PACCAR Six Sigma Journey

Presenter today

D. Scott Sink
Program Director Global
Performance Excellence, IISE
Sr. Advisor, The Poirier Group

Our Presenter:

Ross Wagner
Six Sigma BB
Chillicothe PACCAR Plant
IISE Chapter #1 Member

14 July 2022
PURPOSE:
To continue our series of Webinars on Operational Excellence and Business Process Management by providing a Case Study from IISE Chapter #1--PACCAR

11:00 Tee-up—Scott

11:05 Ross Wagner—Six Sigma Black Belt, PACCAR Chillicothe Plant, Member and IISE, Chapter #1 member

12:25 Scott Close out and Adjourn
ISE’s Create Value by Integrating People, Strategy, Process and Technology

The Requirement for the rate of Improvement of this Integration has been changing dramatically.

ISE’s are well suited (trained) to help ensure Business Process Improvement happens faster and better!

**IIESE PERFORMANCE EXCELLENCE WEBINARS**

Boost your career. Add knowledge to your ISE toolkit. Select from any (or all) of the IIESE Performance Excellence Webinar tracks below to hone your skillset to its maximum and improve your organization.

**Performance Excellence topics include ...**

- Accelerating Benefits Realization
- Best Practice Case Studies
- Career and Leadership Development
- Change Leadership and Management
- Industry and Service Systems 4.0
- Integrated Lean and Six Sigma
- Operational Analytics
- Operational and Business Process Excellence
- Personal and Professional Mastery

**Industry and Service Systems 4.0**
Explore the major “movements” and hear thought leaders in Industry 4.0, Healthcare 4.0, Supply Chain 4.0, Service Systems 4.0, more.

- Business Process Management 4.0/5.0: Perspectives and Points of View to Migrate to Higher Levels of Operational Excellence
- Integrated Systems Engineering: Thought Leader Perspectives and Points of View
- Supply Chain 4.0: Cold Supply Management-Vaccine Case Focus
- Using ‘Control Towers’ to Integrate your Digital Supply Network
- Supply Chain 4.0: Benchmarking to Latest Innovations in Logistics and Supply Chain Leadership and Management
- Service Systems Engineering Best Practice Virtual Benchmarking
- Service Systems Engineering Outstanding Innovation
- The Industry Practitioner Track Orlando 2019: Sneak Preview
- Smart Supply Chains and Industry 4.0
- The Impact of Industry 4.0 on Business Models
- The ISE Role in Service Systems Engineering: Service 4.0 Overview, Digital Transformation in Healthcare and Enterprise Shared Service
- Whetting your Appetite (“Aperitivo”): All you Need to Know about Industry 4.0

**Operational and Business Process Excellence**
Some organizations integrate Business Process Excellence perfectly. Others need a well-designed program. We’ll show you how to jump-start a great Op Ex Program.

- Agile Operational Excellence/Business Process improvement
- IIESE Annual Conference 2022: The Performance Excellence Track Detailed Preview
- The New Industrial Engineering: Integrated Systems Engineering and Management Systems Engineering
- Building Performance Management Systems: Sharing Lessons Learned
- Business Process Management 4.0 – Glimpses of What’s Ahead
- Engineering Social Service Systems
- Operational Excellence: Creating Strategies and Migration Plans for Large-Scale Improvement Initiatives
- Industry Benchmarking: Small and Medium Sized Enterprises Best Practices in Operational Excellence
- How to Design, Develop and Execute “Flow Workshops”
- Principles and Tools to Ensure Optimal Process Performance
- IIESE Outstanding Capstone Senior Design Projects
- Pioneering and Engineering a New World
- Resilience Re-examined: Reengineering How We do Business and Ensure Public Safety
- Restarting the Economy: Guidance on the Backside of the Disruption
- Business Continuity Strategies and Tactics in Periods of Major Disruption
- Navigating Your Business Through the COVID Crisis
- Growth and Failure Scenarios in Other Enterprises
20’s style Operational Excellence Programs are a product of well over 100 years of ‘design and development’

A BRIEF -HOWEVER COMPLEX- HISTORY OF LEAN
Several branches & trends influence its evolution

Operational Excellence
Evolution began with the founding of Industrial Engineering circa turn of 20th Century
Branches evolved in Lean and TQM then into Integrated LeanSigma and now into Integrated Systems Engineering:
Enterprise Wide Operational Excellence Programs
Flex Lean Six Sigma Journey—from our 15 March Webinar

Establish an Agile Continuous Improvement Management System that enables Flex Forward and ensures Flex is a valuable partner to improve the world.

- Just-in-Time (JIT)
  - TAKT Time
  - Single Piece Flow
  - Pull Production

- Setting Foundation
  - Training
  - Leadership
  - Change Management
  - Supermarket
  - Value Stream Map
  - 5s + 1
  - Quick Changeover

- Lean Office
  - Streamline office processes

- Lean Supply Chain
  - End-to-end supply chain processes

- Lean 2.0
  - End-to-end business process
  - Customer / Supplier Engagement

- Lean Six Sigma 4.0
  - Digitization
  - Automation

- Agile CI

- Agile Continuous Improvement

- Kaizen to Business Needs
  - Aligned to Finance & Business Priorities

- Commit to Deliver
  - Quality
  - Cost
  - Delivery
  - Responsiveness
  - Productivity
  - Visible Difference
  - Efficiency
  - Speed
  - Assets Velocity
  - People Empowerment
  - Lead Time Reduction
  - Pristine Ramp, Transfer & Startups
  - Environment (CSER)
  - Loss Prevention
  - System Migration
SIX SIGMA JOURNEY FOR PACCAR

Brief story of how it began and how it currently thrives
OBJECTIVES

- Introduction
  - Who is PACCAR?
  - Our World-Wide Footprint
  - Explain our Early Continuous Improvement Background
- PACCAR Continuous Improvement Program
  - Mission
  - Training
  - Goals
  - Performance
  - Recognition
Continuous Improvement
PACCAR Inc is a global technology leader in the design, manufacture and customer support of high-quality light-, medium- and heavy-duty trucks under the Kenworth, Peterbilt, and DAF nameplates. PACCAR also designs and manufactures advanced diesel engines, provides financial services, information technology, and distributes truck parts related to its principal business.
KENWORTH - CHILlicothe

- ESTABLISHED 1974
- OVER 2,000 EMPLOYEES
- ALMOST 200 TRAINED BELTS ONSITE
Introduction – Ross Wagner

Colleges Attended & Degrees Obtained
- Shawnee State University – Pre-Engineering
- Ohio University – BS in Industrial & Systems Engineering
- Capital University – Masters in Business Administration

Job Titles in my career spanning 25 Years
- Industrial Engineer
- Process Engineer
- Project Engineer
- Manufacturing Engineer
- Program Manager
- Six Sigma Black Belt
25 YEAR PROGRAM EVOLVEMENT

The Path of Program Strategic Methodologies

1997

Mid 2000’s

2018+

© PACCAR Inc.
Our mission is to develop highly skilled leaders who will continuously improve business processes, products and services to contribute to the customer’s and the company’s success!
PROGRAM START “THE BEGINNING”

• PACCAR Launched Six Sigma in 1997
  • Under the direction and leadership of Helene Mawyer
  • Helene Mawyer, PACCAR Vice President of Global Quality (retired 2016)
    • Established the foundation and principles that drive our program today.
    • Prior to joining PACCAR, she worked for 20+ years with General Electric in a variety of technical and managerial assignments.
Early waves of training involved identifying high potentials
Curriculum was highly monitored, evaluated, and adjusted
Classes were audited and attended by executives
Post class follow up was instrumental and engaging
Students and Champions were given participation expectations
TRAINING – TARGET STUDENTS

- Engineers
- Material Planners
- Quality Coordinators
- Maintenance Technicians
- Application / System Developers
- Transactional Employees
- Supervision / Unit Managers
- Area Business Managers
- Assistant Plant Managers
- Executives
TRAINING – CLASSES / CURRICULUM

**FIRST WAVES**

- **Green Belt**
  - Black Belt Week 1
  - Black Belt Week 2

- **Black Belt**
  - Black Belt Week 3
  - Black Belt Week 4

**PROGRESSION**

- Lean Belt
  - Restructured

**TODAY**

- **Lean Belt Week 1**
- **Green Belt Week 1**
- **Green Belt Week 2**
- **Black Belt Week 3**
- **Black Belt Week 4**

**Design for Six Sigma - Basics**
- Champion
  - Design for Six Sigma
  - Transactional DFSS
  - Champion

**Design for Six Sigma - Advanced**
- Champion
  - Transactional DFSS
  - Problem Solving
  - Champion
“Give me six hours to chop down a tree and I will spend the first four sharpening the axe.”

- Abraham Lincoln -

“It’s hard to lead a cavalry charge if you think you look funny on a horse.”

- Adalai Stevenson -
STUDENTS – AFTER CLASS

- Continue to work projects
- Expectation for using tools to solve problems and document
- Quarterly visits from Corporate

Standard Project Closure Templates Provided
PROGRAM FOLLOW UP

Quarterly Review ~4 Years

- Corporate representative monitoring progress of program
- Met with the belts working the projects
- Met with the champions of the belts
- Met with site staff to facilitate all were in alignment for participation
GOALS – ELEMENTS TO THRIVE

Ever Changing...

Financial Savings – Hard and Soft

Belt Utilization – Certain Quantity of Projects / Year / Belt

Quantity of Projects Complete d / Year

% of Closed Projects Improving Quality of our Product
GOALS – PERFORMANCE APPRAISALS

Site Specific - Driving Participation for Individuals
  • Belts
  • Champions
  • Executives

Corporation
  • Results Published in Annual Financial Report
BELT ROLES AND TITLES

- Functional Belts – Lead, Apply, Grow
- Dedicated Belts – Coach, Mentor, Lead, Teach
- Master Black Belts – Guide, Coach, Facilitate, Content Experts, Developers
- Director Continuous Improvement (6σ) – Oversight, Conductor, Champion
- Vice President of Quality – Strategy, Tactics, and Direction
PICKING PROJECTS

- Experience of Belt with Continuous Improvement
- Experience of Department Personnel with Continuous Improvement
- Largest Portion – Improvement Made by Belts regarding their own job
  - Most often not announced or pre-determined
  - Smaller Impact but big for morale and engagement
- Smaller Portion – Improvements across departments or divisions
  - These are typically highly planned and coordinated
  - Large impact to the business
TYPICAL PROJECT PORTFOLIO
TYPICAL PROJECT PORTFOLIO

Quality 3 – 10 Form
TYPICAL PROJECT PORTFOLIO

DMAIC Form
**PROJECT REPORTING STRUCTURE**

- Each Division Reports Monthly – Completed Projects
- MBB/DBB & Accounting Review and Approve All Project Savings

<table>
<thead>
<tr>
<th>No.</th>
<th>Project Number</th>
<th>Champion Name</th>
<th>Assigned Belt</th>
<th>Division / Location</th>
<th>Project Description</th>
<th>Book &amp; Implement Dates</th>
<th>Realized Savings</th>
<th>Annualized Savings</th>
<th>Savings Category</th>
<th>Quality / Safety Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

© PACCAR Inc.
PROJECT IMPACT MONITORING

- Significance of Manual Signatures and Sign Offs for Project Approval
- Audits of Capital Investment and Quality Corrective Action Projects
- As savings increases >$100K to >$1M, additional approves from Division and Corporate required

<table>
<thead>
<tr>
<th>Function</th>
<th>Name</th>
<th>Init.</th>
<th>Date</th>
<th>Function</th>
<th>Name</th>
<th>Init.</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project</td>
<td>T. Scott</td>
<td>25</td>
<td>12/2/21</td>
<td>Process</td>
<td>C. Cooper</td>
<td>C</td>
<td>12/23</td>
</tr>
<tr>
<td>Champion</td>
<td>J. Ziltzalber</td>
<td></td>
<td>1/1/22</td>
<td>M.E.</td>
<td>C. McGuire</td>
<td></td>
<td>1/10</td>
</tr>
<tr>
<td>DBB</td>
<td>R. Wagner</td>
<td>M</td>
<td>1/2/23</td>
<td>M.E. Mgr</td>
<td>JD Pinkerton</td>
<td>J</td>
<td>1/20</td>
</tr>
<tr>
<td>Plant Mgr</td>
<td>D. VanZuiden</td>
<td></td>
<td>1/1/21</td>
<td>M.E. Dir</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Mgr</td>
<td>Matt Hartley</td>
<td>M</td>
<td>1/2/21</td>
<td>Controller</td>
<td>R. Butterbaugh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality Mgr</td>
<td>Brett Perkins</td>
<td></td>
<td>1/1/22</td>
<td>Controller</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Safety Manager
  Signs all Safety Projects
- Quality Manager
  Signs all Quality Projects
- Accounting Controller/Representative
  Signs all Projects
- DBB / MBB
  Signs all Projects
- Plant Manager
  Signs all Projects over certain $avings
RECOGNITION ACTIVITIES

- Top of Class Competition
- Certification
- PACCAR Six Sigma Awards
- Site Specific
  - Project of the Month
  - Annual Awards – Multiple Categories
  - Achievement Celebrations
RECOGNITION – TOP OF CLASS COMPETITION
2019 Lean Six Sigma
Continuous Improvement

Green Belt Certification
Caleb Campbell was presented with his Green Belt Certification. He is the first Certified Green Belt in Kenworth Chillicothe.

What is Certification
After completing training, you must complete three projects using tools covered in training, and pass a test.

Vision and Leadership
Developing Exceptional People and Teams
Six Sigma Team Provided Lean Belt Certification Bringing Kenworth-Chillicothe to 157 Certified Lean Belts

Kenworth Chillicothe
RECOGNITION – ANNUAL BANQUET
RECOGNITION – ANNUAL AWARDS

Most CI Projects

Most CA Projects

Best Quality

Safety Excellence

Environmental Impact

Morale

Champion Choice

Tip Top Champion

Plant Manager’s Pick
Continuous Improvement

Goal Alignment and Performance

Kenworth-Chillicothe Six Sigma reached a Major Milestone by Completing Project #6,000. This is a compilation of over 23 years of continuous improvement activity saving $294M.
RECOGNITION – CORPORATE WIDE

• Each PACCAR Division Submits Annually
• 5 Categories – 1 Winner from Each
  • Customer Focus
  • Environmental
  • Productivity
  • Quality Improvement
  • Revenue
• Overall PACCAR Winner Picked from 5 Categories
• Winning Projects each Category
  • Receive Financial Awards
  • Receive Plaques
PROGRAM PERFORMANCE

Show Kenworth Chillicothe Historical Performance

Keys to Maintaining a Successful Program Checklist

Indicate PACCAR’s Next Steps with Continuous Improvement

Show how PACCAR has performed with a CI Influence – Business Impact
2021 Kenworth Chillicothe CI Results

Historical Performance Over Last Decade

Safety Impact = 21%
Quality Impact = 60%

2021 Results:
715 Projects Closed
Saving $5.5M
MAINTAINING SUCCESS
CHECKLIST

✓ Corporate Leadership / Engagement
✓ Participation Goals – Across All Levels
✓ Keep Training Intriguing and Challenging
✓ Recognition Activities – Award the Performer
✓ Building Relationships – Maintain Contact
PACCAR CONTINUOUS IMPROVEMENT

- Maintenance of Goals
- Training Content Evaluation
- Participation in Industry Forums and Educational Endeavors
- Champion and Belt Support Continuance
- Program Promotional Initiatives
BUSINESS IMPACT

- PACCAR CI Perspective
- Market Share Gain
- 83 Years of Net Income
- PACCAR Revenue Growth
  - 6.8 Billion 1997
  - 23.5 Billion 2021
CLOSING REMARKS

- Perspective on PACCAR’s Continuous Improvement Journey
- Understanding our Methods of;
  - Engagement of Trained Belts
  - Operational Infrastructure
  - Performance Monitoring & Reporting
  - Recognition Efforts
- Orchestrating a Successful Continuous Improvement Program
2022 Webinar Topics under Development

- 2 Aug—Designing and Building Successful Tiered Huddle Systems (Victoria Jordan, Emory Healthcare will join Scott Sink for this timely Webinar)
  
  https://us06web.zoom.us/webinar/register/WN_WgscPty7R8aQoVlyShEU0Q

- 16 Aug—Tackling Competency Improvement—Perspectives and Points of View

- 13 September—Final Four ISE Capstone Senior Design Project Case Studies

And don’t forget IISE’s new Operational Analytics Certification Program...
IISE PERFORMANCE EXCELLENCE WEBINARS

IISE Performance Excellence Track for Practitioners and Students

Operational Excellence, Performance Excellence, Integrated LeanSigma, Operational Analytics, BPM/I 4.0, High Performing Cultures, Integration of Strategy-People-Process-Information and Technology Enablement, Best in Class Case Studies Networking

All being Developed for you for New Orleans in May 2023!!!
Customer and Member Satisfaction and Feedback Survey

PACCAR Six Sigma Journey Case Study

You can go to this IISE link soon and get deck and recording.

Certificates of Participation will be e-mailed to you within 3 business days.