MIMOSA
Open Meeting
Houston, Texas
December - 2019
Agenda – Process Industry Practices

• P I P Overview: 26 Years Strong
  – Formation / Vision
  – Active Membership Growth
  – Organization & Volunteers

• P I P Practices
  – Development Process
  – Collaboration
  – Website

• Leverage Proven Successful Process
Who is Michael Poehl?

– PIP Director since April 2013

– 28 years with BP / Amoco
– Chemicals and Upstream
– Technical / Operations Early Career
– Vice President Amoco Energy Group
  North America
– Retired in 2002

– Adjunct Professor at University of Texas
  Chemical Engineering since 2002

* Paw Paw (Best Job Ever)
Owner, engineering, and construction companies within the process industries seek active membership in PIP to establish Practices through the direct exchange of knowledge as a means to achieve superior results.
P I P Initiative

• Founded by seventeen Members in 1993
• Self-Funded Organization
  – Endorsed by the Construction Industry Institute (CII)
    • Research Unit within the Cockrell School of Engineering
  – Copyright owned by The University of Texas (UT)
• Consortium of Owner and Contractor Companies
  – Historically, membership has consisted of two Owners to each Contractor (E P C Firms)
• Purpose:
University of Texas at Austin

Cockrell School of Engineering

CII “Umbrella” $12.6 M / Year

- CII Core R&D Center $7.8 M
- PIP Engr. Stds. $2.6 M
- OS2 IAP UT R&D $2.1 M
- CCIS UT CEPM $0.1 M
• **Today, PIP has 97 Active Members**
  – 62 Owners
  – 35 Contractors

• **Members represent a significant share of diverse process-related industries**

- Oil & Gas
- Power
- EPC Industries
- Specialty Chemicals
- Food & Beverage Processing
- Mining
- Pharmaceuticals & Biotechnology
- Refining & Petrochemicals
- Pulp & Paper
Active Membership Growth

Active Members
## Non-active Members

<table>
<thead>
<tr>
<th>ADM</th>
<th>Koppers</th>
</tr>
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<tbody>
<tr>
<td>BAE Systems</td>
<td>Kraton Polymers</td>
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<tr>
<td>Bahrain Petroleum - BAPCO</td>
<td>Lanier &amp; Associates</td>
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<tr>
<td>Baker Hughes</td>
<td>Lloyd Engineering</td>
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<td>BEI Engineers</td>
<td>Medallion Operating Company</td>
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<tr>
<td>Braskem SA</td>
<td>NOVA Chemicals</td>
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<td>ONEOK</td>
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<tr>
<td>Carboline Company</td>
<td>OXEA</td>
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<tr>
<td>Chevron Phillips</td>
<td>Phoenix Park Gas Processors</td>
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<td>Ecodyne Limited</td>
<td>PPG</td>
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<td>Emerson</td>
<td>Praxair</td>
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<td>Extraction Oil &amp; Gas</td>
<td>Professional Engineering Consultants (PEC)</td>
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<td>Geo V. Hamilton</td>
<td>ROCKWOOL Technical Insulation</td>
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<td>Stepan Company</td>
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<td></td>
<td>Sumitomo Chemical</td>
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<td></td>
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<td>Wood Group USA, Inc.</td>
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Licensees

API
ASME
Autodesk
Aveva
Cornell University
De La Salle University
Florida A&M University
Hexagon
IEEE
IHS
IRA-CIPEN
Kinsmen Group
Lamar University
Lee College
Montana State University - Billings

National Institute of Building Sciences
National Insulation Association
Palomar College
South Central Louisiana Technical College (SCLTC)
St. Paul Technical College
SAI Global
Texas A&M University-Corpus Christi
Techstreet (Clarivate)
University of North Dakota
University of Wisconsin – Madison
Shared Goals Amongst Members

• Minimize Total Cost of Ownership
• Reduce Plant Operating and Installation Costs
• Standardize Non-Proprietary Processes
• Develop and Implement Common Industry Practices for:
  – Facility Design
  – Procurement
  – Construction
  – Operations
  – Maintenance
Are There Risks in Your Project?
Why Companies use PIP

• Member Companies have the opportunity to adopt the Process Industry Practices
• Reduce Plant Operating and Installation Costs
• Standardize Non-Proprietary Processes
To Avoid Potential Risks
Industry Position of PIP Practices

- Replace Internal Standards
- Redeploy Standards Maintenance to Higher Value Activities
- Industry Recognized by API, ASME, ISO & ASTM.
- Recognized And Generally Accepted Good Engineering Practices

Before PIP

With PIP
A B E T Philosophy for Chemical Engineering

None of us is as smart as ALL of us!
P I P Volunteers

- **Approximately 500+ Active Volunteers**
  - **Subject Matter Experts**
    - Function Team Members (380+)
    - Discipline Contacts
  - **Management**
    - Steering Team Representatives (120+)
    - Team Sponsors
    - Committee Leaders
  - **Young Professionals**
    - Development Opportunities
• Collaboration between Member Company SME’s
• “Best Practice” Standardization where applicable
• 500+ Published Practices
• 13 Engineering Disciplines

DATA MANAGEMENT
- Metadata, IDTC, Work Processes

I/E
- Electrical, Process Controls, Analyzers

PROCESS
- P&ID, Hygienic Process, Project Engineering

CSA
- Civil, Structural, Architectural

MECHANICAL
- Machinery, Vessel, Coatings, Insulation, Refractory

PIPING
- Material Specifications, Engineering & Complementary, Valve Descriptions & Practices, Pipe Supports Details, Pipeline Systems
Collaboration – Secret Sauce of PIP

• Four Elements
  – Openness
  – Ego Check
  – Transparency
  – Follow PIP business guidelines

• Strong Leadership

• Commit to Improvement of the Process

• Training >>>> Teamwork
GROWING LEADERS
Do the best you can until you know better. Then when you know better, do better.

Maya Angelou
Table of Contents

1. Scope ...........................................2
2. References ..................................2
  2.1 Process Industry Practices .............2
  2.2 Other References ..........................2
3. Definitions ...................................2
4. Requirements ..............................3
  4.1 Resources ....................................3
  4.2 Planning .....................................3
  4.3 Harmonization .............................4
  4.4 Organization of a Practice ............5
  4.5 Data Forms ..................................13
  4.6 Drawings ...................................13
  4.7 Engineering Guides......................13
  4.8 Technical Writing .........................13

APPENDIXES
Appendix A – Author Checklist
Appendix B – Example of Practice Table of Contents
Practice Development Process

Member Companies Harmonizing

Adopting

Process Industry Engineering – Procurement – Construction Process

Practice Development Process

Data Collection & Analysis
Function Team (FT) (Varies)

Practice Development
Function Team (FT) & PIP Editor (Varies)

Member Company Review (MCR)
Steering Team & Discipline Contacts (5 weeks)

Post-MCR Review
Respond to Comments
Practice Updates
Function Team (FT) & PIP Editor (Varies)

Practice Publication
PIP Editor (Varies)

Steering Team Balloting (STB) (30 days)
## Practice Types

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<tr>
<th>CODE</th>
<th>TYPE</th>
<th>AUDIENCE</th>
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<tbody>
<tr>
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<td>Authors and Editors of Practices</td>
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<td>C</td>
<td>Criteria (Design Specification)</td>
<td>Engineers</td>
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<td>E</td>
<td>Engineering Guide</td>
<td>Less experienced Engineers</td>
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<td>F</td>
<td>Fabrication Details</td>
<td>Procurers (BoMs), Fabricators (Details), and Inspectors</td>
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<tr>
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<td>Installation Details</td>
<td>Installers, Constructors, and Inspectors</td>
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<td>Vendors, Fabricators, Manufacturers, Installers, Constructors, Inspectors, and Start-up Teams</td>
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Practices by Discipline
December 2, 2019

Number of Practices

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<th>Discipline</th>
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Total Planned - 148
Published - 506
PIPI Engineering Guideline and Criteria

- Practice Development – 6
- Architectural & Civil – 8
- Structural – 4
- Foundations – 5
- Structural Steel – 5
- Coatings/Insulation/Refractory – 6
- Electrical – 7
- Machinery – General – 6
- Pumps – 6
- P&ID – 2
- ASME B31.3 Piping General – 7
- ASME B31.3 Piping Design – 4
- Valves – 8
- ASME B31.4/8 Pipeline Systems – 4
- Hygienic Processes Piping – 2
- Process Controls - General – 9
- Process Analyzers – 5
- Process Control Valves – 6
- Process Measurement – 9
- Vessels – 5
- Heat Exchangers & Tanks – 2

116 Practices on How To Use Practices
Why Employees use P I P

• Employee development thru participation
  – Technical, Interpersonal, Leadership abilities
• Opportunity to influence P I P Practices to best meet the needs of your company
• Allows YOU to learn from OTHERS

Tell me and I forget
Teach me and I remember
Involve me and I learn.

Benjamin Franklin
Why Employees use P I P

- Haagen-Dazs Ice Cream?
Collaboration with Other Organizations

Need YOUR Input on Path Forward

My idea is....
www.pip.org

We are our Members

PIP Practices are written through a harmonization process. Members assign engineers to discipline teams where each member company shares their non-proprietary best practices.
Thank you! Questions?

www.pip.org
marketing@pip.org
Back – Up Slides
Active Membership Requirements

• **Attend Quarterly Meetings in Houston, Texas**
  – Provide internal non-proprietary standards for harmonization into PIP Practices, if available
  – Contribute to Practice revisions
  – Follow PIP business guidelines

• **Voluntarily adopt & implement Practices**

• **Commit to improvement of the process**
Active Membership Requirements

• Provide at least 2 Volunteers
  – Steering Team Participant
    • Able to represent the company’s interest on voting matters (strategic direction, budget, employee resources)
    • In-person attendance at a minimum of 50% of meetings annually
    • Up to 3 alternates allowed
  – Function Team Participant(s)
    • Subject Matter Expert in an Engineering Discipline
    • Participate at a minimum of 33% of team meetings, in person or via webex
    • No limit to the number of Function Team participants allowed
Active Membership Dues

- **First Year Dues** = $25,000
- **Membership Renewal** = $35,000/year
  - Discounts earned through active participation
    - **Gold Level Discount** (60% off renewal)
      - Steering Team Representative attends 75% of meetings
      - Function Team Member attends at least 66% of team meetings
    - **Silver Level Discount** (30% off renewal)
      - Steering Team Representative attends 50% of meetings
      - Function Team Member attends at least 33% of team meetings
  - Minimum Level of Participation required to achieve Active Member status
Metadata – Preview Teaser ....
What does Metadata mean for PIP?

**Metadata Function Team**

Mission Statement:

Promote awareness and coordinate the discovery, documentation, harmonization, use and reuse of data using best practices.

**Long Range Objectives (5-10 years to achieve)**
- Develop Metadata communication/transfer beyond PIP

**Medium Range Objectives (2-5 years to achieve)**
- Develop an Electrical data elements list (similar to DMDIM001) from the Electrical Practices datasheets

**Short Range Objectives (<2 years to achieve)**
- Develop MDFT Charter document
- Hyperlink the internal PIP References in the Practices (concentrated effort for all Practices; existing and new)
- Develop guidelines for coordinating the assignment of data labels and fields
- Develop an initial PIP “data dictionary”
- Develop a Metadata Management Process
- Develop a Data/Metadata Stewardship Program (See Note)
- Create a Metadata Strategy / Practice
- Adopt / existing industry Metadata Standards
- Identify Appropriate Metadata Tools
- Implement Metadata Management across the PIP organization
• **Think About It**
  – When was the last time you printed out a spec to read it?
  – When was the last time you referred to a handbook sitting in a shelf vs. looking online?
  – Have you ever wondered where the spec developers got their values from?
  – Have you ever seen a spec refer you to 10 other relevant specs?
  – Have you ever uploaded an old specification (non-digital) and then tried to run a search?

• **If you answered yes to any of these questions, you are yearning for Metadata!**
PIP – WHAT? ..... 

- If it looks like a Duck
- If it walks like a Duck
- If it sounds like a Duck
- It is probably a Duck
PIP – NOT Duck....

Duck

DUCK

DUCK

K

Duck
P I P METADATA

• Metadata tags must be added at the native document level

• Links must be created before the document converts to PDF

• **PCCFL001 – with Metadata**

  2.1 Process Industry Practices (PIP)
  
  – [PIP PCCGN001](#) - General Instrument Design Checklist
  – [PIP PCCGN002](#) - General Instrument Installation Criteria
  – [PIP PCIDP100](#) - Differential Pressure Installation Details
  – [PIP PNF0200](#) - Vent/Drain/Instrument Connection Details

  2.2 Industry Codes and Standards

  • [American Gas Association (AGA)](#)
  • [American National Standards Institute (ANSI)](#)
      Part 1 General Equations and Uncertainty Guidelines
      Part 2 Specification and Installation Requirements
      Part 3 Natural Gas Applications
      Part 4 Background, Development, Implementation Procedures and Subroutine Documentation

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