Attracting and Retaining Associates -
A Partnership of HR and Production

Presented by: Dr. David Cochran, Jason Barnes and Jennifer Oxtoby (IPFW) and Andy Gargac (Nissin)
Agenda

• Overview of Nissin Brake Ohio and IPFW
• Collective System Design (CSD)
• The role of Human Resources
• Using CSD to create an HR System Design
• Future Direction
Background: Nissin Brake Ohio

- Tier 1 supplier for brake systems for Honda and Harley Davidson
- Established in 1988
- Company philosophy: The future of Nissin Brake Ohio, Inc. is through the vision and involvement of our Associates.
- # of Employees= 585, including 460 hourly associates
- Current challenges:
  - Retaining associates with many high paying jobs moving into our area with an already low unemployment rate.
  - Choosing the best associates within the bottom of the barrel labor pool
  - Ultimately, trying to bridge the tension gap between HR and Production Depts. and view this issue as a system problem
Center of Excellence in Systems Engineering

The Systems Engineering Center focuses on 3 areas:

**Academics**
- Senior Design
- Hands-on Lab Experience
- Experimentation
- Applied Research
- Publishable Research Papers

**Engagement**
- Student Co-ops and Internships
- Experiential Learning
- Facilitated Design Process for Sustainability for Industry

**Research**
- Enhanced Learning
- Career Readiness of Students
- Economic Impact to Region

- Applied Research
- Publishable Research
- Economic Development Support of Region
- Commercialization
What is Collective System Design?

• Collective System Design provides a rigorous approach to design systems which incorporates shared learning and leadership.

• Collective System Design provides a leadership process for re-designing existing systems and developing new systems.

• Collective System Design provides clearly defined objectives, physical implementation, and performance measures for systems.
Collective System Design Flame Model

The flame model illustrates different areas of the system design:

- **Tone**: Mindset, Attitude, Perspective

- **Thinking**: Logical Design of System, Understand Implementation Path

- **Structure**: Organization Structure

- **Actions/Work**: Processes, Standard Work & Procedures

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Steps 1-3: Leadership Alignment

Step 1:
Senior Leadership Makes a Conscious Choice to Change

Step 2:
Define Stakeholders & System Boundary / Value Stream(s)

Step 3:
Establish Tone and Values
Steps 4-7: The Thinking that drives Change

Step 4:
Identify Customers and Needs

Step 5:
Determine Functional Requirements (FRs)

Step 6:
Map the Physical Solutions (PSs) to FRs

Step 6.1:
Evaluation of Design Matrix

Step 6.2:
Is the Design Acceptable?

Step 6.3:
Is the Decomposition Complete?

Step 7:
Define Performance Measures (FR_{M} & PS_{M})
Step 8: Establishing Organization Structure

- Physical Solutions (PSs) defined by the system design map lead to the organization structure
Steps 9 - 9.4: Sustainability through PDCA

Continuous Improvement: CSD Map and PDCA

- White sheet Standard Work defines normal operation.
- Green sheet Standard Work defines how to identify and resolve abnormal conditions in a predefined manner.

Step 9.1: (Plan)
Implement PSs with Standard Work

Step 9.2: (Do)
Complete the Standard Work

Step 9.3: (Check)
Check Against the Measures

Step 9.4: (Act)
Modify Design as Needed

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Step 10: Quantify Lost Opportunities

Step 10:
Evaluate the Cost of Not Achieving the FRs
Step 11 & 12: Resource Allocation & Sustainability

Step 1:
Senior Leadership Makes a Conscious Choice to Change

Step 10:
Evaluate the Cost of Not Achieving FRs

Step 11:
Prepare Resource Re-allocation Plan

CSD Map and PDCA

Feedback for Sustainability and Growth
## Comparison of CSD to Lean / Six Sigma

<table>
<thead>
<tr>
<th>ACTION</th>
<th>Physical Modeling of the Work</th>
<th>Lean</th>
<th>Six Sigma</th>
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<td>Kaizen</td>
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<td>STRUCTURE</td>
<td>Measures/evaluation tied to FRs</td>
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<td>Organizational processes and structure derived from system design map</td>
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<td>THINKING</td>
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<td>• Establish functional requirements and design solutions</td>
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<td>• Robust Design</td>
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<td>• Standardizing Work</td>
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<td>TONE</td>
<td>Leadership journey to establish collective agreement, values, beliefs and learning environment</td>
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<td>Awareness of the existing tone and its impact</td>
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**The Language of CSD**

**FR**: Functional Requirement (FR) – Collective Agreement

**PS**: Physical Solution (PS) – Proposed Solution

**FR$_M$** is a performance measure tied to the FR (outcome)

**PS$_M$** is a measure on the PS (doing the work)

*Note*: Not every FR or PS requires a measure.
Manufacturing System Design Decomposition (MSDD)
Lean Is the Result of Achieving the System Design FRs
System Diagnosis by MSDD Questionnaire

Average:
\[(4 + 4 + 5 + 4) / 4 = 4.25\]
### Survey Data Communicate a Range of Responses

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<th>Q114</th>
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**IPFW CENTER OF EXCELLENCE IN SYSTEMS ENGINEERING**

**INDIANA UNIVERSITY–PURDUE UNIVERSITY FORT WAYNE**

**AN IPFW CENTER OF EXCELLENCE**
Survey Results Show System Performance
The Foundation of Successful System Design

PS-Q11
Stable output from operators

FR-Q11
Ensure that operator has knowledge of required tasks

FRm-Q11
Number of defects per n parts caused by an operator’s lack of understanding about methods

PS-Q11
Training program

FR-Q12
Ensure that operator consistently performs tasks correctly

FRm-Q12
Number of defects per n parts caused by non-standard methods

PS-Q12
Standard work methods

FR-Q13
Ensure that operator human errors do not translate to defects

FRm-Q13
Number of defects per n parts caused by human error

PS-Q13
Mistake proof operations (Poka-Yoke)
The Challenge of Employee Turnover

- Increased costs of hiring, training and replaying employees
- Productivity
- Quality
- Employee morale
- Financial performance of company
The Employee Lifecycle

• Stages that all employees go through

• Ability to retain good employees is impacted at each stage

• HR plays a critical and strategic role
HR Policies and Practices Matter

• HR manages the administrative side of employment and counsels on benefits and compensation

• HR is most often responsible for recruiting and hiring employees with a big role in training

• HR drives employee engagement, which is directly tied to employee motivation, commitment and drive
Production/HR Partnership to Reduce Employee Turnover

- Introduced Collective System Design to HR Director and Manager in order to design HR System
- Collaborative meetings between HR and Production to identify requirements (FRs) and solutions (PSs)
- Simultaneously running six sigma project to identify causes of employee turnover
Maintain an adequate workforce to achieve Nissin mission
FRm1

Create a culture/environment for Continuous Improvement
FRm12

Provide a safe, clean and ergonomically correct environment for all Nissin Associates
FRm11

Bring in the right people
FRm13

Get new employees ready to work
FRm14

Keep the right people in the right jobs
FRm15

What

How

Solution implementation sequence

System Design Nomenclature:
FR: Requirement. What we must achieve (starts with a Verb).
Rm: Performance measure to evaluate R achievement
PS: Solution. Planned means to achieve requirement. (defined by a Noun).

HR System Design Map

Nissin Human Resources System Design Map

PS1

PS12 PDCA Cycle with Standard Work & Tone
PS13 Employee recruiting and hiring plan and procedures
PS14 New hire plans and procedures
PS15 Employee retention plan and procedures

Level 2

FR11 Provide a safe, clean and ergonomically correct environment for all Nissin Associates
FRm11

FR12 Create a culture/environment for Continuous Improvement
FRm12

FR13 Bring in the right people
FRm13

FR14 Get new employees ready to work
FRm14

FR15 Keep the right people in the right jobs
FRm15

Level 3

FR131 Recruit qualified people
FRm131

FR132 Hire qualified people
FRm132

FR141 Onboard and develop skills and capabilities of new employees
FRm141

FR151 Develop, reward and recognize employees
FRm151

FR152 Understand why employees leave
FRm152

Level 1

4/18/17

PS11 ?

PS12 NBO Recruiting Process
PS13 NBO Hiring Approach
PS14 NBO Orientation and Training Process
PS15 NBO Employee Development Approach
PS152 NBO Exit Interviews

PS131 NBO Recruiting Process
PS132 NBO Hiring Approach
PS141 NBO Orientation and Training Process
PS151 NBO Employee Development Approach
PS152 NBO Exit Interviews
HR System Design

Level 1

FR1
Maintain an adequate workforce to achieve Nissin mission
FRm1
?

PS1
Nissin Human Resources System Design Map

Level 2

FR13
Bring in the right people
FRm13
?

PS13
Employee recruiting and hiring plan and procedures

Level 3

FR131_
Recruit qualified people
FRm131_
?

PS131
NBO Recruiting Process

FR132_
Hire qualified people
FRm132_
?

PS132
NBO Hiring Approach
FR1
Maintain an adequate workforce to achieve Nissin mission
FRm1
?

PS1
Nissin Human Resources System Design Map

FR14
Get new employees ready to work
FRm14
?

PS14
New hire plans and procedures

FR141_
Onboard and develop skills and capabilities of new employees
FRm141_
?

PS141
NBO Orientation and Training Process
FR1
Maintain an adequate workforce to achieve Nissin mission
FRm1?

PS1
Nissin Human Resources System Design Map

FR15
Keep the right people in the right jobs
FRm15?

PS15
Employee retention plan and procedures

FR151_
Develop, reward and recognize employees
FRm151_?

PS151
NBO Employee Development Approach

FR152_
Understand why employees leave
FRm152_?

PS152
NBO Exit Interviews
**Six Sigma Project**

**Project Objective:** Incorporate six sigma practices into a collective system design project in order for NBO to purposefully implement practices that positively impact the workforce, thereby increasing associate retention.

<table>
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<tr>
<th>STEPS</th>
<th>TASKS</th>
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| Define | • Define $Y = \text{Employee Retention}$  
• Create HR System Design Map and Value Stream Map (FRs)  
• Tools: process mapping, SIPOC, RACI |
| Measure | • Identify key metrics: Start and Separation Date, Training Date, OJT Trainer, Supervisor, Absenteeism Points, Pay Rate, Reason for leaving  
• Collect data  
• Tools: 5 Whys, Fishbone |
| Analyze | • Identify and screen potential causes  
• Identify critical solutions to implement (PS)  
• Tools: Correlation, ANOVA, Hypothesis Testing, Regression |
| Improve | • Implement solutions (PS)  
• Establish measures for each requirement ($FR_m$) and solution ($PS_m$) |
| Control | • Implement process controls and PDCA cycle |
**Stable Workforce Leads to Stable Production**

**Hourly Associates**

- 23% reduction in turnover from last ki

**Technical Associates**

- 93% reduction in turnover from last ki.

65 Ki activity

- Target more focused associate feedback discussions
- Target more morale boosting activities
- Continue to improve 2 way communication between the Production Managers and HR
- Continue to review and revise policy with managers
Stable Workforce Leads to Stable Production

65 Ki activity
- Target temp ratio zone from 6% - 12% for flexibility or provide a buffer in changing market conditions
- Lower temp ratio will help our ability to:
  - Spend more time cross training current NBO associates
  - Improve direct training with the Temporary Associates
  - Reduce downtime
  - Improve Quality

Continued effort to reduce temp associate ratio to a manageable 12%

Strong effort to balance the temp associate by shift to assure balanced “know – how”

Feb 2017

Jan 2016
Next Steps

- Continue working on HR System Design map with Nissin to evaluate and complete the design including lower-level requirements, solutions and measures
- Complete data analysis for six sigma project
- Develop standard work and implement with PDCA
- Create resource allocation plan to achieve HR System Design Map Requirements
Questions?

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