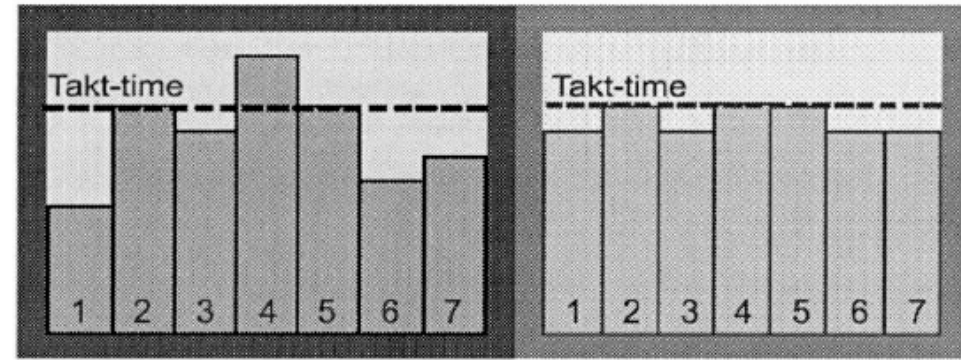
Most important factors found (in descending order):

- Reduction of number of deviations
- Improvement of quality performance
- Reduction of risk of product recalls
- Assistance in increasing manufacturing productivity/efficiency
- Reduction of rejected material
- Improvement of employee commitment and attitude towards change
- Assistance in becoming more customer orientated
- Reduction of risk of audit observations

Lean more dominant in publicly traded companies vs. private
non-processed products vs. processed



Case studies IV



Application of lean paradigm in red meat processing

David Simons, Keivan Zokaei, Cardiff Business School, UK, British Food Journal 2005

- Effects of Takt Time and Standardised Work
- Focus on takt time improves operator activity from 60% to 80%
- Standardisation improves quality and traceability
- Higher team spirit
- Reduction of inspection
- Improved workstation lay-out



Case studies V

Lean Supply Chain Management

Ballas, J&M Consulting, Mannheim, Germany, 2008

Application at Delicatessen Manufacturer

Leveling of planning and production

Sequencing of manufacturing

Standardisation

Results:

Change-over times from 10 to 7 minutes

Reduction of finished product wastes by 20 %

Reduction of inventory by 15%



Benefits of lean (NZ)



- Tangible

- Productivity improved by 50%
- Inventory holdings reduced from 5-6 weeks to 2 weeks or less
- Work in progress (WIP) reduced by 70%
- Lead times for orders reduced from 12-17 weeks to 4 weeks
- Projects that used to take 4 months now take 5 weeks
- Sales up 10%
- Grown 30% over the last four years

- Intangible

- Allows the senior management team to 'know' their business better (Go to "Gemba")
- Mostly the staff buy in to the changes and feel like they are part of the change process
- Relaxed staff atmosphere, less stress in the work place for staff and management
- The physical landscape of the work place becomes much more organised, clean and aesthetically pleasing
- Blame cultures eliminated

NZTE, Supporting Lean Manufacturing Initiatives in New Zealand, 2008

Implementation - Get Started

- Find a change agent
- Get Lean knowledge
- Find a lever
- Map your value streams
- Begin asap with kaikaku
- Expand your scope

First six months

© Womack & Jones

Implementation - Create a new organization

- Reorganize by product family
- Create Lean function
- Devise a policy for excess people
- Devise a growth strategy
- Remove anchor-draggers
- Instill a “perfection” mind-set

Six months through year two

Implementation - Install business systems

- Introduce Lean accounting
- Relate pay to firm performance
- Implement transparency
- Initiate policy deployment
- Introduce Lean learning
- Find right-sized tools

Year three and four

Implementation - Complete the transformation

- Apply these steps to your suppliers/customers
- Develop global strategy
- Transition from top-down to bottom-up improvement

By end of year five

Supports

- NZTE Lean Business programme
 - Seminar for senior company managers
 - Up to \$10,000 to engage a consultant to provide training and to develop implementation plan (to be matched by 50%)
- Tertiary Provider Programmes
 - Lean philosophies are incorporated into teaching programmes
 - Research students (Masters, PhDs)
- Private Providers
 - Training programmes on-site, off-site
 - Individual consultancy
- Lean Consultants and Trainers

Outlook

- Lean implementation needs stamina
 - At least 1 year with external assistance
 - Overall > 3 years horizon
- Lean supply chains will spread – adds to continuity
 - Networks/Fora
- Lean is a major tool for productivity improvements in and out of current recession
- Let's not forget the better product, process, and equipment
- Lean leads to increased sustainability through focus on customer value and waste elimination

