Genuine Direct Drive Servo Presses

Rethink the Way you Form

Optimizing Productivity in Deep Draw Applications

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Optimizing Productivity in Deep Draw Applications

In this presentation we will:

1. Review common metal forming problems related to deep drawn metal formed parts

2. Identify the disadvantages of using traditional mechanical press technology and tooling to solve deep draw forming issues

3. Demonstrate the advantages of using Direct Drive Servo Press technology to solve deep draw forming issues, improve part quality, and increase profitability

Review Common Metal Forming Problems

Deep Draw

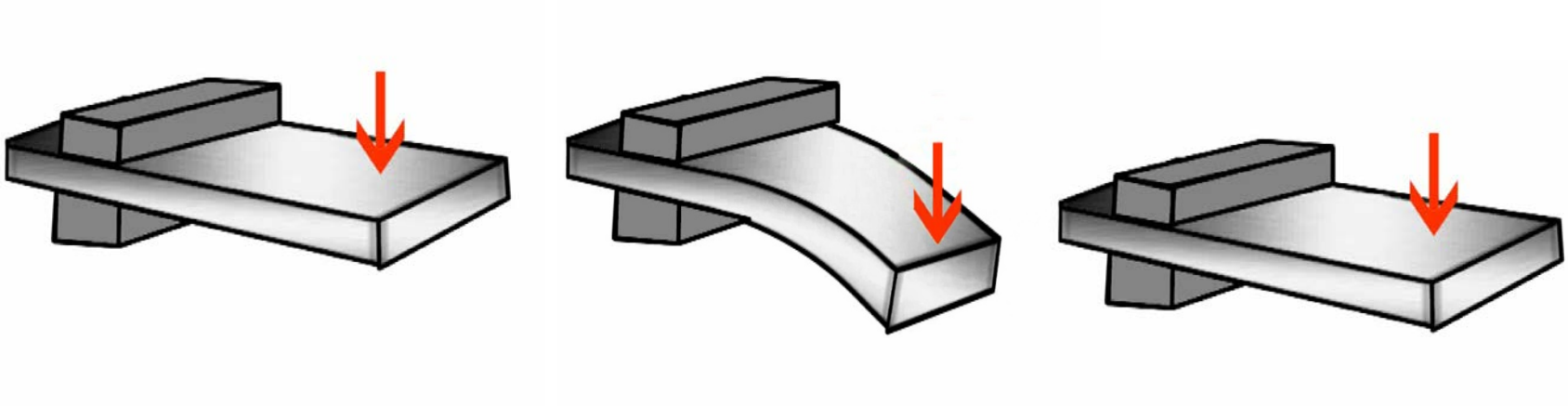
1. Forming Review

- Below Elastic Limit
- Above Elastic Limit
- Ultimate Tensile Strength
- Ductility, elongation
- Work hardening
- Tearing and Breakage

Review Common Metal Forming Problems

Deep Draw

Force below the elastic limit

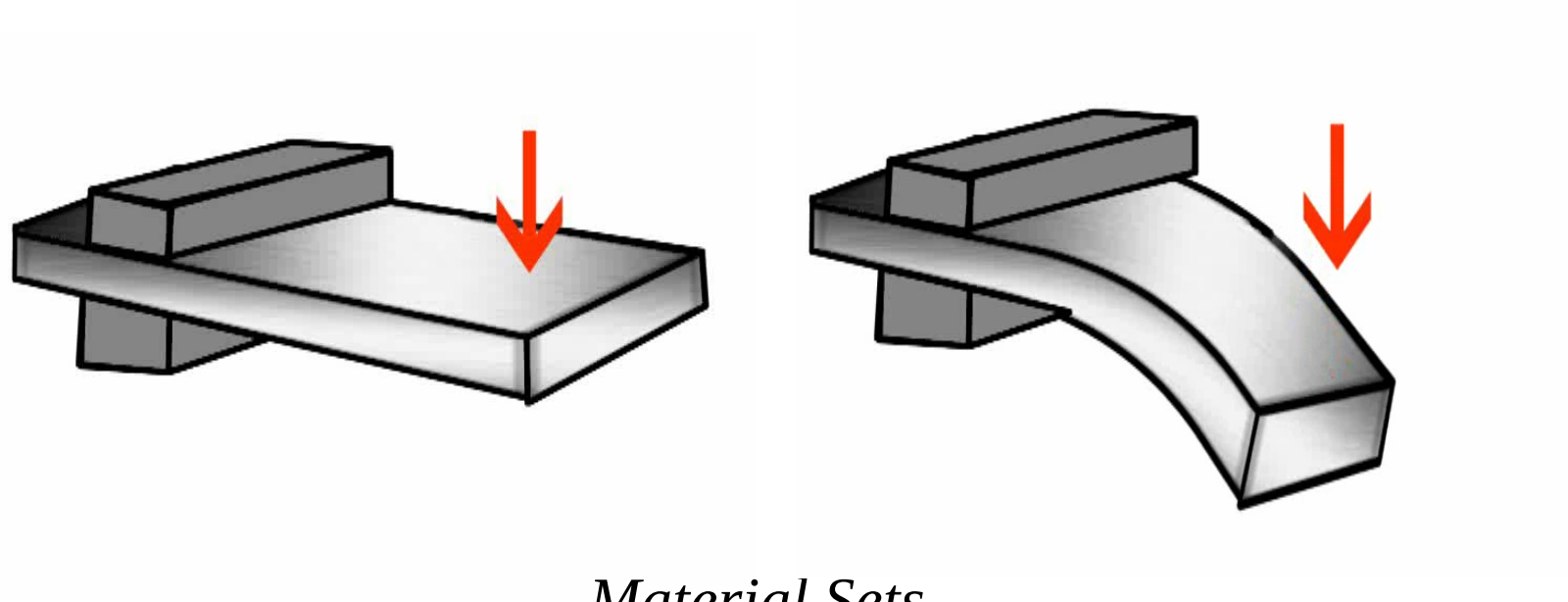


Springback

Review Common Metal Forming Problems

Deep Draw

Material beyond the elastic limit

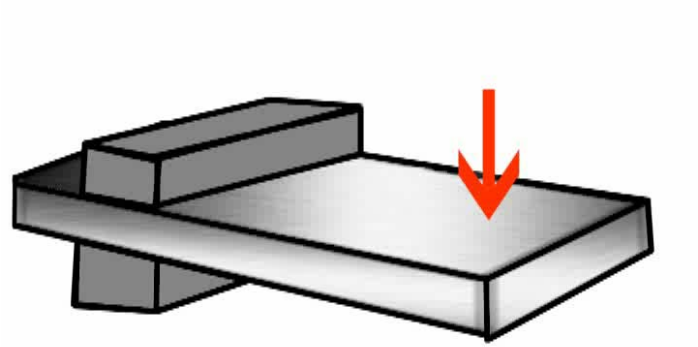


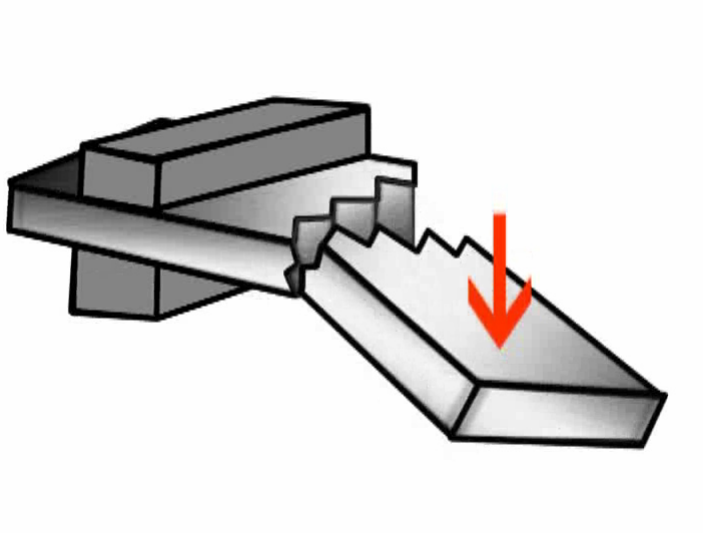
Material Sets

Review Common Metal Forming Problems

Deep Draw

Material beyond ultimate tensile strength





Tears and breakage

Review Common Metal Forming Problems

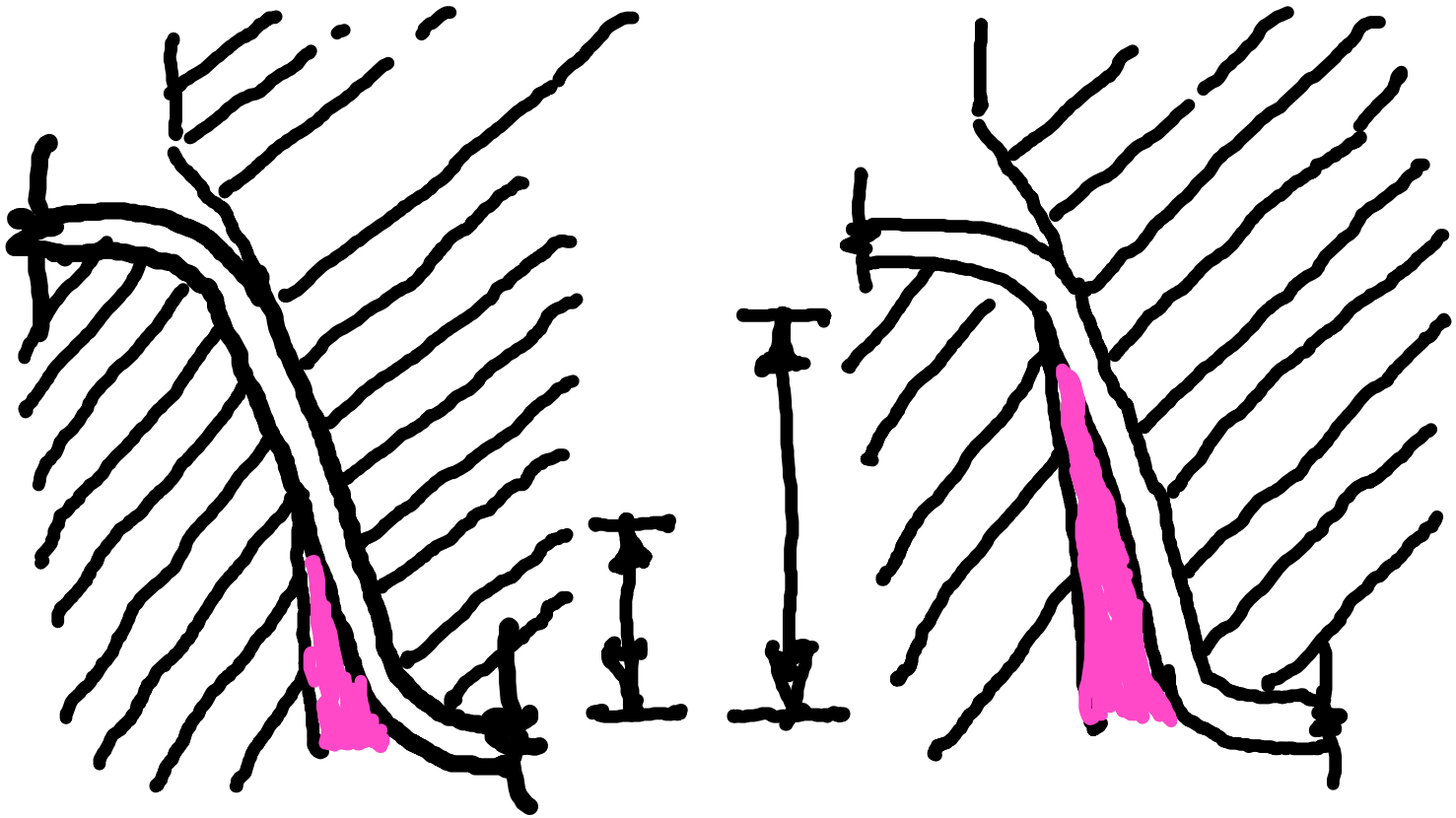
Deep Draw

Ductility, elongation & work hardening

Review Common Metal Forming Problems

Deep Draw

Tearing mechanism during drawing



Review Common Metal Forming Problems

Deep Draw

Conclusion:

Below the elastic limit = springback

Above the elastic limit = material sets

Beyond ultimate tensile strength =
cracks, tears, and breakage

Work above elastic limit & below ultimate tensile strength

Solving Common Metal Forming Problems

Deep Draw

2. The disadvantages of using traditional mechanical press technology and tooling

   - Multi-stage/station die sets require larger press beds or multiple presses
   - Higher tooling costs
   - ***NOT ENOUGH ENERGY***

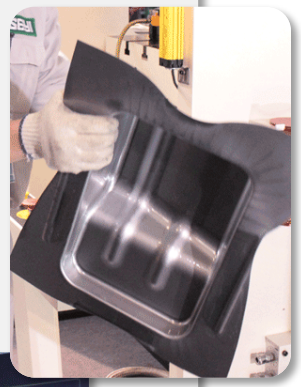
Solving Common Metal Forming Problems

Deep Draw

3. The Advantages of Using Direct Drive Servo Press Technology

Use time, energy and tonnage to flow and set material

- Forming energy higher up in the stroke
- Slow speed at stroke bottom
- Dwell at stroke bottom

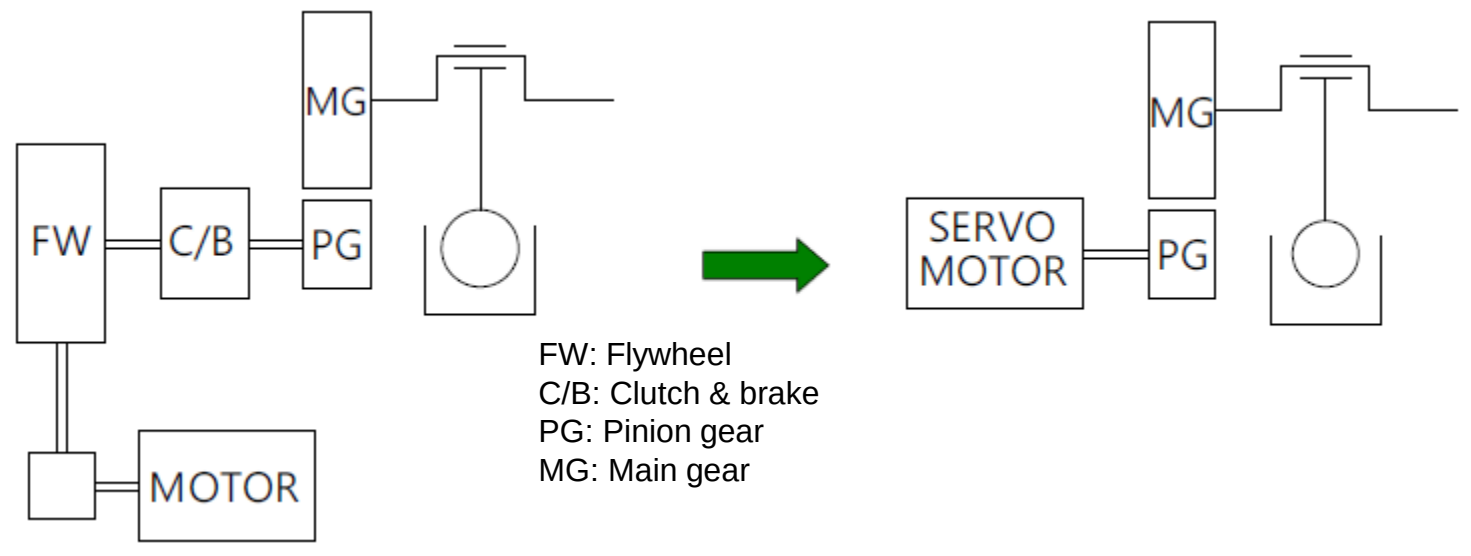


How is this possible?

The Advantages of Using Direct Drive Servo Press Technology

Servo Press vs. Mechanical Press

- The typical main motor and motor speed controller is replaced with a servo motor and CNC controller
- The flywheel and C/B system are eliminated
- The slide/ram motion and speed is freely programmable, at any point of entire stroke



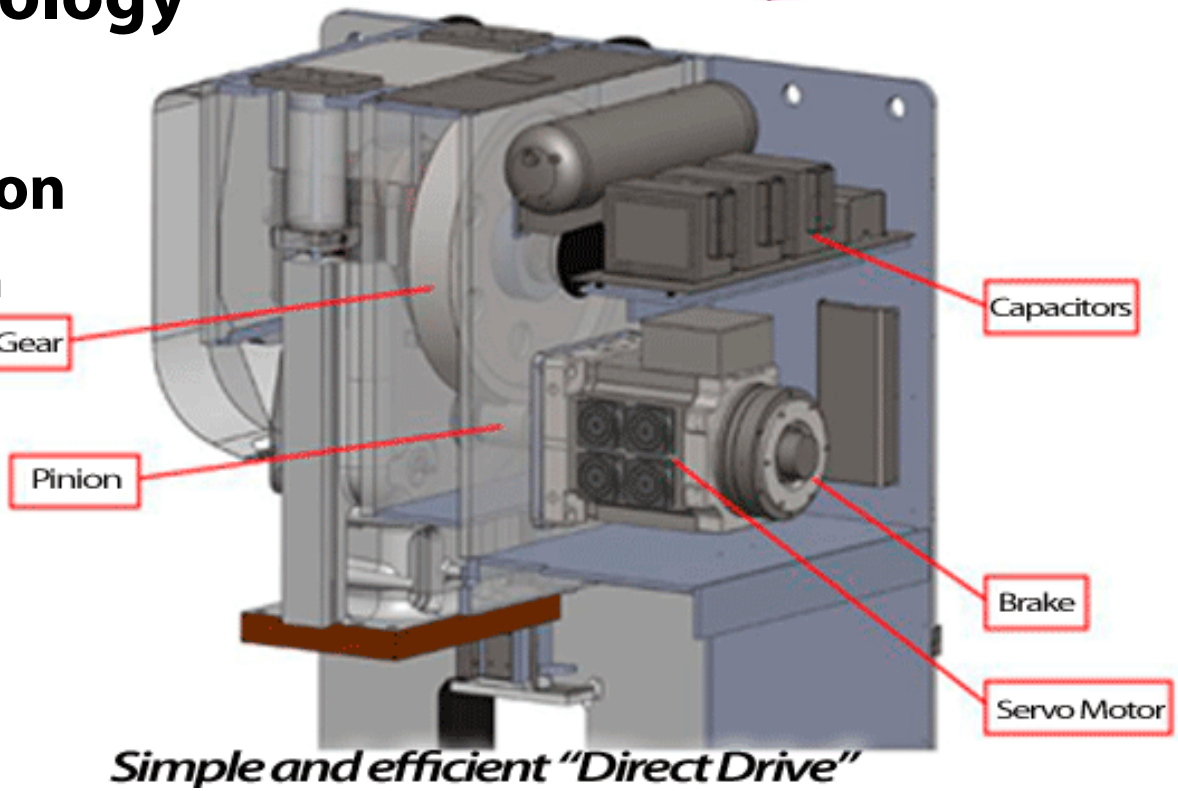
Typical Press

Servo Presses

The Advantages of Using Direct Drive Servo Press Technology

Direct Drive Transmission

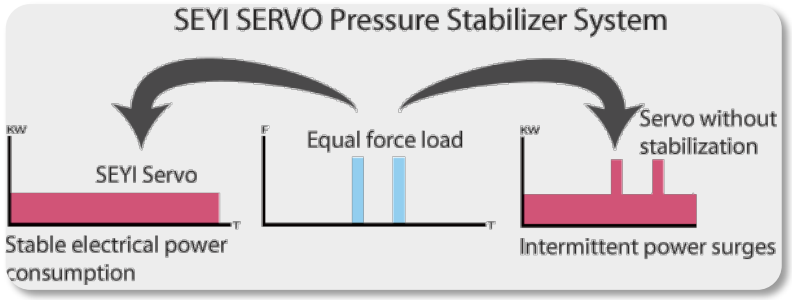
- Shortest transmission path among all servo press manufacturers.



Simple and efficient "Direct Drive"

Unique Energy Storage System

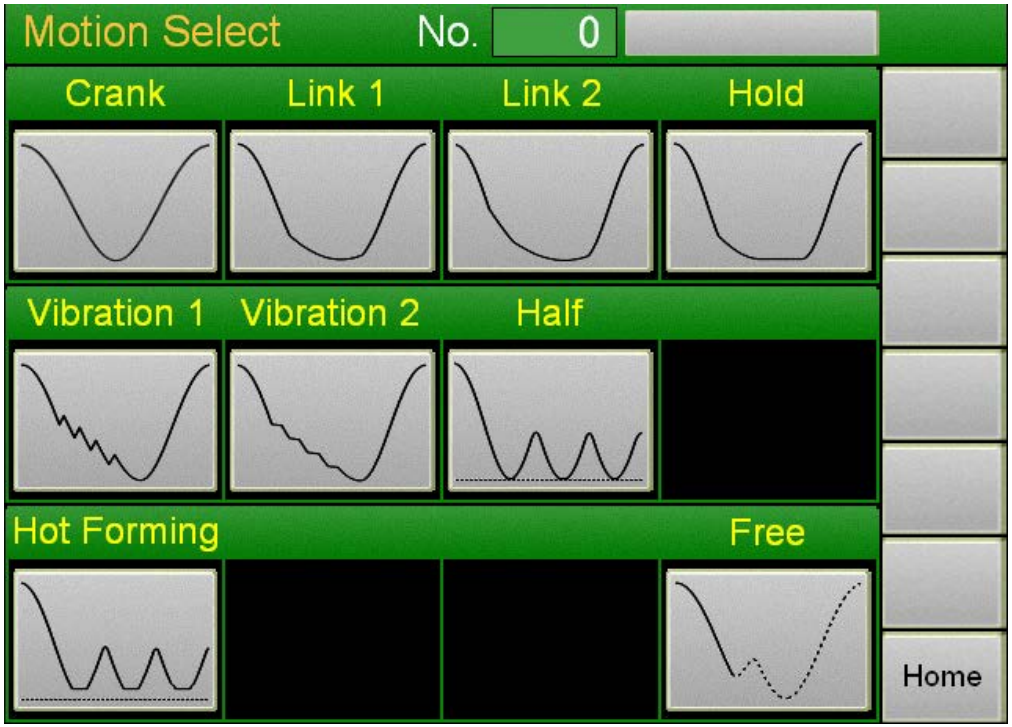
- Power surges are eliminated and energy is conserved and optimized through a series of capacitors



The Advantages of Using Direct Drive Servo Press Technology

Multiple Functions in One Press

- Pre-programmed slide motion profiles and ability to create custom slide motion profiles to optimize a specific job



The Advantages of Using Direct Drive Servo Press Technology

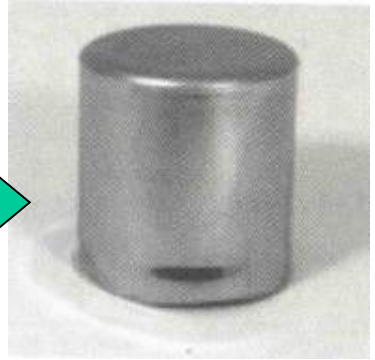
Eliminating tears and breakage: Deep Draw

- Multiple hit and dwell function

Slide motion curve

A draw operation for stainless can

Typical press
in one stroke
Drawing Ratio: 50%

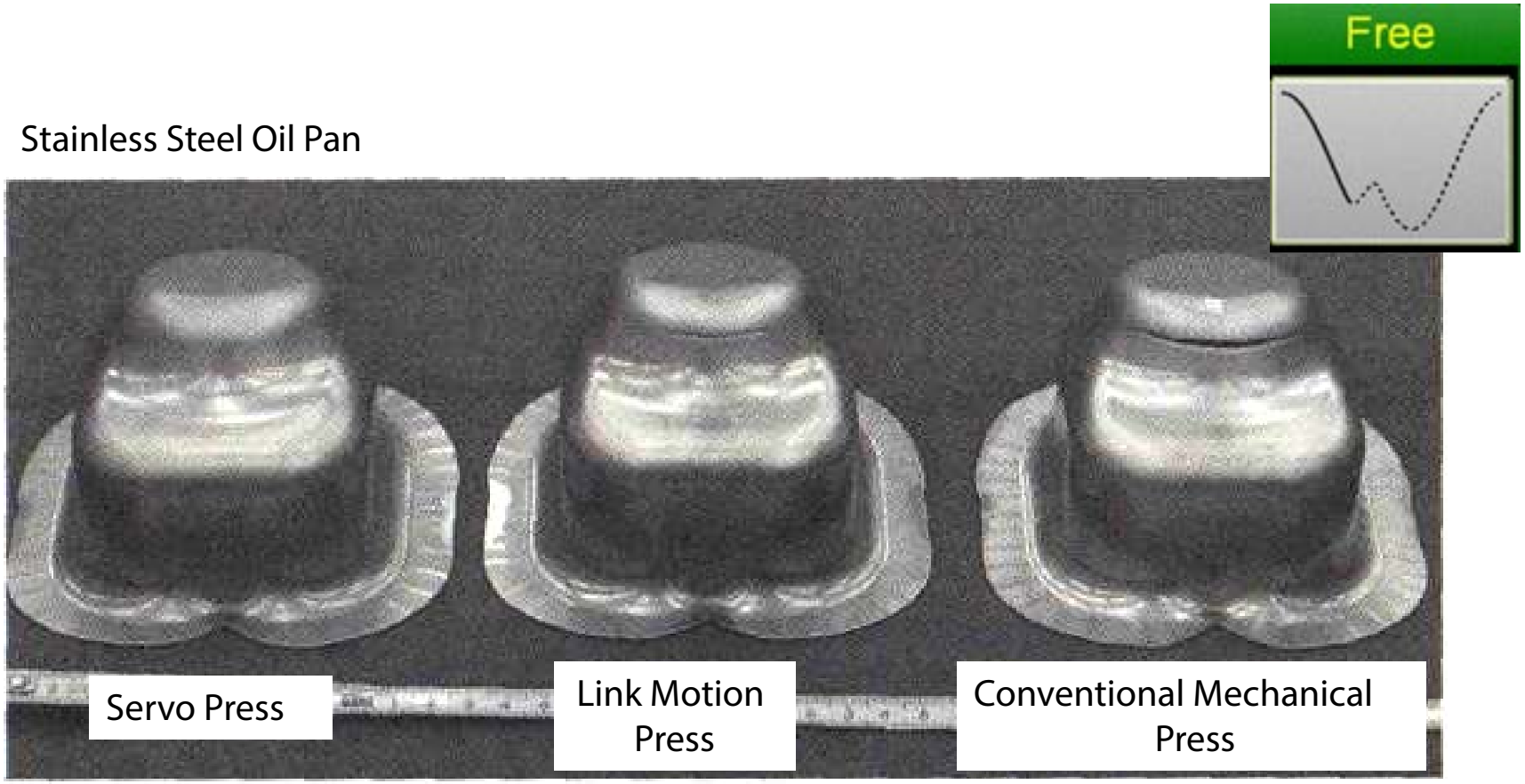


Servo press "Vibration" motion
in one stroke
Drawing Ratio: 73%

The Advantages of Using Direct Drive Servo Press Technology

Increased Forming Capability: Deep Draw

- Multiple hit and dwell function



The Advantages of Using Direct Drive Servo Press Technology

- **Improved Part Quality**
  - Less deflection
  - Less vibration
  - Less overall clearance
- **Increased Profitability**
  - Fewer stations/stages
  - Faster production rates
  - Decreased tooling costs
  - Production versatility

Genuine Direct Drive Servo Presses

Rethink the Way you Form

Optimizing Productivity in Deep Draw Applications

谢谢

Q and A