Are You Ready to Troubleshoot?

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How We Got To This Point

The Process Troubleshooting Skills in Energy Consortium (PTSE) worked under the guise of a National Science Foundation grant.

Awarded for the:
- Development of a National Troubleshooting Competition event
- Development of process troubleshooting scenarios

Session Objectives

- Definition of Troubleshooting
- Competition Structure & Format
- Competencies Needed for Success
- Coach a Troubleshooting Team
- Insider Tips
- Resources Colleges Need to Compete

Competition Format

- ➢ **Qualifying Round**
  - ✓ Types of Questions
  - ✓ Scoring & Selection
- ➢ **National Finals**
  - ✓ Types of Questions/Exercises
  - ✓ Scoring
- ➢ **Future Improvements**
  - ✓ Not a Static Competition
  - ✓ Scenarios Will Continue to Evolve
  - ✓ Gaming Technology
  - ✓ Virtual Reality

ptse

2016 Instructor Skills Conference

Competencies for Success

- ➤ Process Equipment Knowledge

- ➤ Process Control Knowledge

- ➤ Team Work and Communication

- ➤ Use of a Troubleshooting Methodology

- ➤ Simulator Experience

- ➤ Use of Operating Procedures

- ➤ Time Management Skills

Coach a Troubleshooting Team

➢ **Knowledge**

  ✓ Process science (pressure, temperature relationships,

  ✓ heat exchange, mass balance, etc.)

  ✓ Process equipment and control systems

  ✓ Read P&IDs

➢ **Team Selection**

  ✓ Team work

  ✓ Communications skills

  ✓ Dedicated, hard working

  ✓ Hold intramural competition to choose best team(s)

➢ **Practice, practice, practice**

  ✓ Paper

  ✓ Simulator

Resources Required

➢ Student commitment to traveling and competing at the national competition

➢ Time outside of class to study, prepare and practice

➢ Opportunity to run "mock" competition

➢ Access to a process simulator to practice computer simulations

➢ Learning a troubleshooting method/completing troubleshooting class.

Insider Tips

- ➢ Know how to use the simulator
  - ✓ Operate from the graphics
  - ✓ Faceplates
  - ✓ Trends
  - ✓ Alarms & alarm acknowledgement
- ➢ Not all scenarios start at 1:00
- ➢ We introduce variability to avoid the "steady state" of normal design
- ➢ Not just one thing can go wrong, but not everything has the same priority
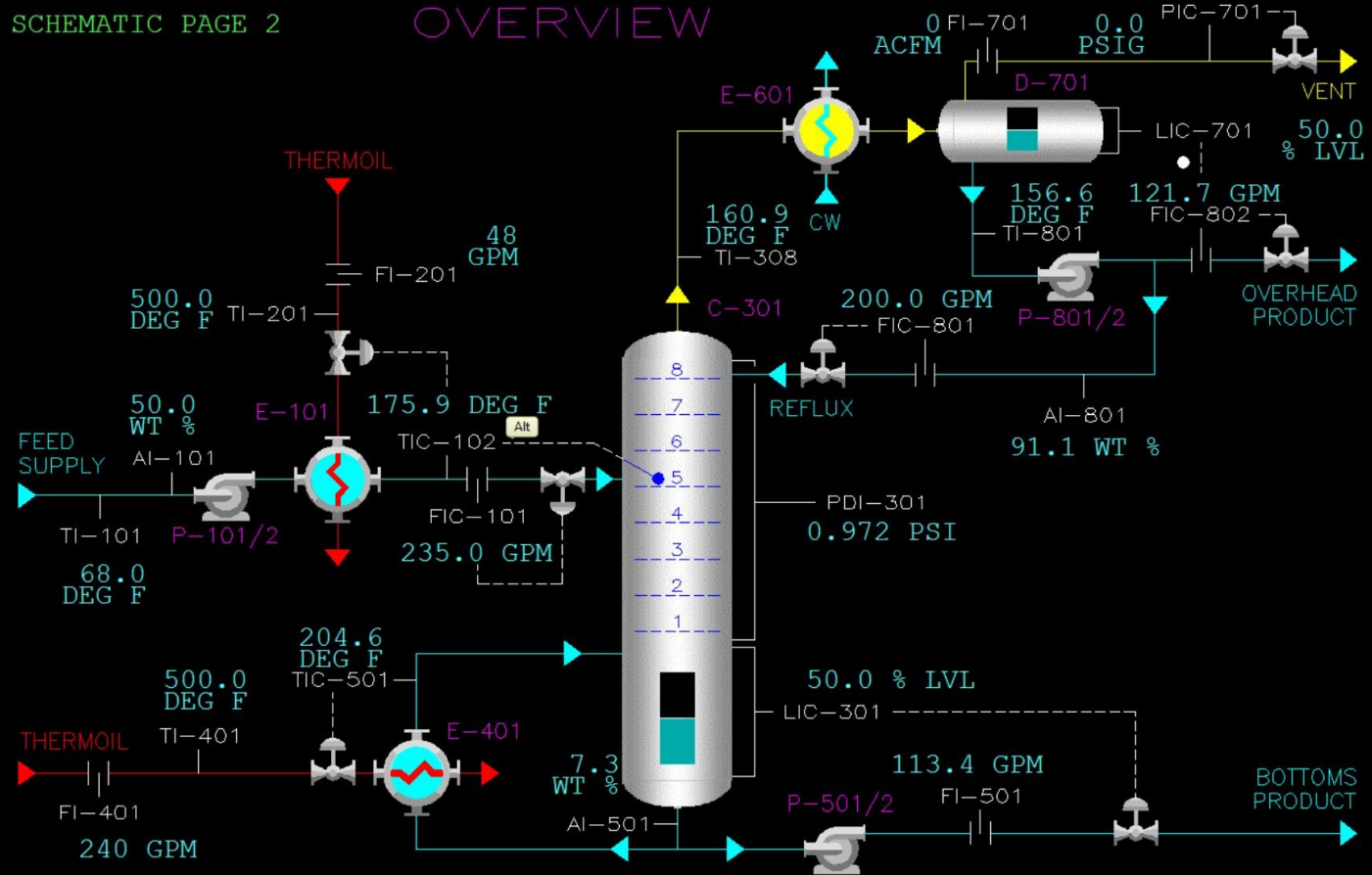- ➢ Know how to use procedures

Let's Troubleshoot!

➢ Divide Into Teams of 3

➢ Complete the Worksheet

 ✓ Review Process Information

 ✓ Gather Data

 ✓ Identify Probable Cause(s)

 ✓ Determine Compensating and Corrective Action(s)

➢ Group Discussion & Debrief on Exercises

Let's Troubleshoot

Questions

Contact Information

Educational Materials Available Via Website on

October 1, 2016

www.ptseonline.com

Contact

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