Dearborn Tool & Die

Lean Die Manufacturing

“Through the use of our skilled work teams, the Dearborn Tool and Die Plant’s purpose is to produce high quality dies that meet or exceed our customer’s requirements – and to be more efficient than our competition”
History

- Plant built in 1938 by Henry Ford
- Located in the Rouge Complex
- State of the Art facility – natural lighting, locker facility, etc.
- Built to produce tool, die, fixtures, patterns, and weld assembly fixtures
- Biography refers to Dearborn Tool & Die as Henry Ford’s “Tinker Toy” shop
- 420,000 square feet
Center Of Excellence

Leverage DTD to be a Competitive Advantage

 ✓ Engineering-Driven Organization
 ✓ Leverage Technology
 ✓ Leverage “Virtual” World
 ✓ Die Design Content – Flawless Execution Globally
 ✓ Drive to be more than “just a die shop”
DTD

• DTD Journey
• Benchmarking Analysis (Since 2006)
  – 6 Countries
  – 12 Cities
  – 15 Facilities
• Goal: Support Timing & Quality Initiatives
  – Top hat strategy
  – Fresher sheet metal
  – Lower investment
  – Support early builds
  – Challenge DTD about what “core” business should be
  – Leverage global resourcing
    • Strategy On “Right-Sizing” the facility
  – Focus on cost, quality, timing – Utilizing people, processes and technology
  – “Best In World” craftsmanship goal
Strategic Initiatives

- Process
- People
- Technology
Process
These highly detailed plans are created by Hourly Die Makers and Machine Specialists in cooperation with Salaried Die Design Engineers.

Fundoshi
Detailed Scheduling – reduced lead time waste of variability

Detailed tasks are identified for each operation.
Process

Lean Material Management
Process/Technology

(Global Software / Grid Pattern Construction / Ram Flex Issues / Class “A” Improvements)

SMIRT

Machine Intensive Die Construction……
Launch Of the AWS In The Machine Dept.

Polishless Draw Dies

Press Compensation

M16 x 20mm Grid Plate for MECOF (3 reqd.)
Dimensions 700 x 500 x 75mm

25mm keyway

KEYS FIT INTO TOP OF CUBE FOR EASE OF SETUP
Technology
(Simulation / Machine Intensive / Morphing Strategy / Precision Cast Details)

FDL - Engineering Strains

Morphing

By-passes timed to produce clean down standing hem flange – elimination of handwork.

Sand Printing
Die Details
Large Castings
Fixture Initiative Trial
Hot Stamped Die Trial
Technology
(Scanning Technology Utilized From Construction Thru Tryout)

Focus on non-traditional parts:

- Aluminum
- High-Strength Steel
- Dual Phase (600 – 900)

Scanning:
- Virtual Die Assembly
- Quality Improvement
- Historical Data
- Reverse Engineering
People

• Benchmarking analysis led to a balance of manpower and equipment with a focus on leveraging technology and processes.
• Expanded work content to the UAW workforce in non-traditional job assignments (e.g. CPA, scanning, scheduling, etc. as “tool of the trade”)
• National & Local Agreements allow for greater operational efficiencies
• Alternative Work Schedule Launched
  – Feb. 2013 Machines
  – Aug. 2014 Plant Wide (95%)
Alternative 7 On 7 Off Schedule

**Traditional***
- 100 Employees Day Shift
  - 8 Hrs. M-F
- 100 Employees Afternoon Shift
  - 8 Hrs. M-F
  = 80/168 Hrs. per week utilized on straight time

**AWS ***
- “A” 50 Employees Day Shift
  - 10 Hrs. M-F
  - 12 Hrs. Sat & Sun
- “B” 50 Employees Afternoon Shift
  - 10 Hrs. M-F
  - 12 Hrs. Sat & Sun
  - 80 Hrs. of pay for 74 Hrs. Worked
  - A & B crew go home for 7 days
  - C & D crew come to work for the next 7 days

“C” 50 Employees Day Shift
- 10 Hrs. M-F
- 12 Hrs. Sat & Sun
“D” 50 Employees Afternoon Shift
- 10 Hrs. M-F
- 12 Hrs. Sat & Sun

Summary: Facility is utilized 148/168 hrs. straight time.
*hypothetical numbers
Results

Results: Die Timing

Results: Die Cost

Results: Die & Part Quality
Coming together is a beginning; keeping together is progress; working together is success.

— Henry Ford —

AZQUOTES