

# Implementing Sustainable Change

*The Importance of Training Your Technicians*

by Daniel Stephens, VP

# Daniel Stephens

➤ **Plastics Engineer:**

🎥 In Plastics Since 1992



 **978.957.0700**  
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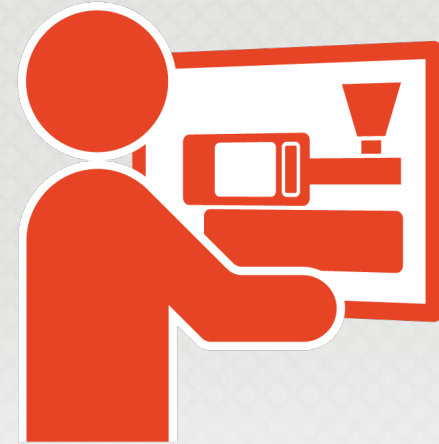
 **Routsis Training**  
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# Daniel Stephens

## Plastics Engineer:

- ▶ In Plastics Since 1992
- ▶ Content Development
  - ▶ Advanced Online Training



# Daniel Stephens

## ➤ Plastics Engineer:

- ▶ In Plastics Since 1992
- ▶ Content Development
  - ▶ Advanced Online Training
  - ▶ SkillSet™ Labs & Worksheets





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  - ▶ SkillSet™ Labs & Worksheets
  - ▶ Professional Certification



# Daniel Stephens





## ➤ Plastics Engineer:

- In Plastics Since 1992
- Content Development
  - Advanced Online Training
  - SkillSet™ Labs & Worksheets
  - Professional Certification
  - Pocket Guides (SM, PVC, EX)



# Daniel Stephens

## Plastics Engineer:

-  In Plastics Since 1992
-  Content Development
-  Solution Development
  -  RightStart™ Solution



# Daniel Stephens

## 🚀 Plastics Engineer:

- 🎥 In Plastics Since 1992
- 🎥 Content Development
- 🎥 **Solution Development**
  - 🎥 RightStart™ Solution
  - 🎥 Certification Portals





# Daniel Stephens

## ➤ Plastics Engineer:

- ◉ In Plastics Since 1992
- ◉ Content Development
- ◉ **Solution Development**
  - ◉ RightStart™ Solution
  - ◉ Certification Portals
  - ◉ SmartTech™ Instruction



# Implementing Sustainable Change

## We'll Discuss:

-  Importance of Change



# Implementing Sustainable Change

## We'll Discuss:

- ▶ Importance of Change
- ▶ Cycle of Change



# Implementing Sustainable Change

## ➤ We'll Discuss:

- ▶ Importance of Change
- ▶ Cycle of Change
- ▶ Change Example





# Implementing Sustainable Change

## We'll Discuss:

- ▶ Importance of Change
- ▶ Cycle of Change
- ▶ Change Example
- ▶ Implementing Change



# Implementing Sustainable Change

## ➤ We'll Discuss:

- Importance of Change
- Cycle of Change
- Change Example
- Implementing Change
- Competent Tech Concerns



# Implementing Sustainable Change

## ➤ We'll Discuss:

- Importance of Change
- Cycle of Change
- Change Example
- Implementing Change
- Competent Tech Concerns
- Long Term Change



# Importance of Change

➤ Change is Necessary to:

- ▶ Maintain Competitive Edge





# Importance of Change

## ➤ Change is Necessary to:

- Maintain Competitive Edge
- Explore Emerging Markets



# Importance of Change

## ➤ Change is Necessary to:

- ④ Maintain Competitive Edge
- ④ Explore Emerging Markets
- ④ Implement New Technology



# Importance of Change

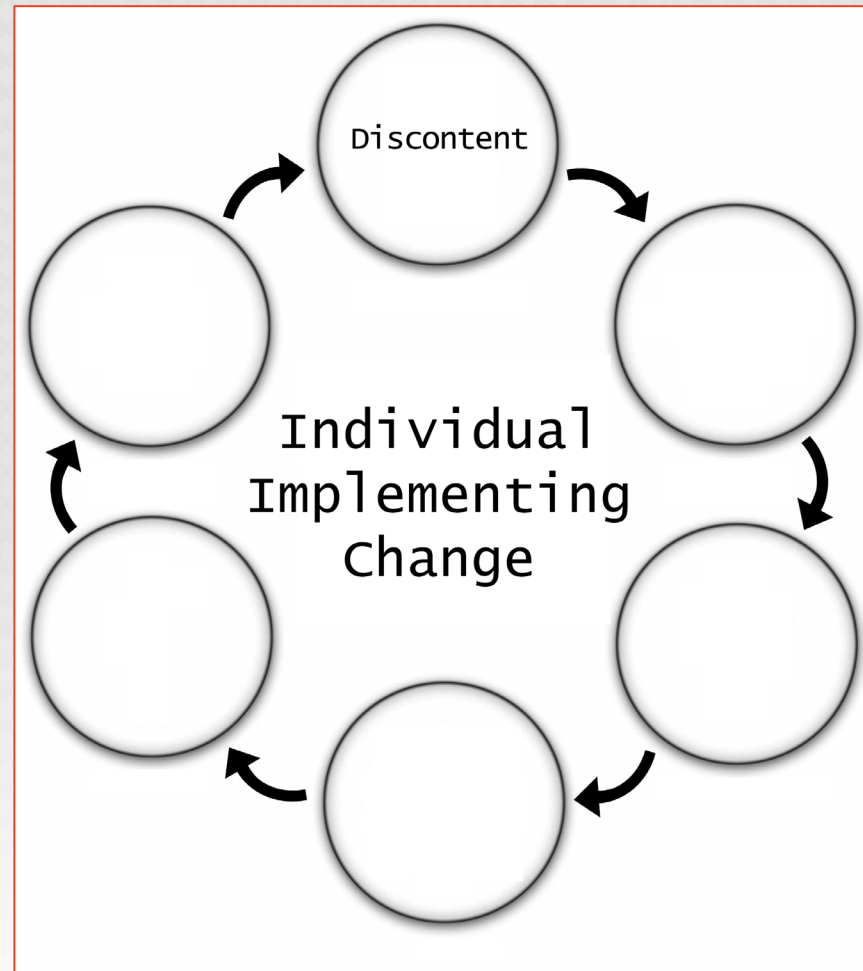
## ➤ Change is Necessary to:

- Maintain Competitive Edge
- Explore Emerging Markets
- Implement New Technology
- Handle Complex Challenges



# Cycle of Change

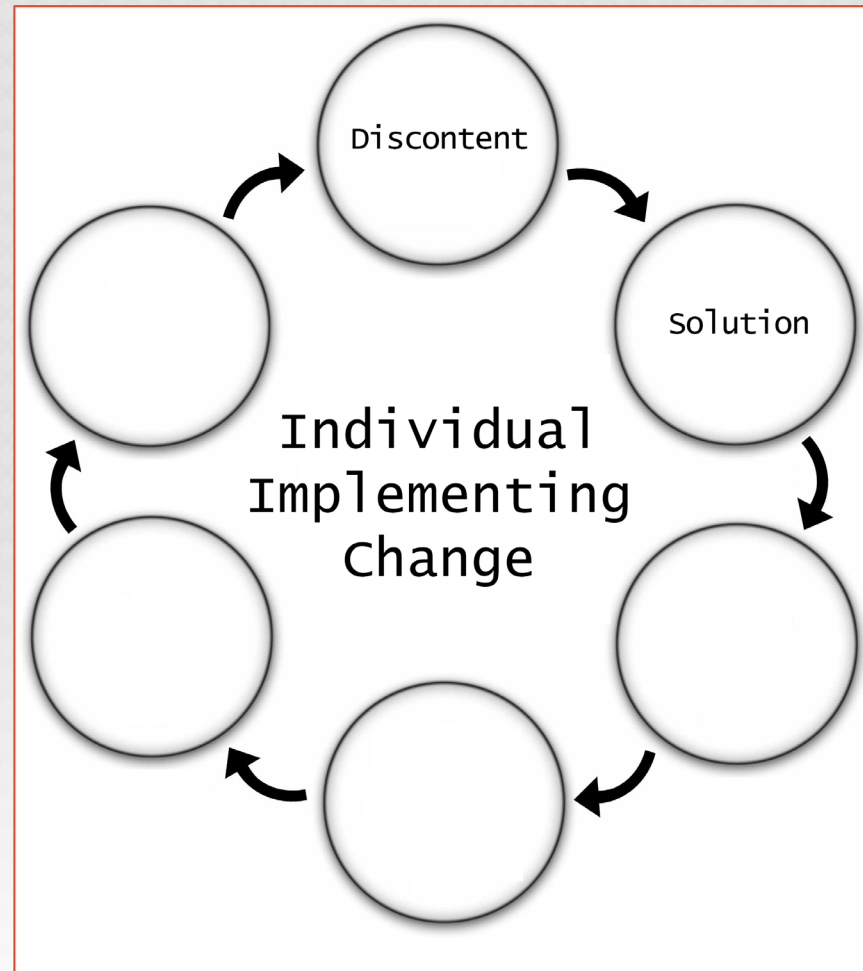
## ➤ Individual:





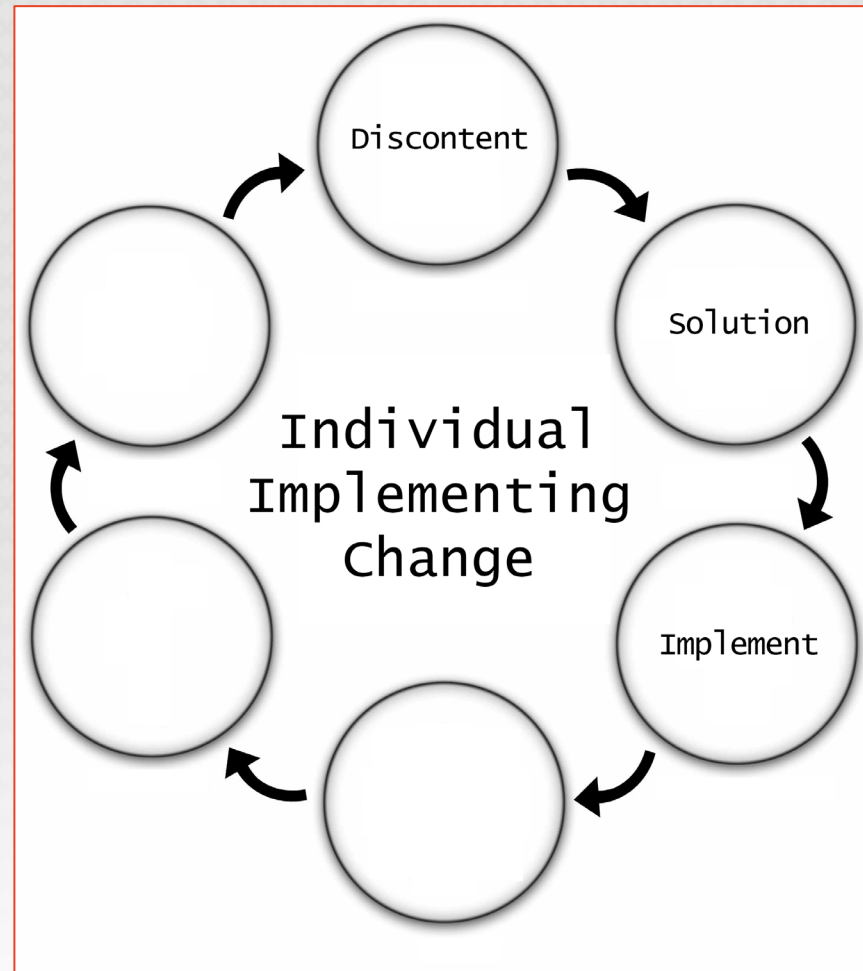
# Cycle of Change

## ➤ Individual:



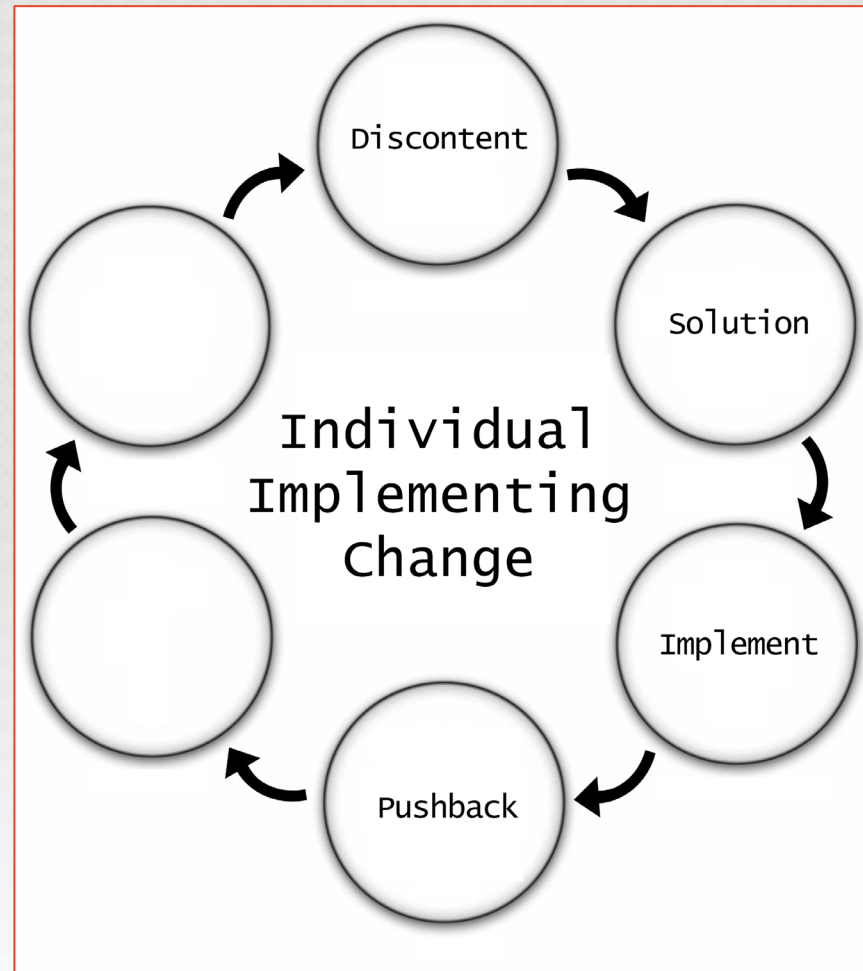
# Cycle of Change

## ➤ Individual:



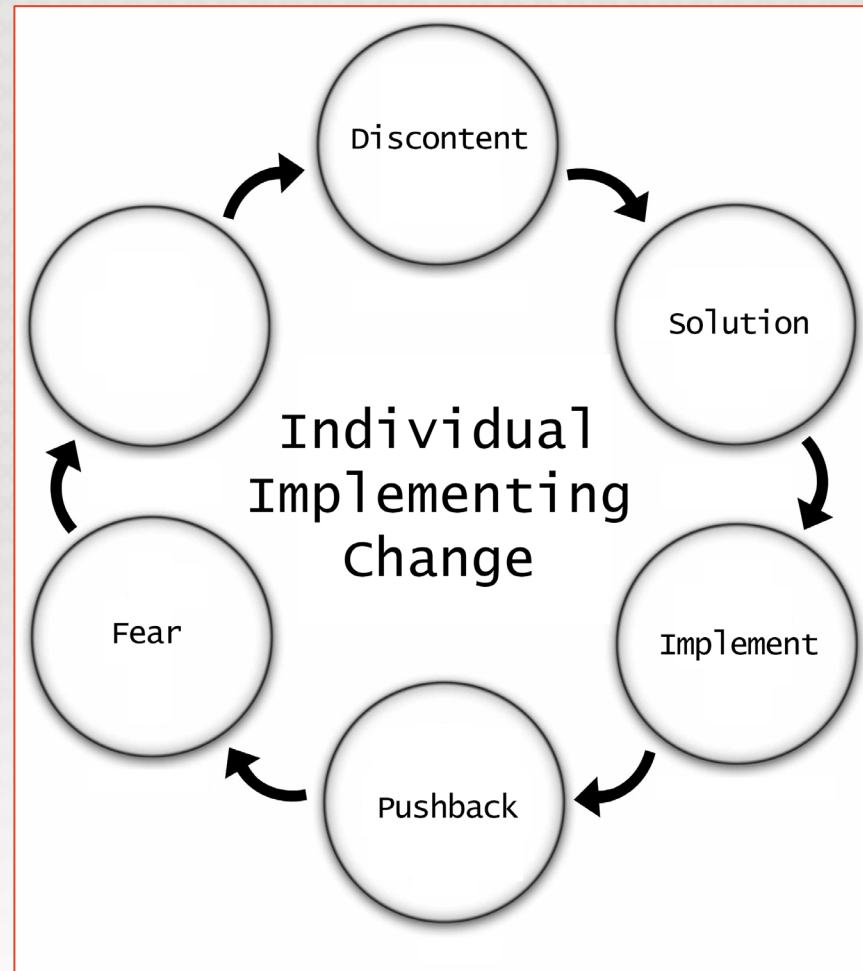
# Cycle of Change

## ➤ Individual:



# Cycle of Change

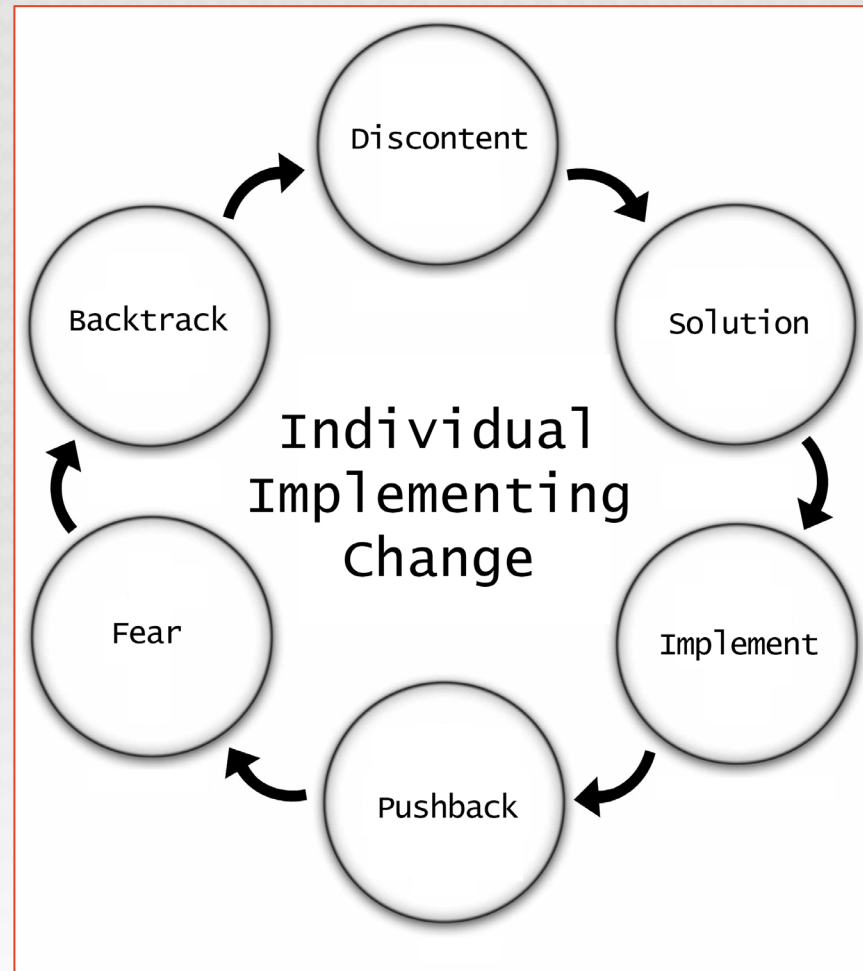
## ➤ Individual:





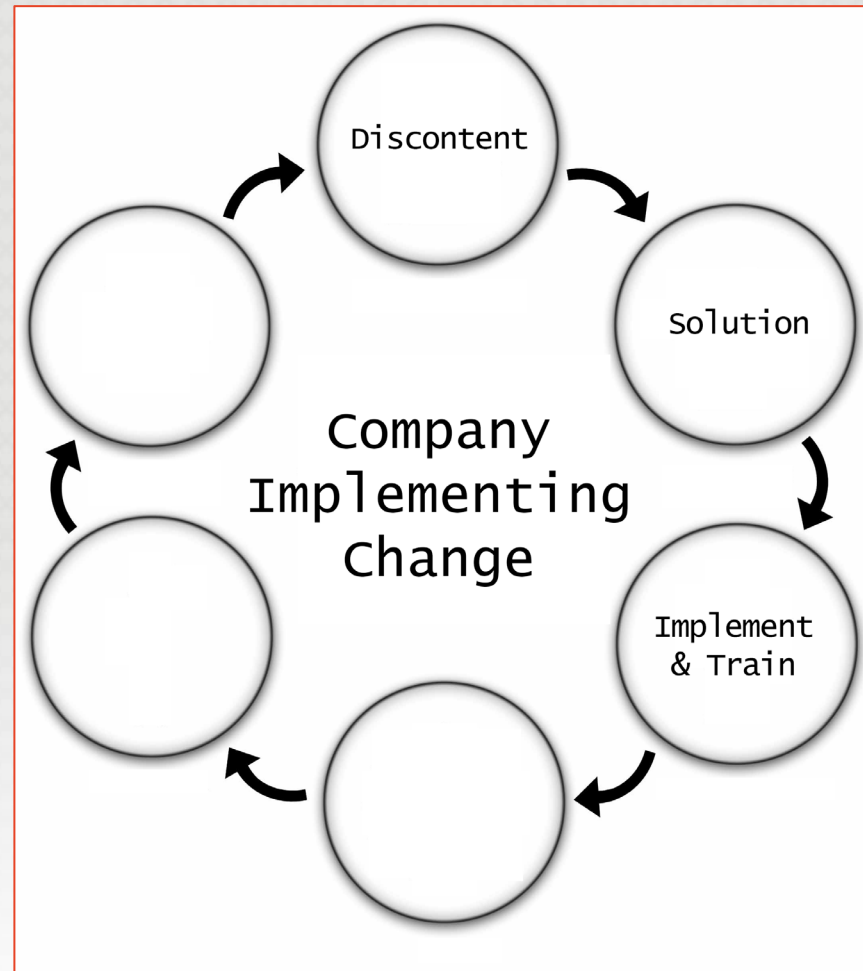
# Cycle of Change

## ➤ Individual:



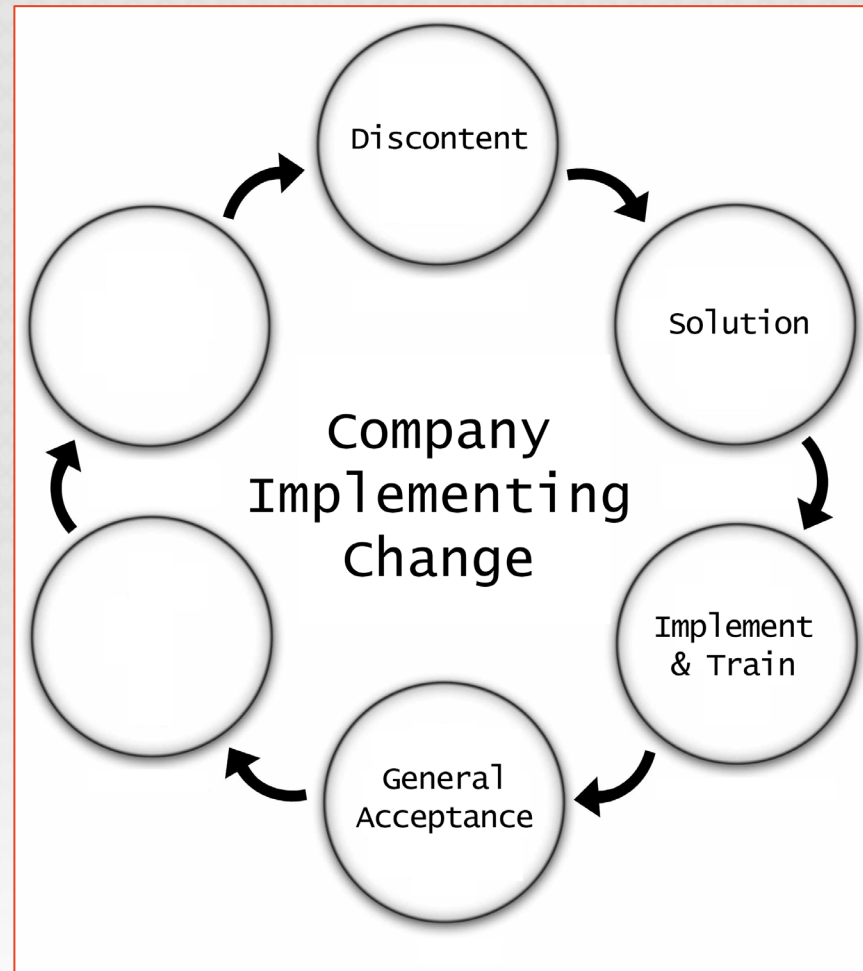
# Cycle of Change

➤ Company:



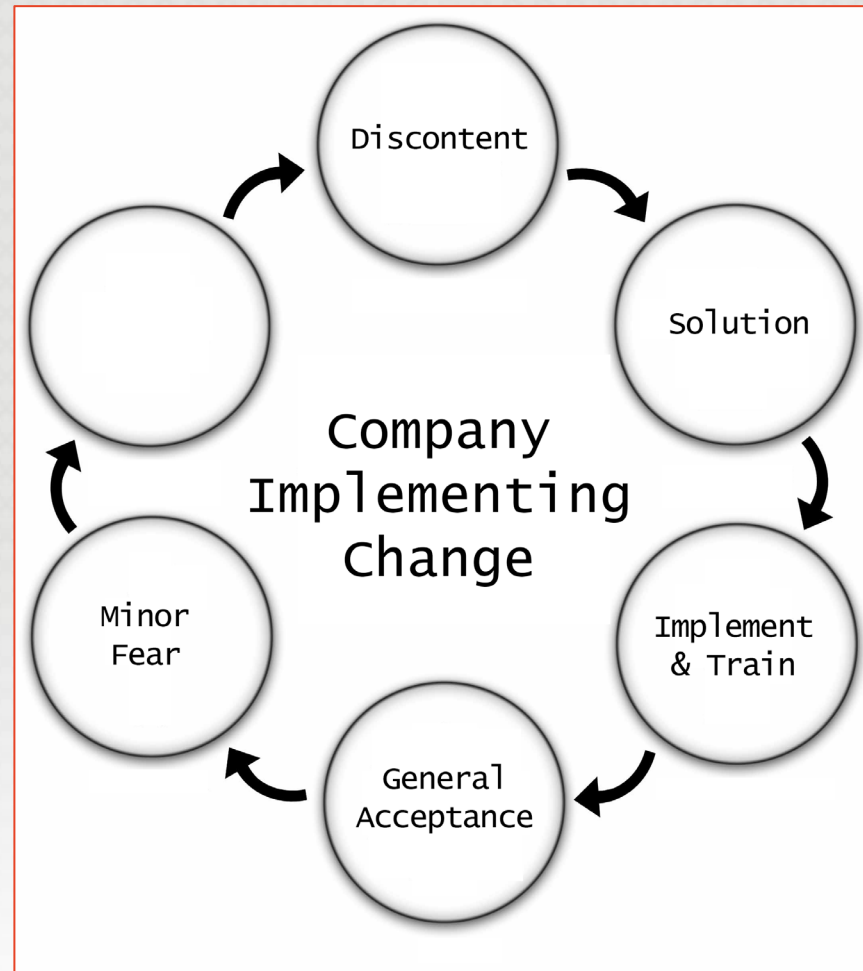
# Cycle of Change

➤ Company:



# Cycle of Change

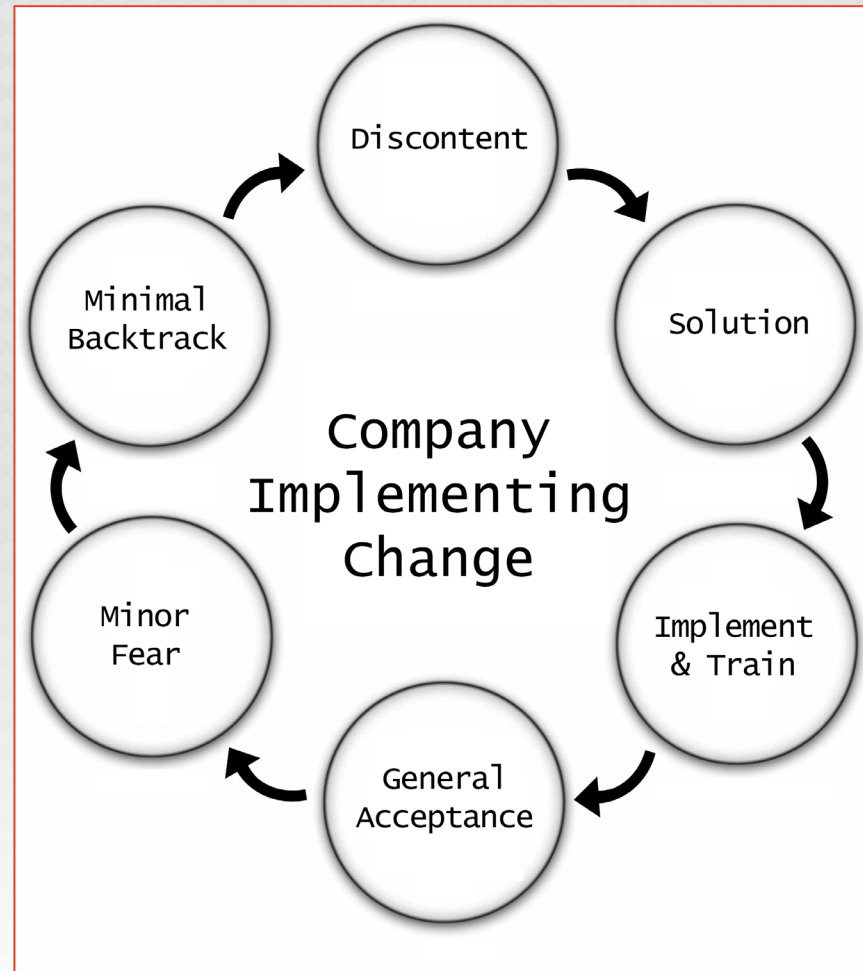
➤ Company:





# Cycle of Change

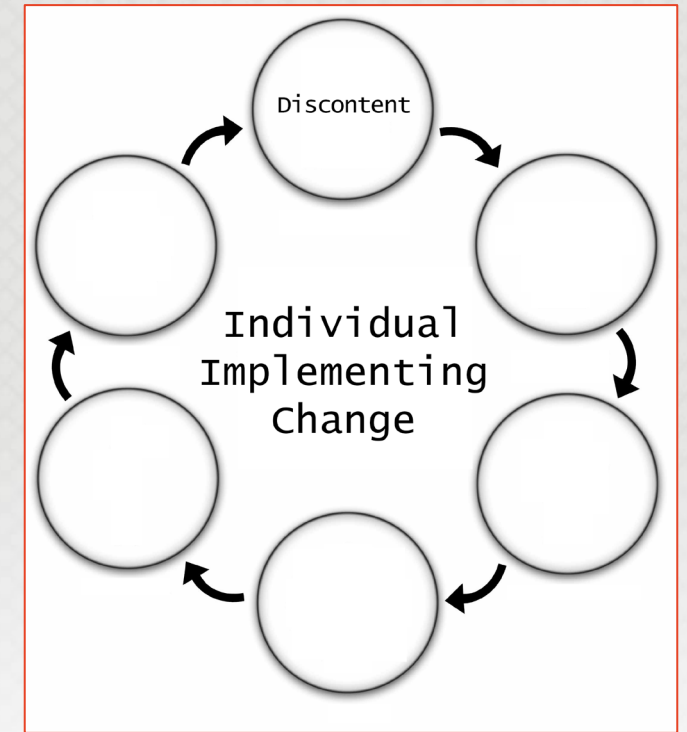
 Company:



# Change Example

## 🚀 Scientific Documentation - Discontent:

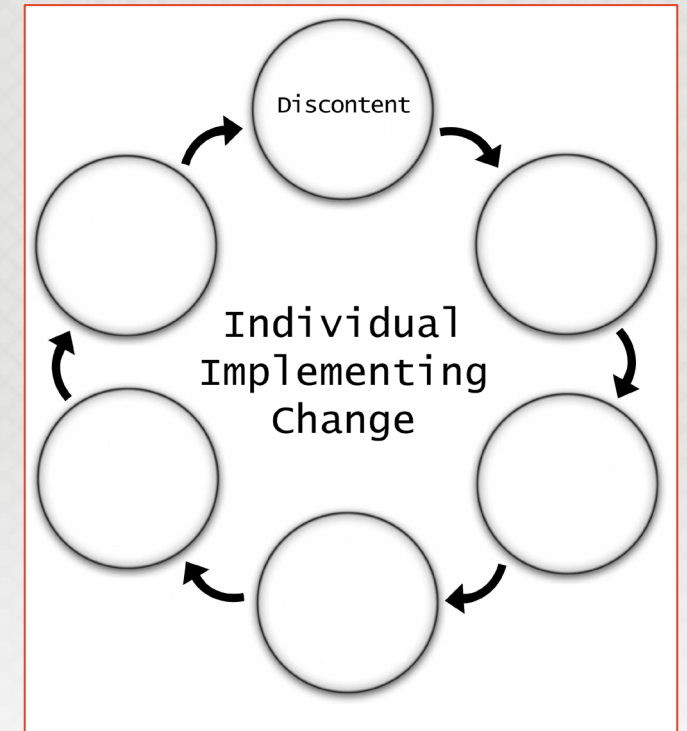
### 🕒 Inconsistent Startups



# Change Example

## 🚀 Scientific Documentation - Discontent:

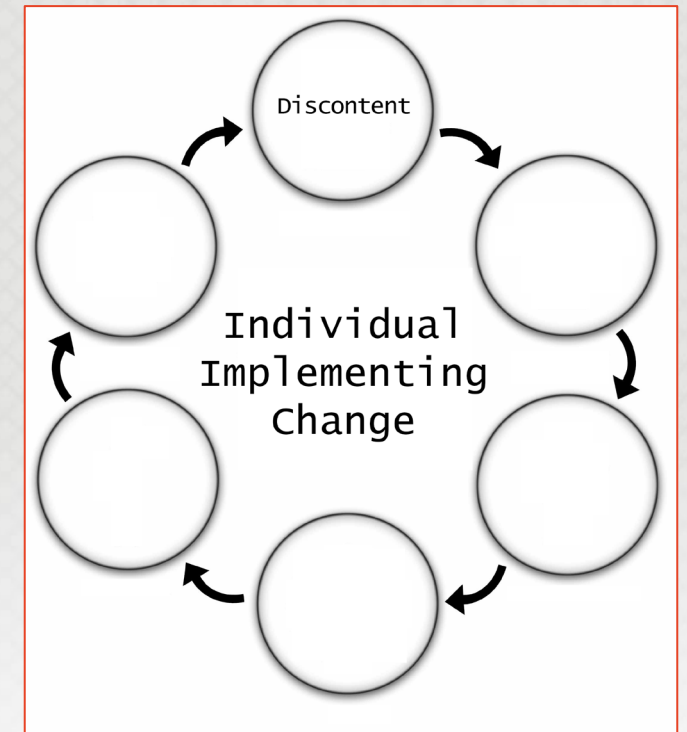
- 🎥 Inconsistent Startups
- 🎥 Customer Returns



# Change Example

## 🚀 Scientific Documentation - Discontent:

- 🎥 Inconsistent Startups
- 🎥 Customer Returns
- 🎥 Provide Quality Assurance



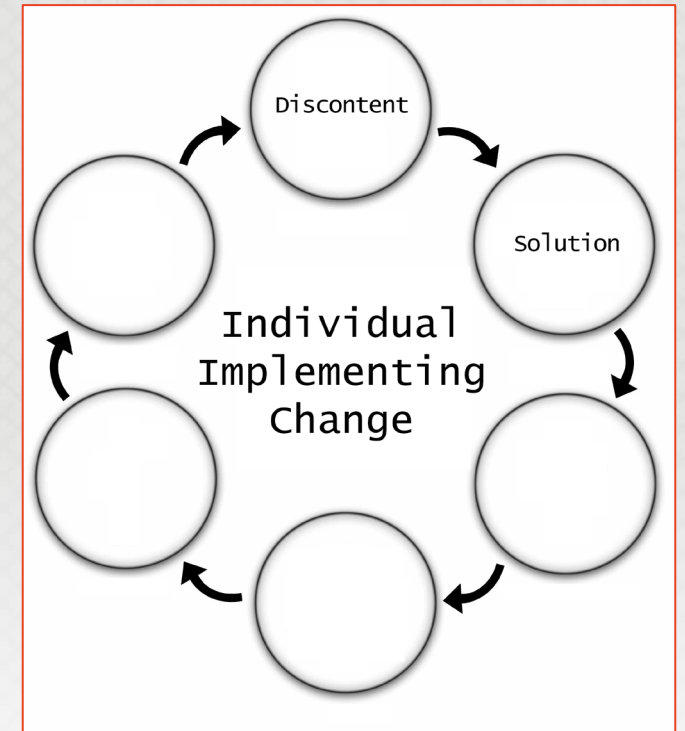


# Change Example

## ➤ Scientific Documentation - Solution:

### 🕒 Document Process Outputs

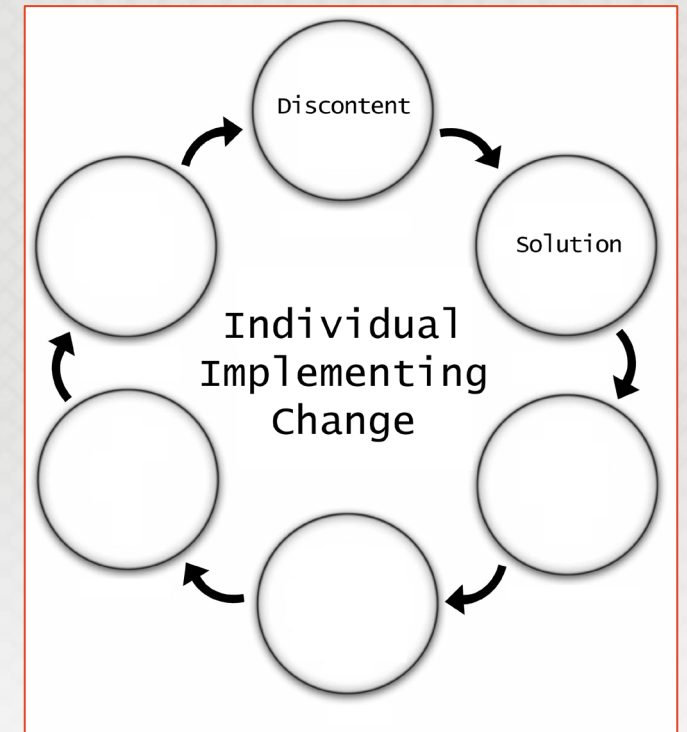
**Inputs vs. Outputs**



# Change Example

## ➤ Scientific Documentation - Solution:

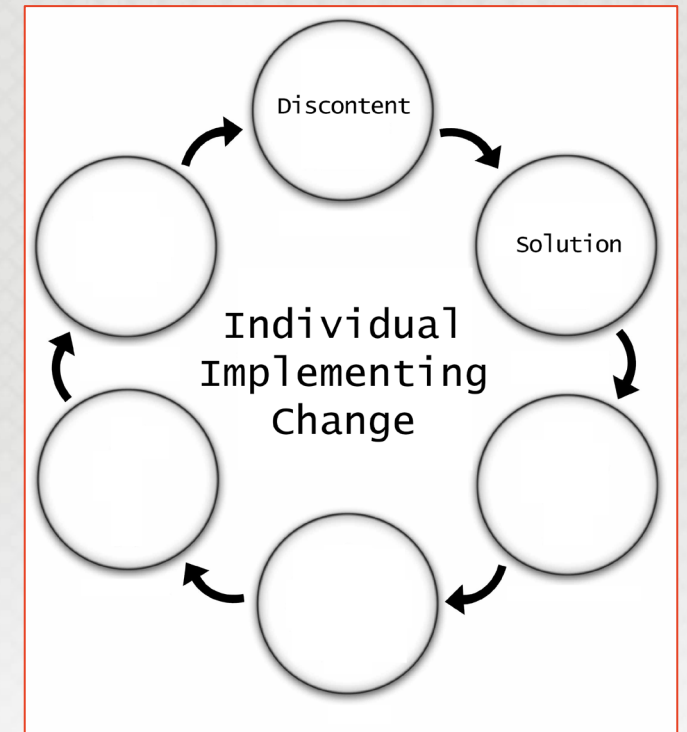
- 🎥 Document Process Outputs
- 🎥 Use Standardized Process



# Change Example

## 🚀 Scientific Documentation - Solution:

- 🎥 Document Process Outputs
- 🎥 Use Standardized Process
- 🎥 Document Process Changes



# Change Example

## 🚀 Scientific Documentation - Implement:

### 🕒 Create New Process Sheet

**Scientific Skillset Worksheet - Process Data**

**Process Information**

Machine # 42

Mold # 18

# of Cavities 2

Material Type PP6106 30%

Material Grade Regrind 30%

Technician Ken Hanson

Date 10/12/2014

Other

Part Code

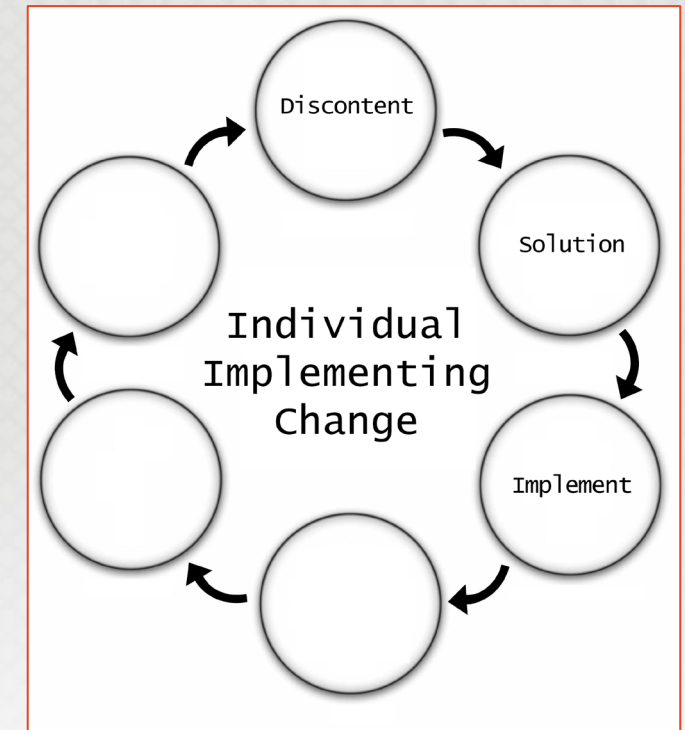
Cooling Time

Core Coolant A

Core Coolant B

Core Surface

Cavity Coolant

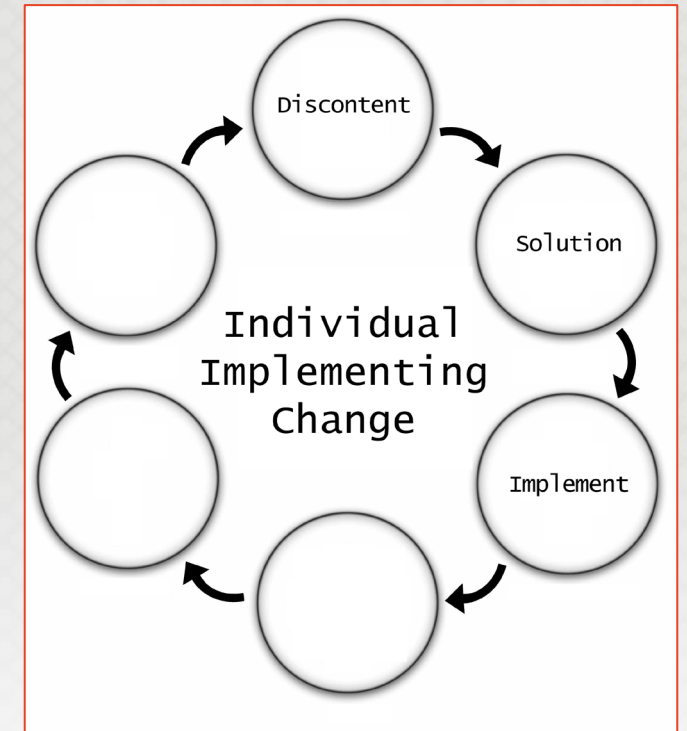




# Change Example

## 🚀 Scientific Documentation - Implement:

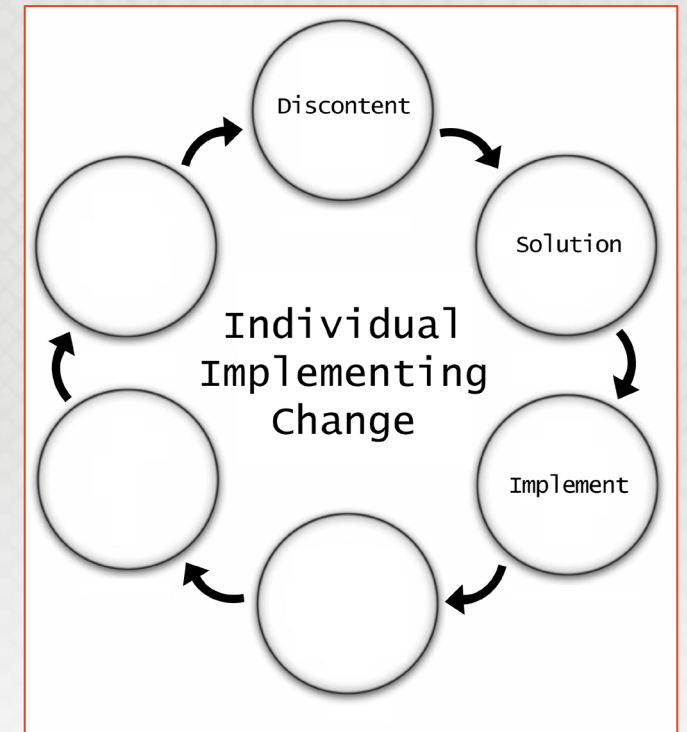
- 🎥 Create New Process Sheet
- 🎥 Generate New Change Logs



# Change Example

## 🚀 Scientific Documentation - Implement:

- 🎥 Create New Process Sheet
- 🎥 Generate New Change Logs
- 🎥 Buy Scales & Probe Kits



# Change Example

## 🚀 Scientific Documentation - Pushback:

🎧 'This is Too Much Work!'

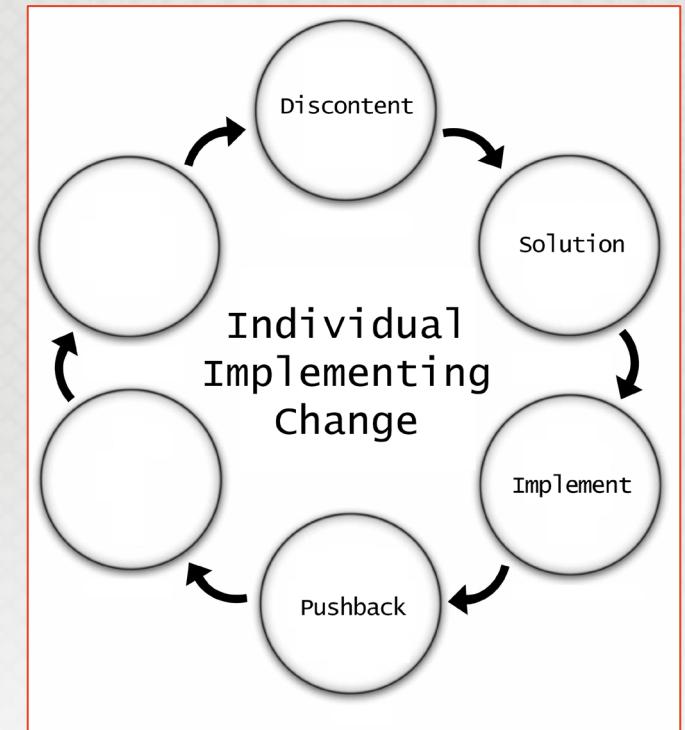
**Scientific Skillset Worksheet - Process Data**

**Process Information**

Machine #	42
Mold #	18
# of Cavities	2
Material Type	PP6106 30%
Material Grade	Regrind 30%
Technician	Ken Hanson
Date	10/12/2014
Other	

**Part Data**

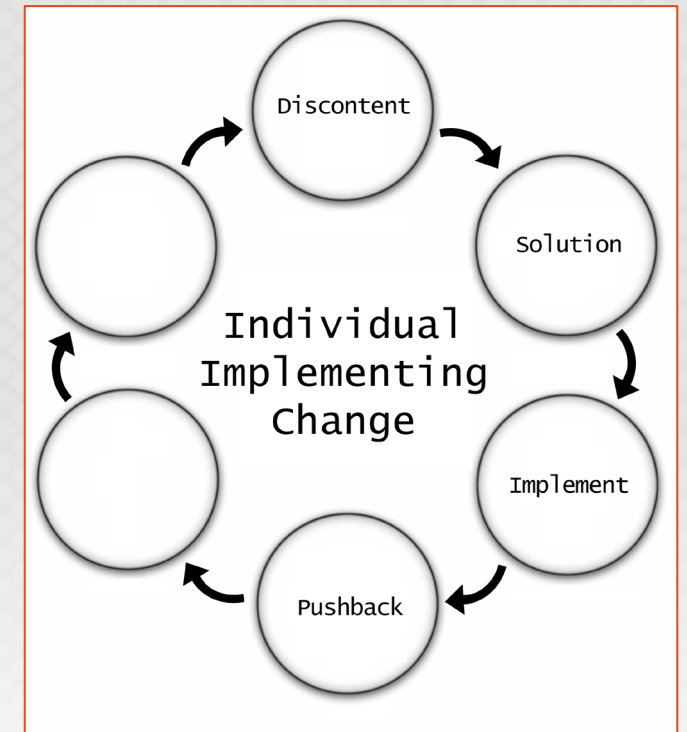
Cooling Time	
Core Coolant A	
Core Coolant B	
Core Surface	
Cavity Coolant	



# Change Example

## 🚀 Scientific Documentation - Pushback:

- 🎧 'This is Too Much Work!'
- 🎧 'We Don't Have Time!'

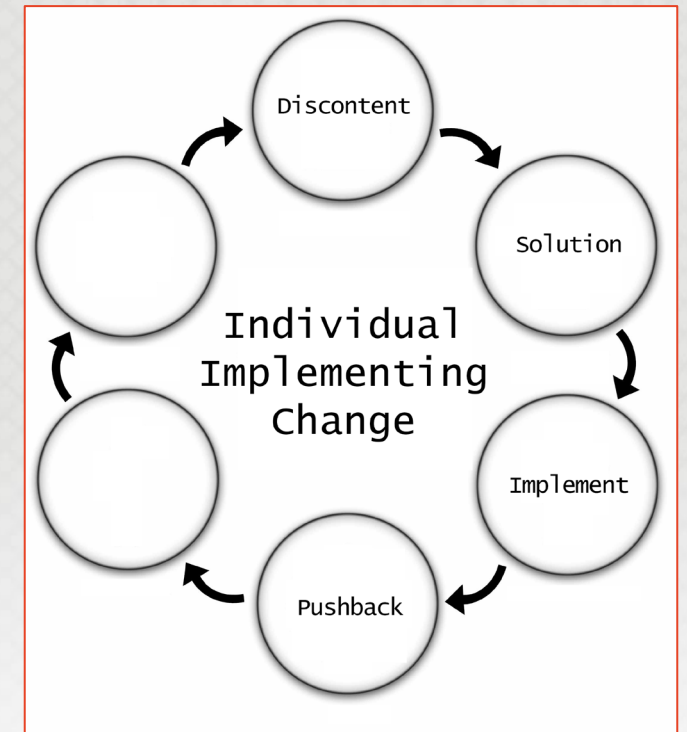




# Change Example

## 🚀 Scientific Documentation - Pushback:

- 🎧 'This is Too Much Work!'
- 🎧 'We Don't Have Time!'
- 🎧 'Why Now after 20 Years?'

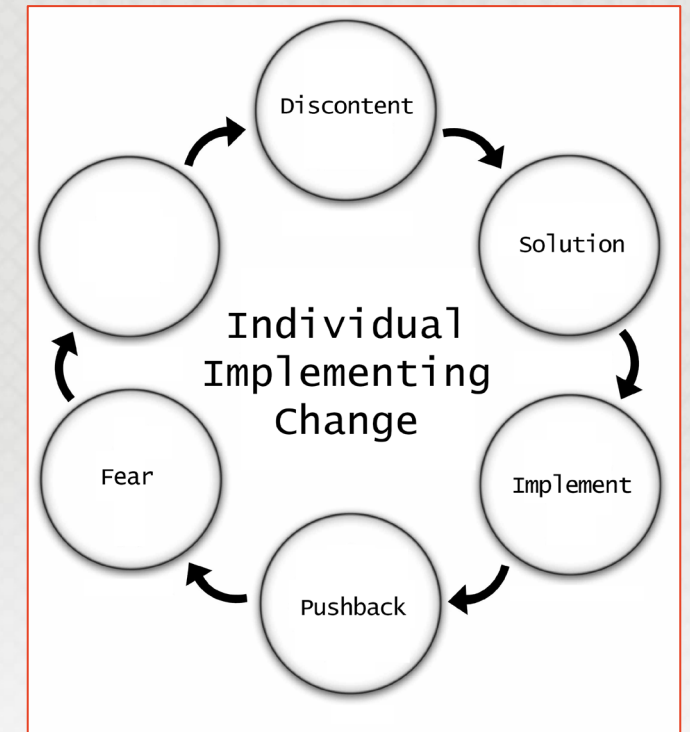


# Change Example

## 🚀 Scientific Documentation - Fear:

🎧 'They are Really Busy'

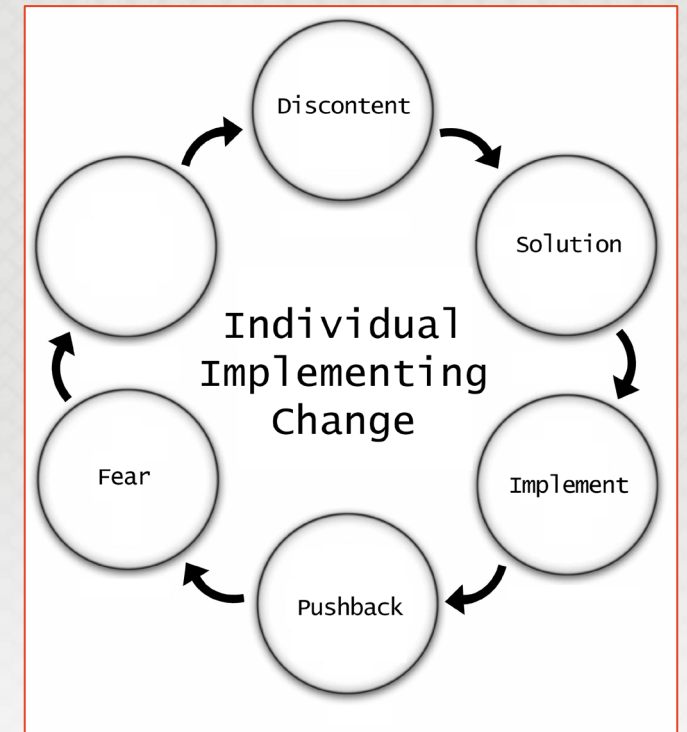
**Documenting  
All Changes**



# Change Example

## 🚀 Scientific Documentation - Fear:

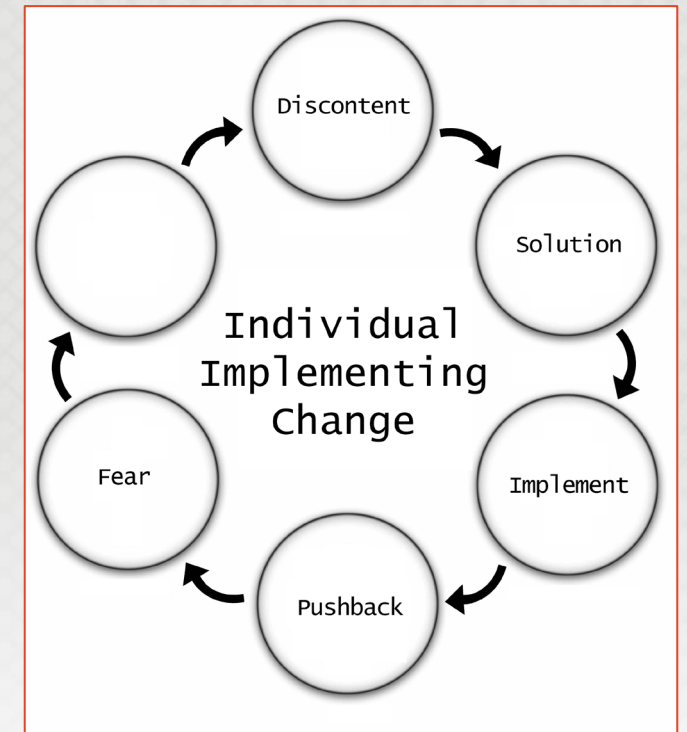
- 🎧 'They are Really Busy'
- 🎧 'Are They Upset with Me?'



# Change Example

## 🚀 Scientific Documentation - Fear:

- 🎧 'They are Really Busy'
- 🎧 'Are They Upset with Me?'
- 🎧 'Is This Really Important?'

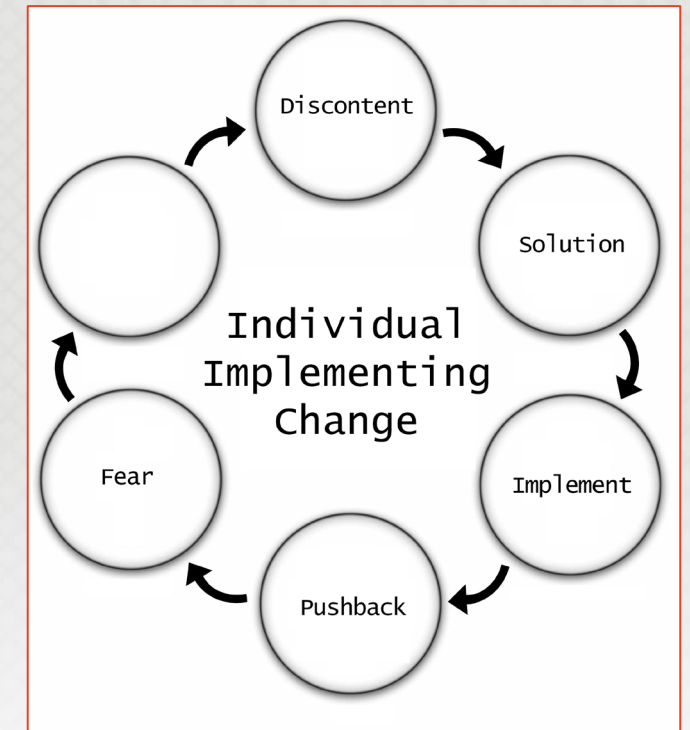




# Change Example

## 🚀 Scientific Documentation - Fear:

- ① 'They are Really Busy'
- ② 'Are They Upset with Me?'
- ③ 'Is This Really Important?'
- ④ 'Will Management Have my Back?'

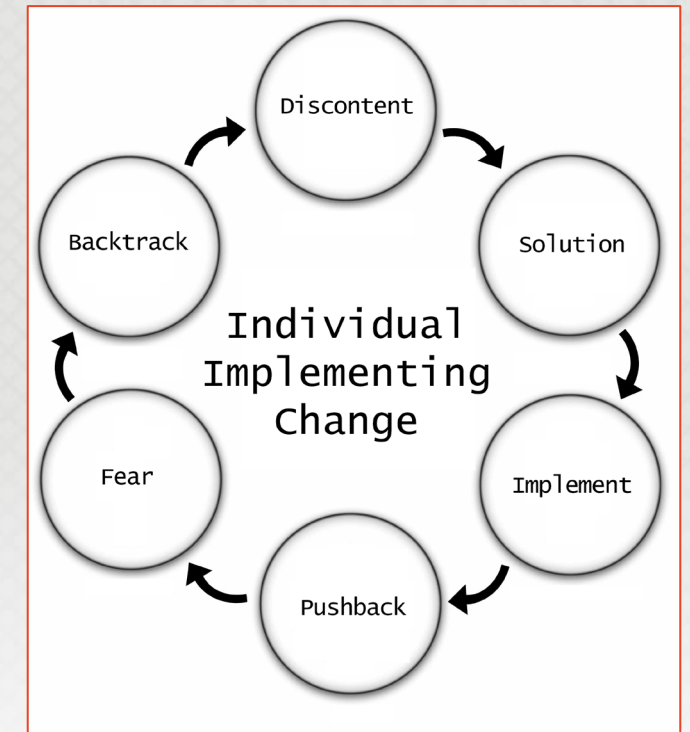


# Change Example

## 🚀 Scientific Documentation - Backtrack:

- 🕒 Few Outputs on the Setup Sheet

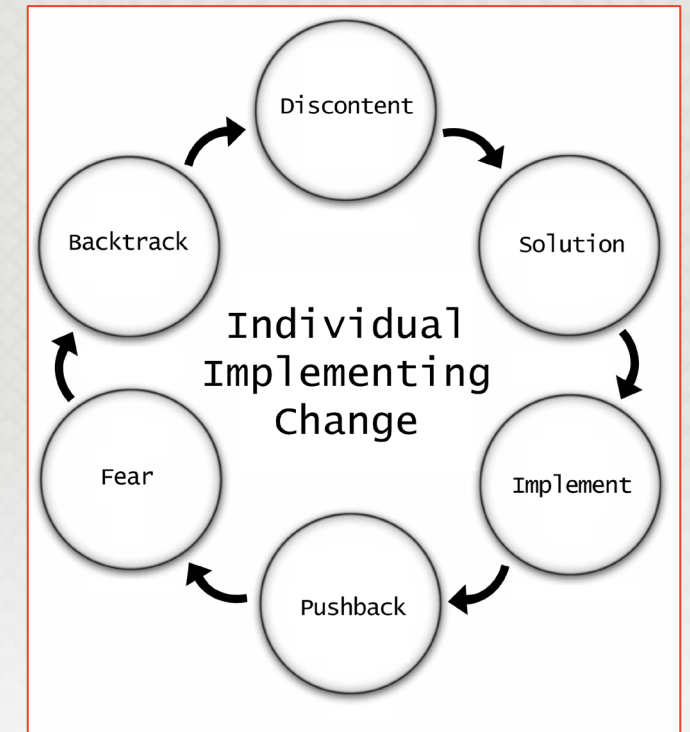
**Hybrid Machine & Process  
Documentation**



# Change Example

## 🚀 Scientific Documentation - Backtrack:

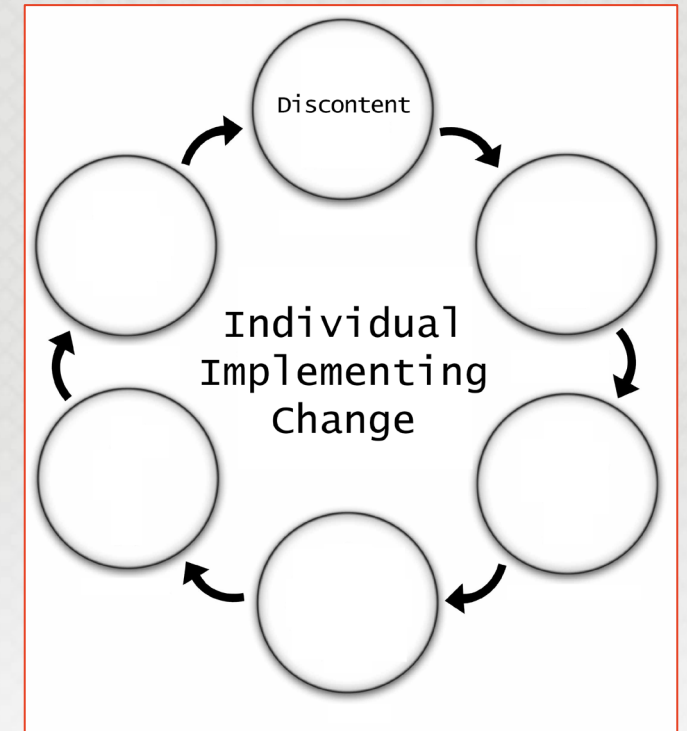
- 🎧 Few Outputs on the Setup Sheet
- 🎧 'Maybe That's Enough?'



# Change Example

## Still Discontent:

- ❶ *Inconsistent Startups*
- ❷ *Customer Returns*
- ❸ *No Quality Assurance*



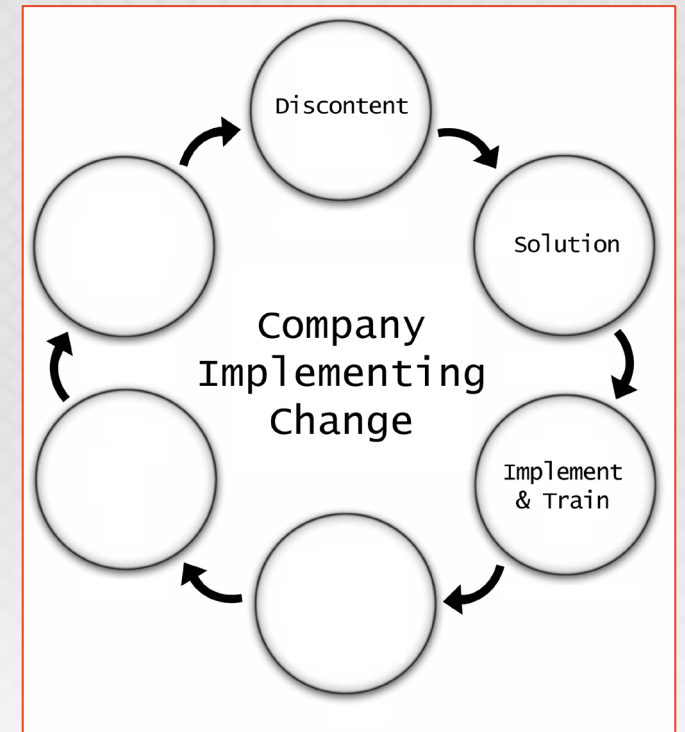


# Change Example

➤ Let's Go Back to Implement:

🕒 New Sheet, Logs, Scales, Probes

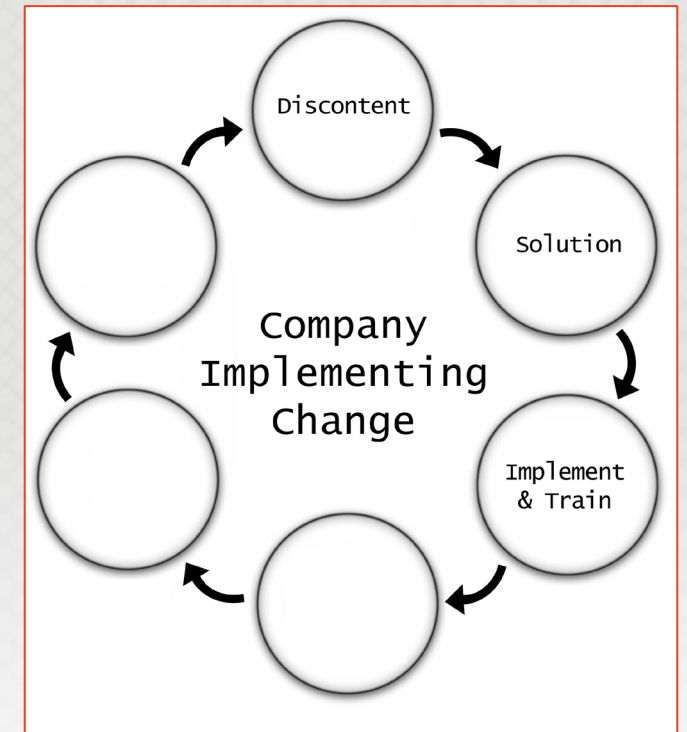
**Documenting  
All Changes**



# Change Example

## ➤ Let's Go Back to Implement:

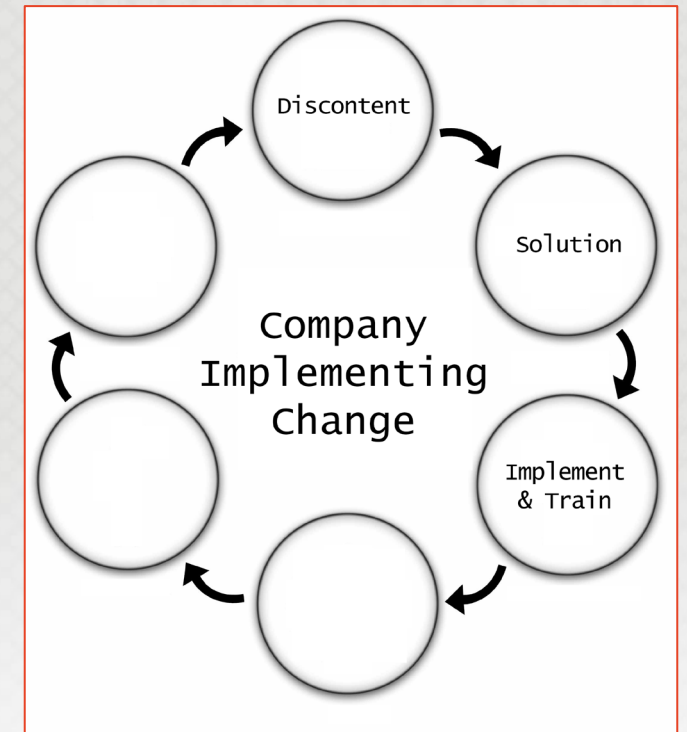
- 🎧 New Sheet, Logs, Scales, Probes
- 🎧 Knowledge-Based Training



# Change Example

## ➤ Let's Go Back to Implement:

- ④ New Sheet, Logs, Scales, Probes
- ④ Knowledge-Based Training
- ④ Hands-On Skill Development



# Implementing Change

➤ Employees Must:

🕒 Learn the 'How' and

1st Stage Injection	
Injection Time	0.12
1st Stage Weight	1.64
Transfer Pressure	754

2nd Stage Packing	
Packing Pressure	280
Packing Time	1.3
Final Part Weight	2
Gate Seal Time*	-

\* from 2nd Stage Time Worksheet

Core Surface Measurement Diagram



# Implementing Change

## 🚀 Employees Must:

- 🎧 Learn the 'How' and
- 🎧 Understand the 'Why'

**Machine Independent Process Setup Sheet**

Machine & Material Info	
Machine #	14
Mold #	640
# of Cavities	4
Material Type	PC
Material Grade	LS455
Technician	J. MOLINA
Date	2/3/2021

Barrel & Recovery	
Melt Temp	305 °C
Recovery Time	4.76 s
Back Pressure	25 bar

1 <sup>st</sup> Stage Injection	
Fill Time	2.05 s
1st Stage Weight	110.7 grams
Transfer Pressure	642 bar

2 <sup>nd</sup> Stage Packing	
Packing Pressure	460 bar
Packing Time	2.00 s
Gate Seal Time	1.7 - 1.8 s
Final Part Weight	123.41 grams

Mold Clamping	
Clamping Force	210 tons
Cycle Time	13.02 s
Clamp Type	TOGGLE

Part Cooling	
Cooling Time	6 s
Core Coolant IN	28 °C
Core Coolant OUT	70 °C
Core Flow	9.5 l/min
Cavity Coolant IN	20 °C
Cavity Coolant OUT	72 °C
Cavity Flow	9.5 l/min

# Implementing Change

## Employees Must:

- ① Learn the 'How' and
- ① Understand the 'Why'
- ① Otherwise they Revert

# Implementing Change



➤ Without 'How' and 'Why':

⌂ They Backtrack

**Machine-Dependent  
Documentation**

# Implementing Change

## Without 'How' and 'Why':

-  They Backtrack
-  Non-Change is Comfortable



# Implementing Change

**Broad Understanding Makes  
Non-Change Uncomfortable**

# Competent Tech Concerns

## ➤ Implementing Change:

- 🕒 Promoted by Management



# Competent Tech Concerns



## 🚀 Implementing Change:

- 🕒 Promoted by Management
- 🕒 Developed by Engineers



# Competent Tech Concerns

## Implementing Change:

-  Promoted by Management
-  Developed by Engineers
-  Sustained by Technicians



# Competent Tech Concerns

**Competent Technicians are  
Key to Implementing Change**

# Competent Tech Concerns

## Good Technicians:

- ⌂ Difficult to Find

**Documenting  
1<sup>st</sup> Stage Injection**

# Competent Tech Concerns

## Good Technicians:

- Ⓜ Difficult to Find
- Ⓜ Expensive to Hire



# Competent Tech Concerns

## Good Technicians:

- ❖ Difficult to Find
- ❖ Expensive to Hire
- ❖ Hard to Retain



# Competent Tech Concerns

## ➤ Common Attempts to Compensate:

- 🕒 Bring in a Guru



# Competent Tech Concerns

## ➤ Common Attempts to Compensate:

- ⌂ Bring in a Guru
- ⌂ Overpay for Talent



# Competent Tech Concerns

## ➤ Common Attempts to Compensate:

- ⌂ Bring in a Guru
- ⌂ Overpay for Talent
- ⌂ Send Techs to Seminars





# Competent Tech Concerns

## ➤ Common Attempts to Compensate:

- Bring in a Guru
- Overpay for Talent
- Send Techs to Seminars
- Solicit Venders for Help





# Competent Tech Concerns

## ➤ Common Attempts to Compensate (cont):

⌂ Expensive



# Competent Tech Concerns

## ➤ Common Attempts to Compensate (cont):

- ⌂ Expensive
- ⌂ Minimal Effectiveness

# Competent Tech Concerns

## ➤ Common Attempts to Compensate (cont):

- ⏮ Expensive
- ⏮ Minimal Effectiveness
- ⏮ Not Sustainable

# Long Term Change

 Requires:



 3-6 Months to Stick





# Long Term Change




## Requires:

-  3-6 Months to Stick
-  Educational Element



# Long Term Change

## Requires:

-  3-6 Months to Stick
-  Educational Element
-  Mastering New Skills



# Long Term Change

## Requires:

- ④ 3-6 Months to Stick
- ④ Educational Element
- ④ Mastering New Skills
- ④ **Constant Reinforcement**

# Long Term Change

## Requires:

- ④ 3-6 Months to Stick
- ④ Educational Element
- ④ Mastering New Skills
- ④ Constant Reinforcement
- ④ Peer Involvement



# Long Term Change

## Requires:

- ④ 3-6 Months to Stick
- ④ Educational Element
- ④ Mastering New Skills
- ④ Constant Reinforcement
- ④ Peer Involvement
- ④ Management Support

# Implementing Sustainable Change

**Techs are the Key to Change...**  
**Need to Understand the**  
**'How' and the 'Why'**