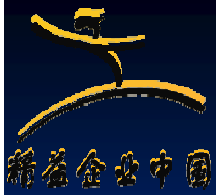


A Lean View of China's Auto Industry

Dr. Marcus Chao
President, Lean Enterprise China

www.leanchina.org

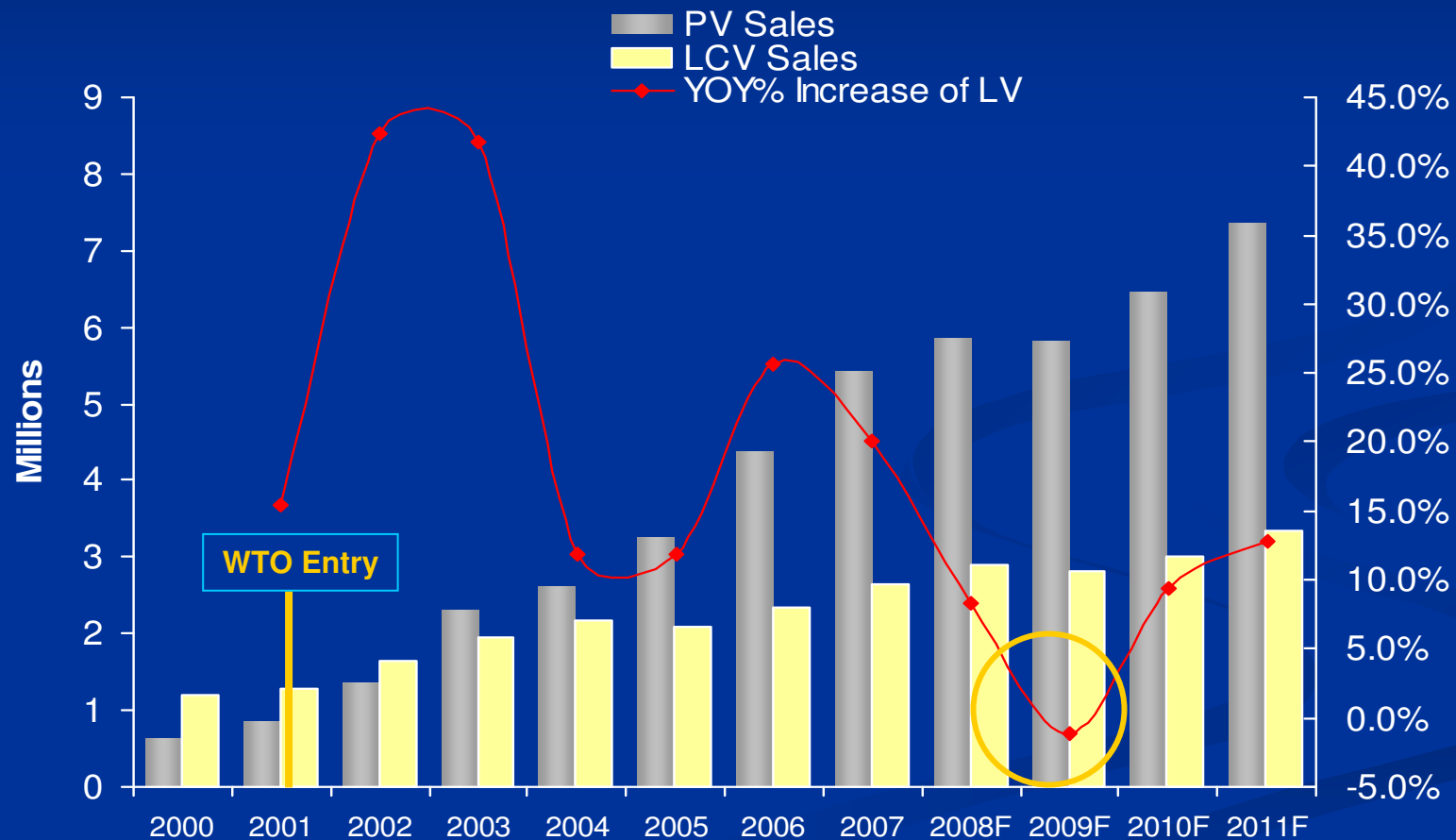


Outline

- China's Auto Market Overview
- My Observations
- China's Unique Auto Market
- Challenges Facing China's Auto Companies
- Opportunities for Lean Thinking
- Lean Applications
- What You Can Do
- Summary

China's Light Vehicle Sales

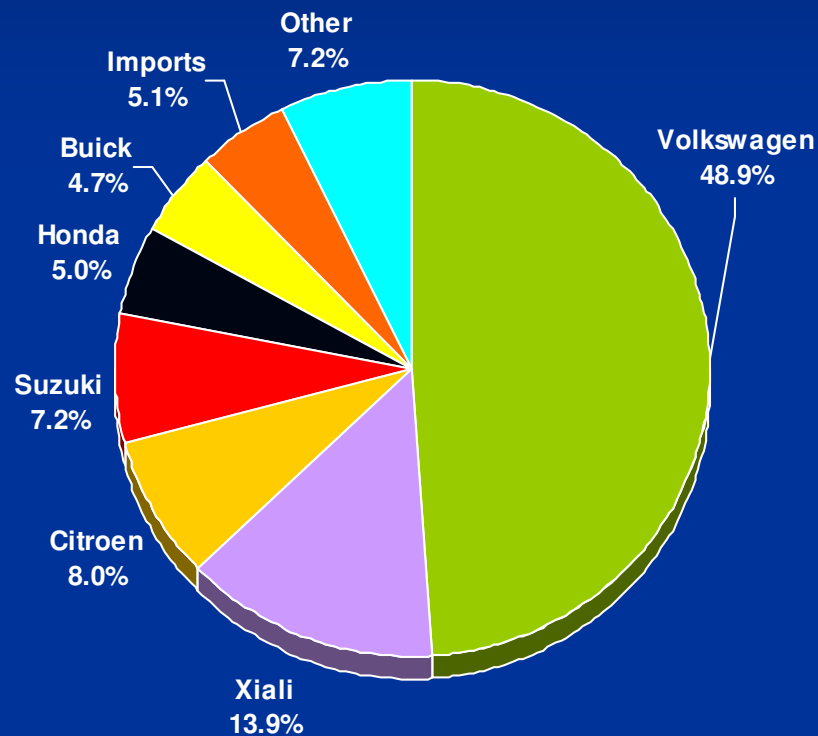
Light Vehicle = Passenger Vehicle + Light Commercial Vehicle (<6 Ton)



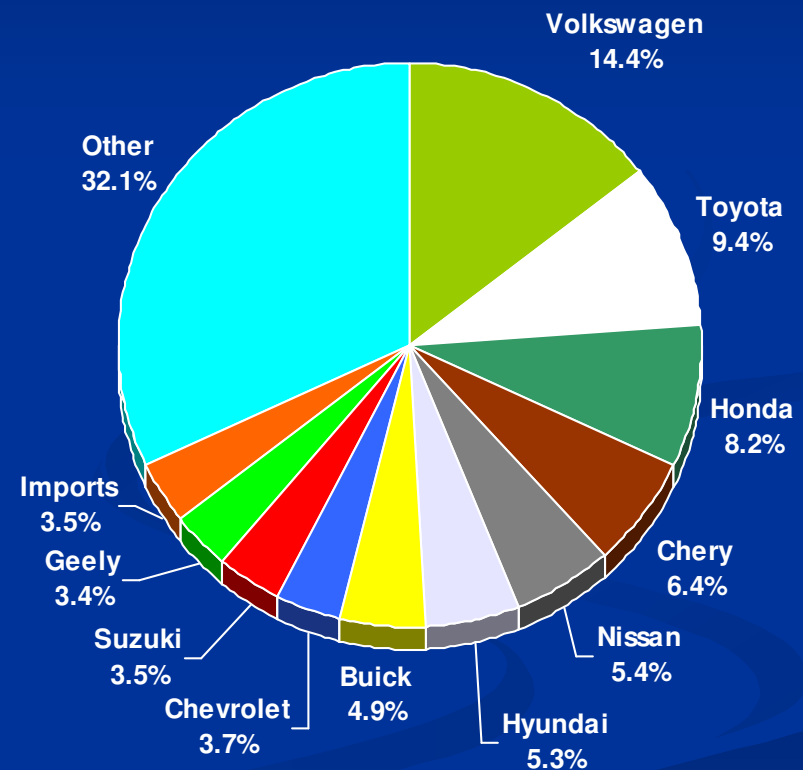
Source: JDPA Forecasting

Increased Competition

13 brand names in 2000 vs. 60+ in 2008



0.65 Million Units in 2000

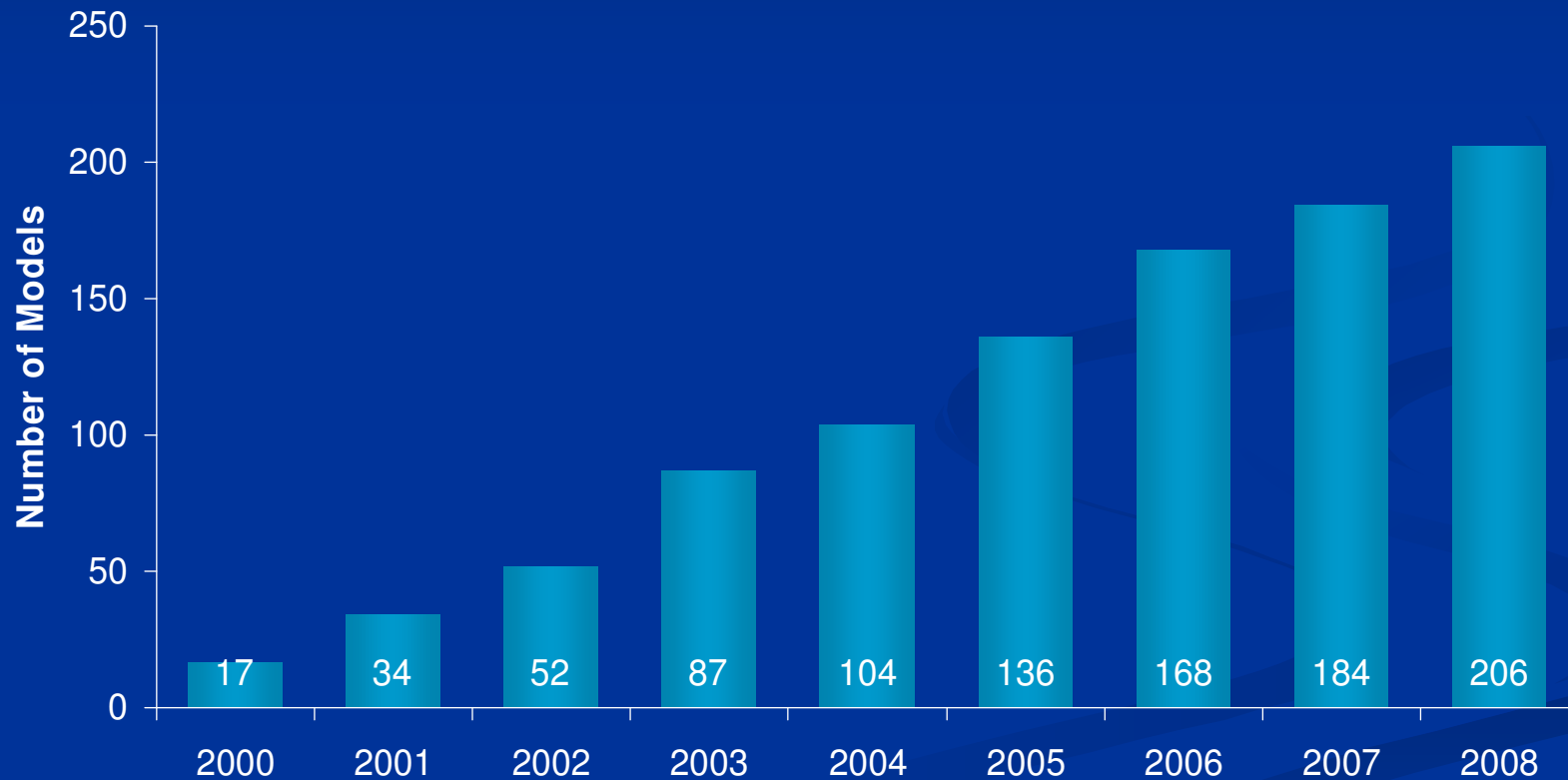


5.60 Million Units in 2008

Source: JDPA Forecasting

A Significant Shift

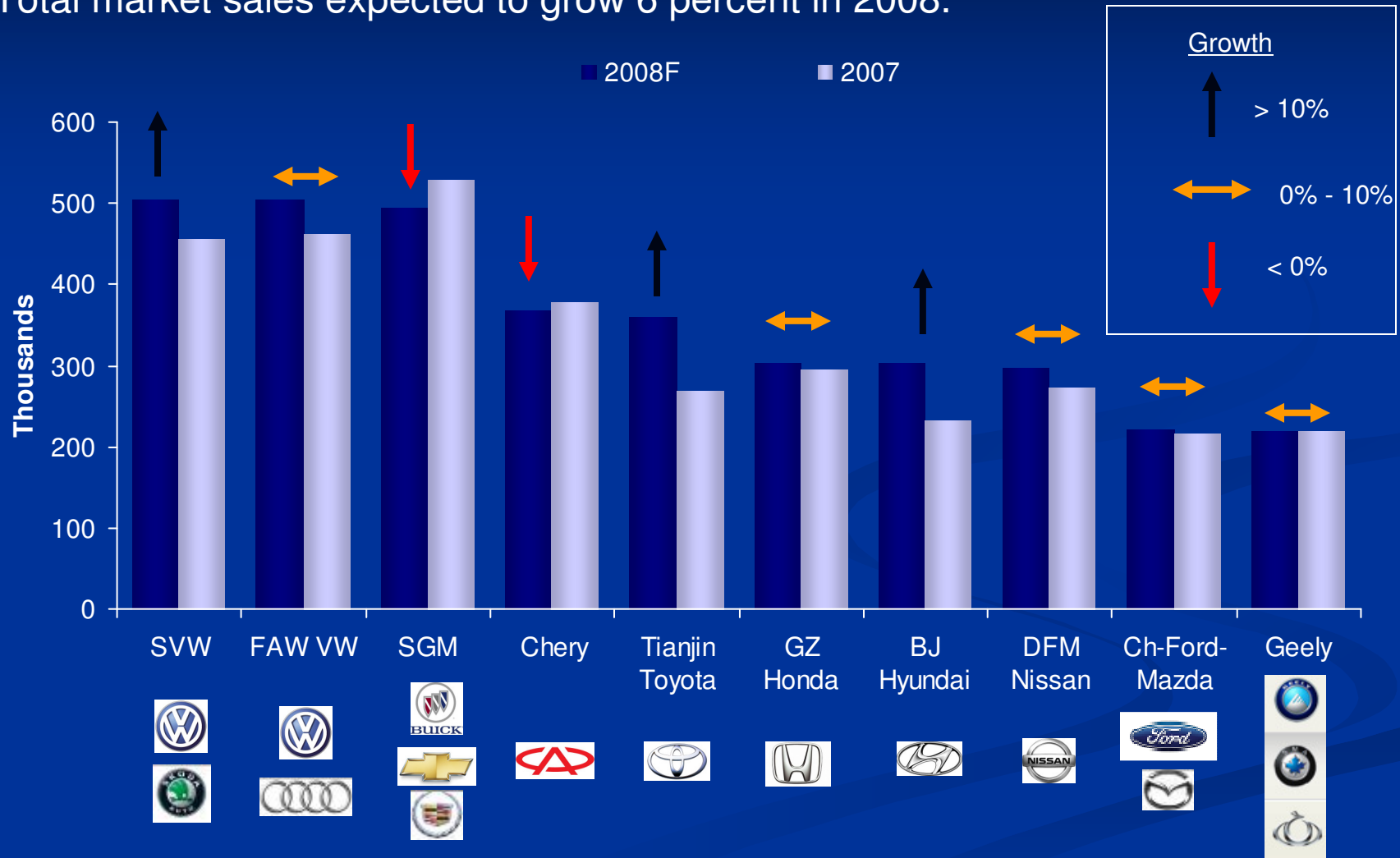
The number of models in China's passenger vehicle market has grown more than ten-fold in the last eight years, feeding the booming demand.



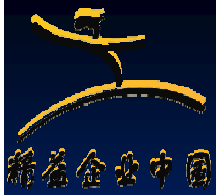
Source: JDPA Forecasting

Top 10 OEM Sales 2008F vs. 2007

Total market sales expected to grow 6 percent in 2008.



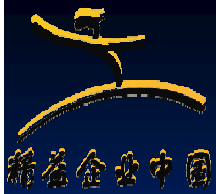
Source: JDPFA Forecasting



China 2008 Initial Quality Survey

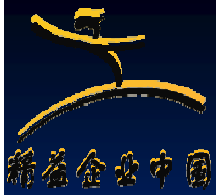
- Fuel efficiency becomes an increasingly significant factor when purchasing a new car
- Toyota, Honda, and Nissan continue to grow sizable market shares in China
- Chinese new car buyers have higher expectations on vehicles quality and performance
 - ✓ 2008 new car quality survey shows 207 pp100 vs. 202 in 2007
 - ✓ Vehicle awareness and technical knowledge has been enhanced

Source: JDPA Forecasting



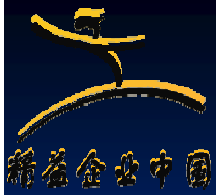
My Observations

- China will remain a leader in the global auto market, at a growth rate close to China's GDP
- It is a buyer's market
 - ✓ JVs will continue to flood the market with new cars and technologies
 - ✓ Domestic car companies will dominate the entry level vehicles and truck market
- Fuel efficiency becomes significant due to higher gasoline price, but being "green" is not yet in the Chinese culture
- China's auto market development path is unique as a reflection of China's Socialist Market Economic System



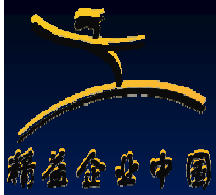
China's Unique Auto Market

- Manipulation of the market by the central government's macroeconomic policies
- Paternalism by local governments toward their own auto companies
- “Thirst for Power” rooted in the Chinese culture
 - ✓ Rather be a head of a small company than 2nd in command of a large corporation
- Consolidating car companies would be a long and difficult process
- Government likes to see more national brand cars but consumers prefer foreign brand names



Challenges Facing China's Auto Companies

- Overcapacity causes severe competition
- Higher operation cost due to double-digit increases in material, labor, and logistic costs
- RMB appreciation
- Global economy meltdown significantly impacts Chinese consumers' confidence
- Higher cost of living
- How to produce low volume and low cost vehicles?
- Speed to market



One Solution: Lean Thinking

- In competitive economies, companies succeed by supplying customers more value than competitors
- Focus on internal process to eliminate waste and increase productivity, enhance capacity and profit
- Creating values
 - ✓ Bring outsourced work in house
 - ✓ Provide contract manufacturing services to other companies
 - ✓ Apply flexible manufacturing to develop low volume production process

Lean concept: Reduce investment

Background:

Due to an increase in demand, the capacity of the In-circuit tester is insufficient

Possible Solution (old mindset):

Purchase additional In-circuit testers at **US\$250K** each that can test 1 unit at a time.

Lean Solution (innovation):

The In-circuit tester perform 2 functions: component test & flash programming. The flash programming can be done on a **US\$80K** PXI tester which can program 4 units concurrently. So, the solution is to buy a PXI tester & decouple the flash programming



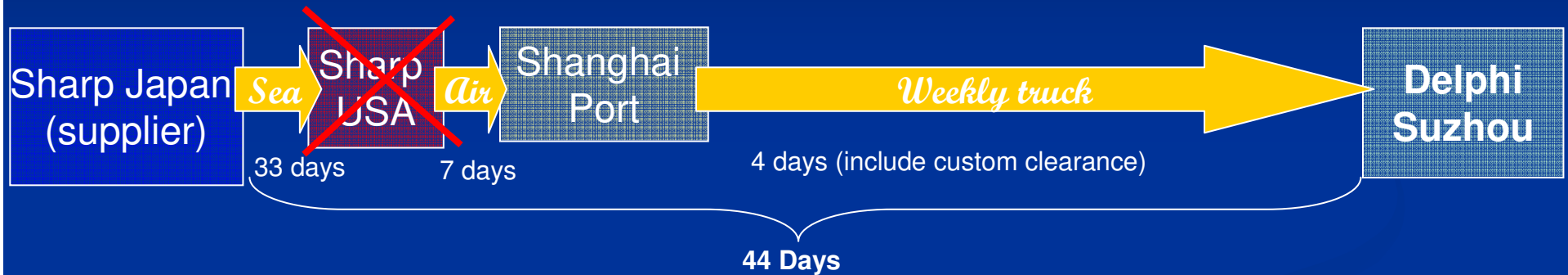
Incircuit tester
(1 unit at a time)

PXI tester
(4 units at a time)

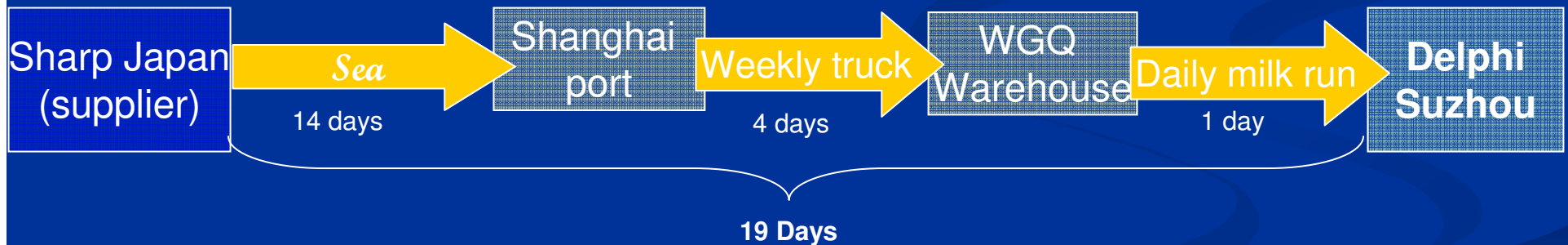


Lean concept: Reduce inventory

Before (Delphi Suzhou keep 1 week material)



After (Delphi Suzhou keep 1 day material)



Inventory cash flow reduction

\$25,104



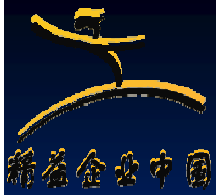
Lean Thinking

- A process is a set of steps which must be taken properly in the proper sequence at the proper time
- Drives the basics at each step:
 - ✓ Valuable: Is it valuable for downstream users ?
 - ✓ Capable: Is it able to produce quality products ?
 - ✓ Available: Is the equipment ready to run when needed?
 - ✓ Adequate: Is there enough capacity?
 - ✓ Flexible: Can the production line be easily modified when the market changes?



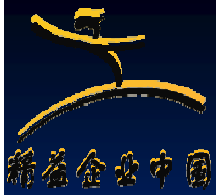
Lean is Problem Solving

- These steps need to be connected and
 - ✓ Flow: eliminating wait time and WIP inventory
 - ✓ Pull: producing only based on downstream needs
 - ✓ Leveling: minimizing fluctuation in production volumes
- The best way of learning is to practice
- Don't be afraid to make mistakes and raise questions
 - ✓ No problem is the largest problem



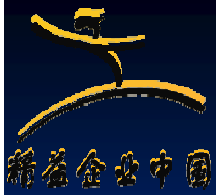
Lean Manufacturing in China

- Common misperception about lean:
 - ✓ Lean is mean
 - ✓ Lean is a set of tools: 5S and “Just-in-time”
 - ✓ We applied Lean in 2000 and are now looking for new programs
 - ✓ Lean is from Japan and it is not suitable for the Chinese workers and culture
- Do not have time for Lean when business is good



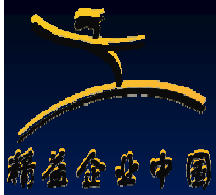
Lean Manufacturing in China

- Many companies took different paths and now suffer
 - ✓ Equate “large” with success
 - ✓ Trust the advanced equipment/technology will resolve all problems
 - ✓ Seek out lowest cost suppliers
- Some companies have applied lean and they are better prepared for today’s tough economy
 - ✓ Better quality, higher productivity, and less inventory



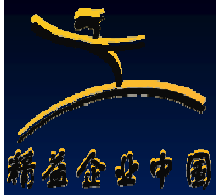
Lean Applications

- A misconception: Lean only works in production
- Other competitive advantages:
 - ✓ Lean product development to shorten the lead time from concept to launch and better designed products for customers
 - ✓ Lean supply chain to reduce material and logistic cost and to leverage suppliers' know-how and resources to enhance technology and on-time-delivery
 - ✓ Lean car dealership to increase customer satisfaction and making rooms for more business



How You Can Apply Lean

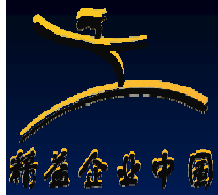
- Integrate Lean activities with business strategies
- Appoint Lean value stream managers looking over end to end processes
- Use a train-the-trainer learning process to develop local talents and build a lean core team
- Encourage managers to act as coaches/teachers
- Take a Gemba walk and “learning to see”
- Leverage cross functional teams to focus on total cost
- PDCA



Lean Enterprise China (LEC)

- LEC, an affiliate of Jim Womack's LEI at Boston, is a non-profit organization established in 2006
- Primary objective: to promote and educate Lean Thinking in China
- Our missions:
 - ✓ Help companies apply lean transformation
 - ✓ Provide on-site train-the-trainer (T3) process
 - ✓ Organize annual lean conference for sharing and learning
 - ✓ Translate and publish LEI lean books
- Located in Shanghai to support your lean journey in China

www.leanchina.org



Summary

- China is an important battlefield for global auto OEM and component companies
- China's unique auto market development requires a long learning curve
- Lean is a key strategy to improve competitiveness
- Times of crisis are times to begin Lean journeys
- Lean leaders will motivate all functional groups to eliminate waste and continue improvement
- It is not too late to begin your lean journey

Wish You A Successful Lean Leap in
The Year of Ox



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