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# 3 Learning Technologies Oil & Gas Millennials Want

Bruce Manthey  
Simtronics Corporation

# Theme and Outcomes

## Theme

To attract Millennials to the Oil & Gas sector their needs must be met

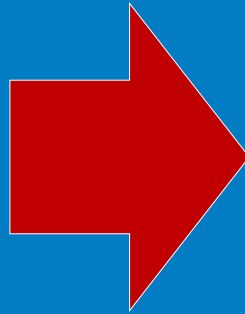
Their wants are different

Looking at PowerPoints does not work

They like to collaborate, want mobility and enjoy competition

We must rethink the way we train and use technology

Three best practices are presented



## Outcomes

Provide ways to better engage with the Millennial Learner

1. 3D virtual environments & OTS;
2. Competitive scoring; and,
3. iOS/Android applications.



Facts, Figures and a Little Fiction!

# ABOUT MILLENNIALS



## Martha Stewart says Millennials Lazy, Lack Initiative

Youngsters are too lazy to get ahead

*Generation Snowflake*

Living with parents... “mollycoddled”

Every business is trying to target millennials

I understand plight of younger people...  
economic circumstances very grim

“But, you have to work for it. You have to  
strive for it. You have to go after it.”



Hamill, Jasper. “Generation Job-shy.” *The Sun Online*.  
13 July 2016.  
<http://bit.ly/2b6xSd7>.  
Retrieved 15 July 2016.

# On 'Survivor,' Millennials and Gen X Get the Showdown They Deserve

Reality television really was the only way to settle this generational clash. Too bad they get most of the details wrong.

by Polly Mosendz  
Polly

September 22, 2016 – 6:00 AM EDT



LIVE TV AUDIO



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POLITIFACT  
TRUTH-O-METER™



# Bibliography

Arellano, Elisabeth. "The Millennials Are Coming! Proven Engagement Strategies." *Learning Solutions Magazine*. The eLearning Guild, 12 June 2013. Web. 15 July 2016.

Asghar, Rob. "Gen X is From Mars, Gen Y is From Venus: A Primer on How to Motivate a Millennial." *Forbes.com*. Forbes Magazine. 14 January 2014. Web. 25 Aug. 2016.

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Farrell, Lindsey, and Andrew C. Hurt. "Training the Millennial Generation: Implications for Organizational Climate." *Journal of Organizational Learning and Leadership* 12.1 (2014): 47-60. Print.

Gilbert, Jay. "The Millennials: A New Generation of Employees, a New Set of Engagement Policies." *Ivey Business Journal*. Richard Ivey School of Business Foundation, Sept.-Oct. 2011. Web. 15 July 2011.

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York, Skip. "This Time, They Mean It: Energy's Baby Boomers Retire And Millennials Will Miss Them." *Forbes.com*. Forbes Magazine, 10 May 2016. Web. 23 Aug. 2016.





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# ABCs (almost) of Millennial Generation

Active learners

Benefits from technology

Collaborative, confident, constant stimulation

Digital natives

Expert multitaskers

First person learners

Goal achievers

Hard workers / high maintenance

Inclusive, independent, individualistic, informed, innovative, investigative, involved

Just wants a personally fulfilling life

Knowledgeable

Learn quickly, like informality, live a mobile collaborative and immediate lifestyle

Mobile, motivated, meaning

Needs: constant feedback, group activities, supervision

Open about emotions and intelligence

Practical, pragmatic, pressured, protected

Respectful, results oriented, responsible, rapidly assimilates information

Seeks praise, approval & support; self-assured; sensitive to others; structured; socially minded

Team-oriented, technically savvy

Values: institutional learning, intelligence

Works to live – doesn't live to work



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# Millennial Learning Style

## **Generation comprised of active learners**

Multi-tasking ability; propensity for innovation; curiosity, discovery, and exploration as contributing factors

Shorter attention spans and low boredom tolerance

## **Hypertext mindset**

Leads to frequent activity changes, reducing applicability of lecture-style training

## **Influence of technology**

Increased need for structured, hands-on, interactive assignments

## **Less likely to internalize material presented in a lecture-only format**

Role-playing as one alternative

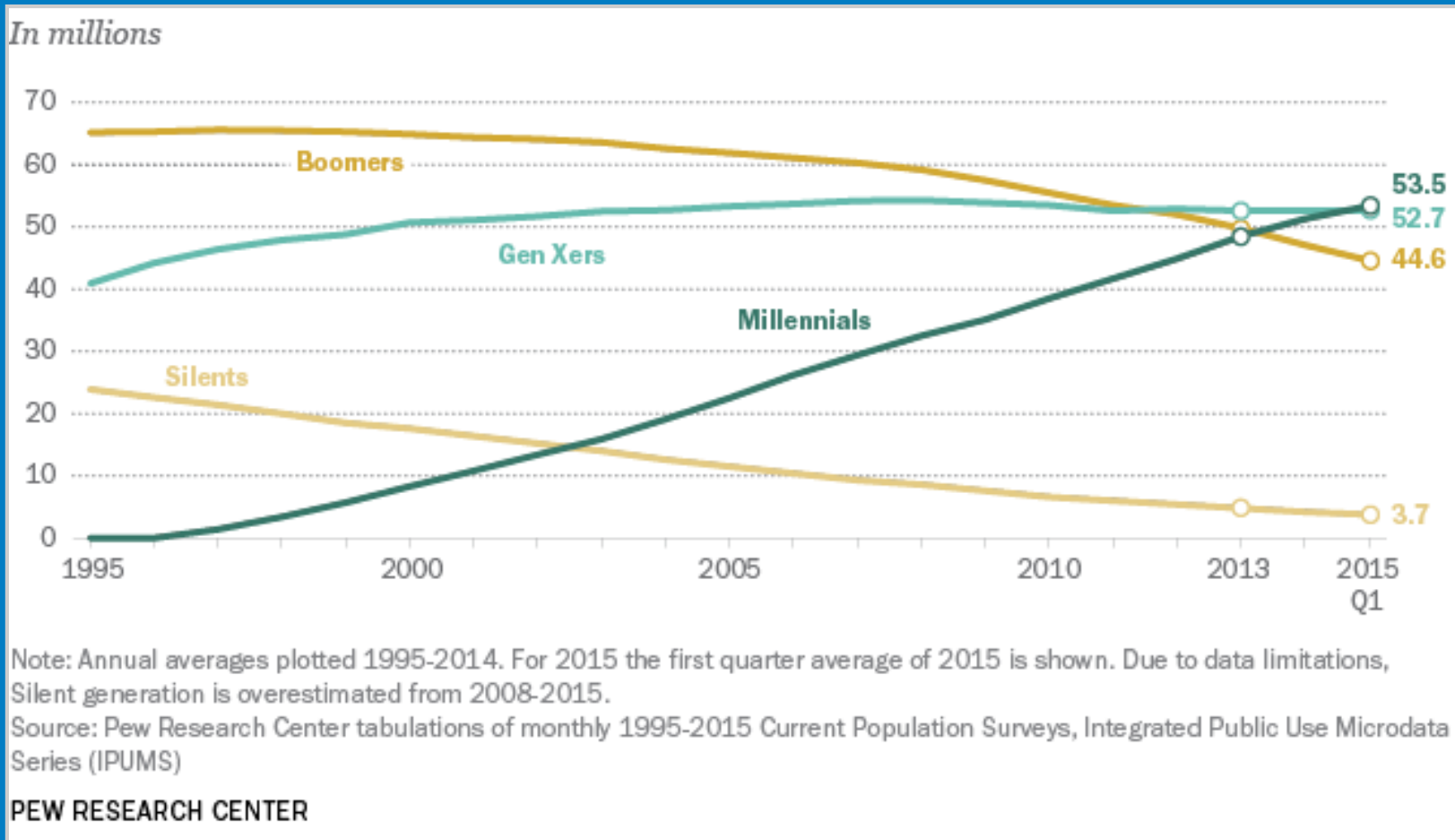
## **Team-oriented, collaborative learning**

Necessity of hands-on elements

# Millennial Learning and Technology



# U.S. Labor Force Dramatic Shift



Source: <http://www.pewresearch.org/fact-tank/2015/05/11/millennials-surpass-gen-xers-as-the-largest-generation-in-u-s-labor-force/>

# The Millennial Learner: What to Provide

## Baby Boomer

Inclusive decision-making

Group interactions and discussions

Chances to try new skills independently

## Generation X

Fun activities

Relevance and understanding of what's in it for me

Discretion to complete tasks their own way

## Millennial

Lots of activity-based group work

Individualized feedback and mentoring

Technology enabled learning and use of their own devices during class

Source: <https://www.td.org/Publications/Newsletters/Links/2015/02/Generational-Differences-in-the-Classroom>

# The Millennial Learner: Generational Relationships

## Baby Boomer

Early 50's – 70

Parents of  
Millennials

Taught kids their  
opinions were  
important

## Generation X

Mid 30's – Early 50's

50% of Boomer Gen

Had to fight to have  
a voice

**Thinks Millennials  
are flighty, flakey,  
and unwilling to  
“pay their dues”**

## Millennial

16 – Early 30's

Children of Boomers  
and “Internet”

“Want information  
when I want it!”

Smartphones and  
tablets

Meaning > money

Source: <http://www.forbes.com/sites/robasghar/2014/01/13/what-millennials-want-in-the-workplace-and-why-you-should-start-giving-it-to-them/#97343bf2fdb>





# The Millennial Learner – One More Observation

*Generic traits and preferences associated with Millennials*

Shorter attention span

Prefer interactive, experiential and collaborative learning

Very comfortable with technology

Multitask

Driven by instant gratification

Like informal and stimulating environments

Prefer casual and friendly relationships with teachers

Often well-rounded

More competitive than we give them credit

More likely to comply with authority than their parents' generation

Well prepared

Best-educated generation

Sources: <https://www.insidehighered.com/blogs/university-venus/millennial-learners>; <http://www.forbes.com/sites/valleyvoices/2016/04/25/millennials-and-their-destruction-of-civilization/#5707e37a3b19>

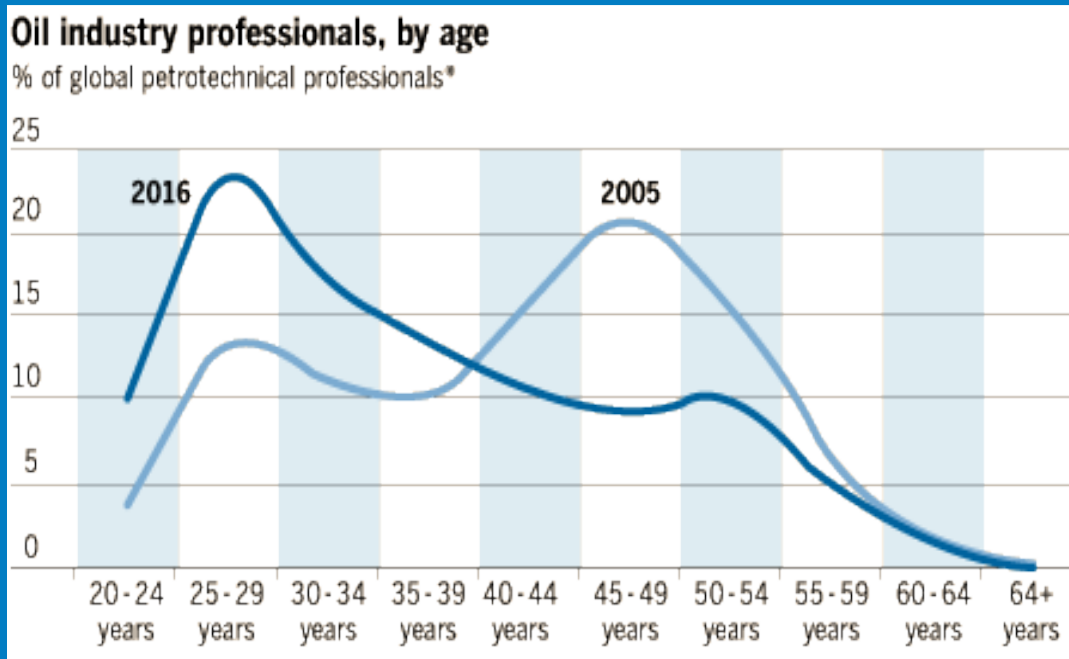


Prices ↓ Training \$ ↓ Retirements ↑ People ↓ Layoffs ↑

# ENERGY/OIL & GAS SECTOR TODAY

# As Predicted in 2011: “Great Crew Change” is Here

## Boomers & Millennials

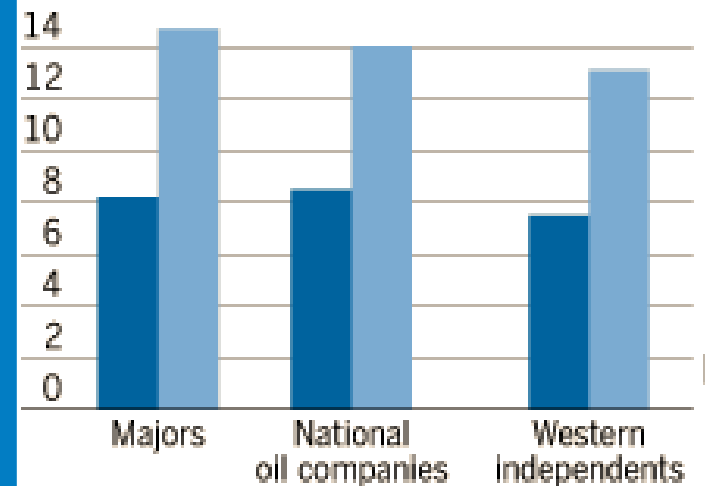


## Time & Talent

### Time to autonomy

Estimated number of years for a fresh graduate to attain autonomy/leadership, by type of company

- To make non-standard, original decisions
- To be in a leadership position



Sources: Schlumberger Business Consulting; Thomson Reuters Datastream.

# “The Perfect Storm”

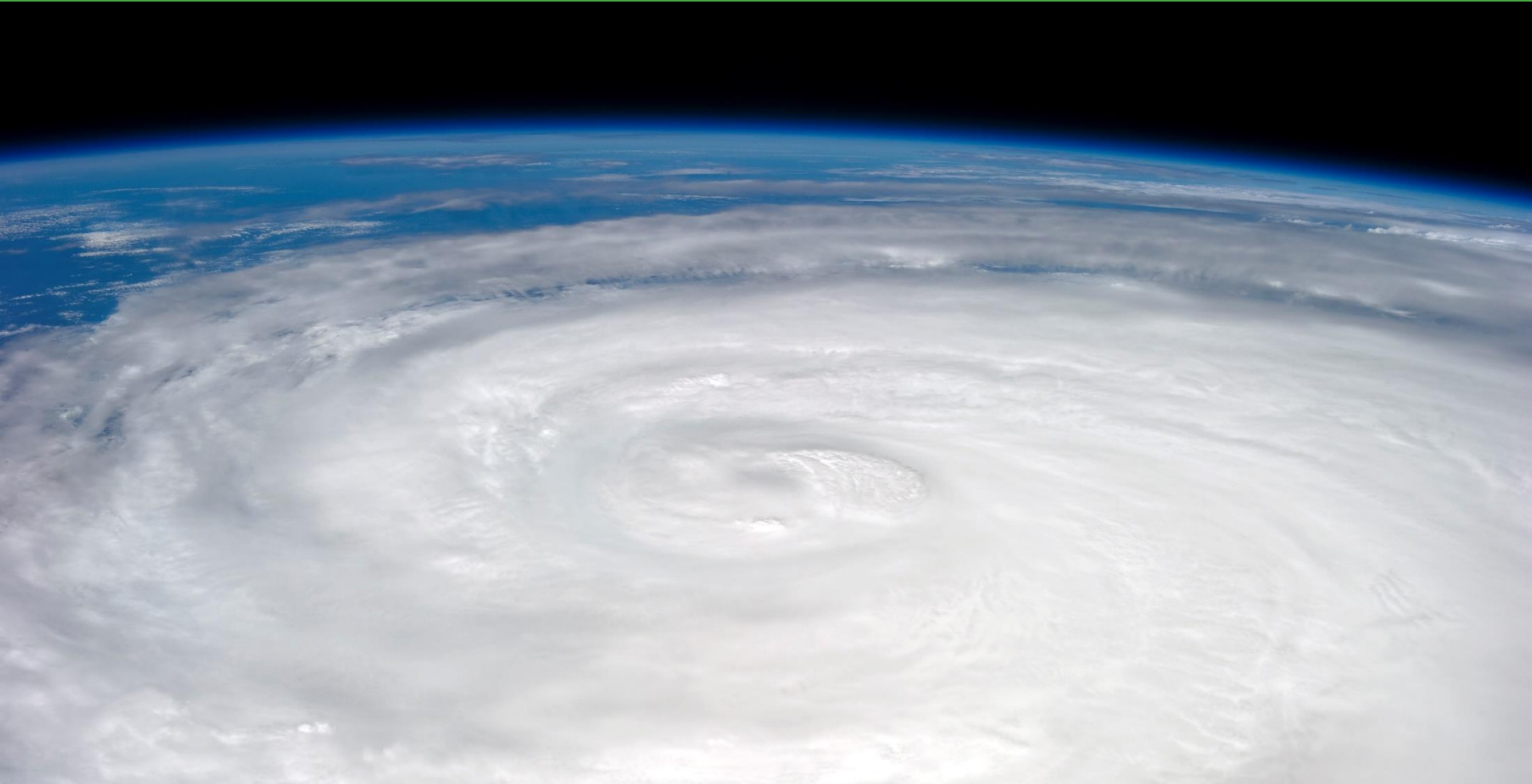


Photo Source: ISS036-E-017952 (11 July 2013) Typhoon Soulik, ENE Taiwan.

# “The Perfect Storm”

**Low oil prices drive workforce reductions resulting in fewer job opportunities**

**Millennials steer clear of Oil & Gas because of fewer job opportunities; thinking High Tech**

**Polytechnics’ enrollments are down; corporate training programs are cut back**

**Increased Baby Boomer retirements reduce number of mentors**

**The two most important people in a plant at 0300 are the Board and Field Operators; but, it takes eight-years to become autonomous**

**Global energy demand is increasing; so are O&G projects**

**High demand for PTPs\* world-wide; supply is low**

**Young people access and interact with information on smartphones and tablets; but, we give them PPTs and custom simulators**

*\*Petro-technical Professional*



## Outcomes

Provide ways to better engage with the Millennial Learner

1. 3D virtual environments & OTS;
2. Competitive scoring; and,
3. iOS/Android applications.

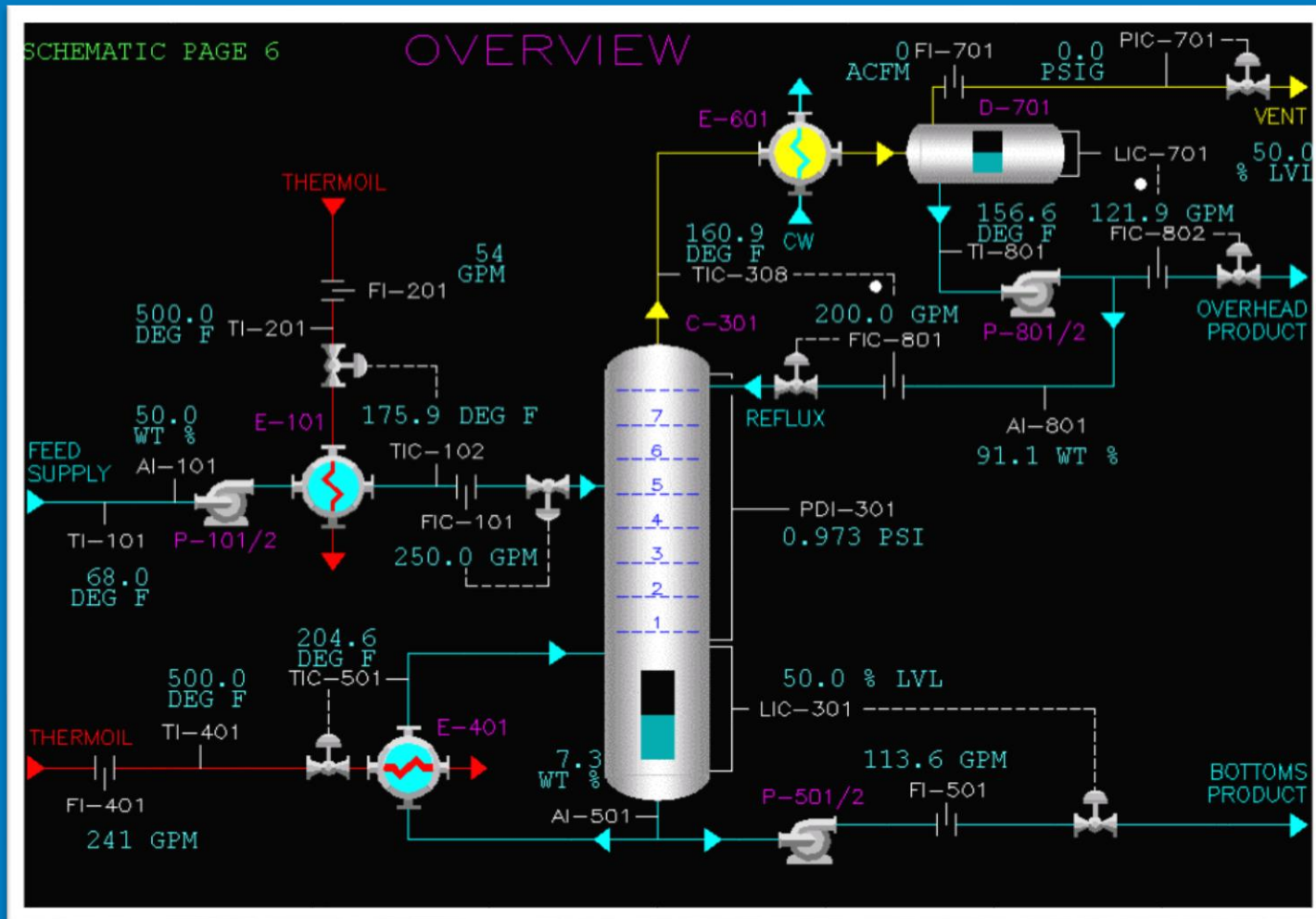
What Oil & Gas Millennials Want from You

# 3 LEARNING ENVIRONMENT BEST PRACTICES



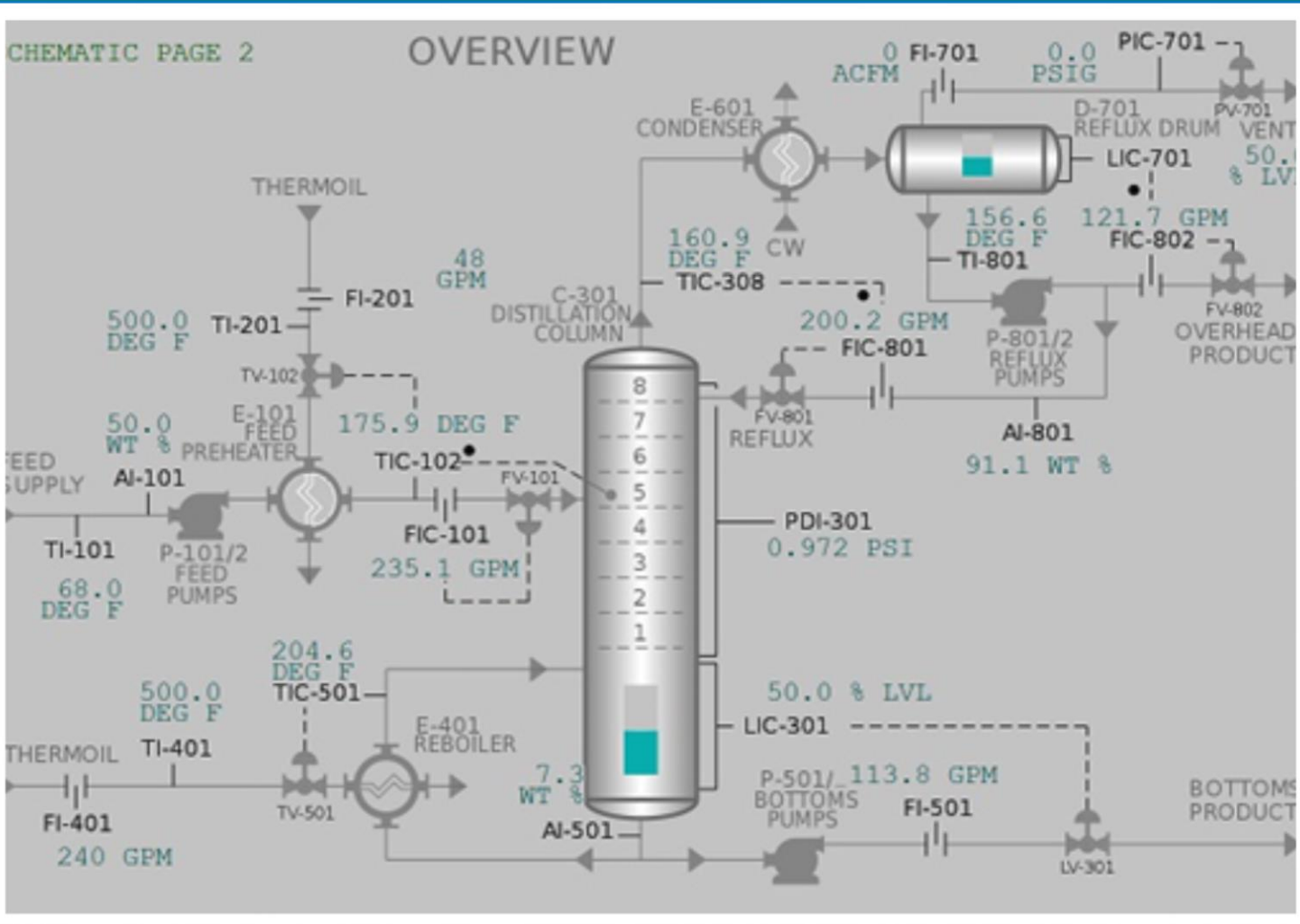
# Operator Training Simulator: DCS Human Machine Interface

## *Been there, done that... part II*



# Operator Training Simulator: DCS Human Machine Interface

*Been there, done that...*

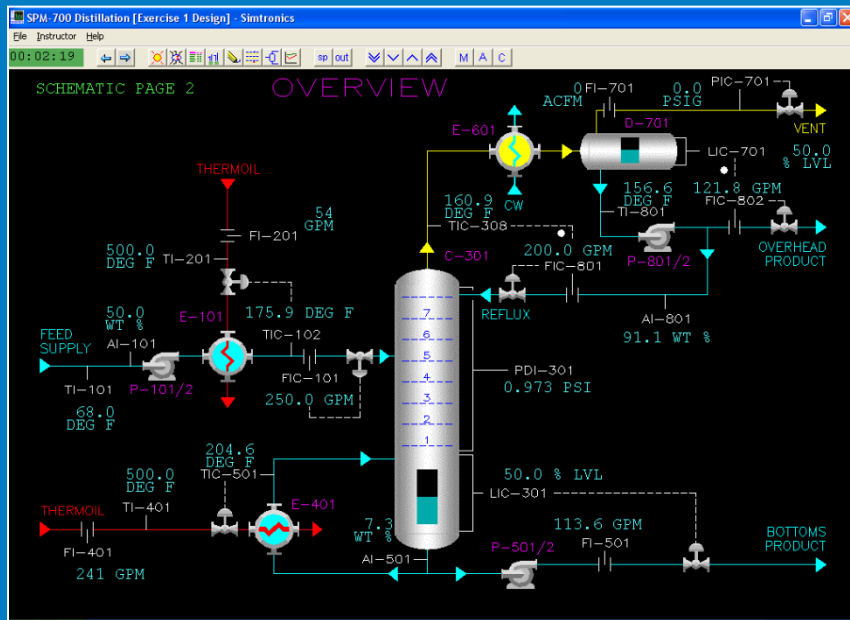


# Let the Gaming Begin!



# Virtual Environments and OTS

## Operator Training Simulator



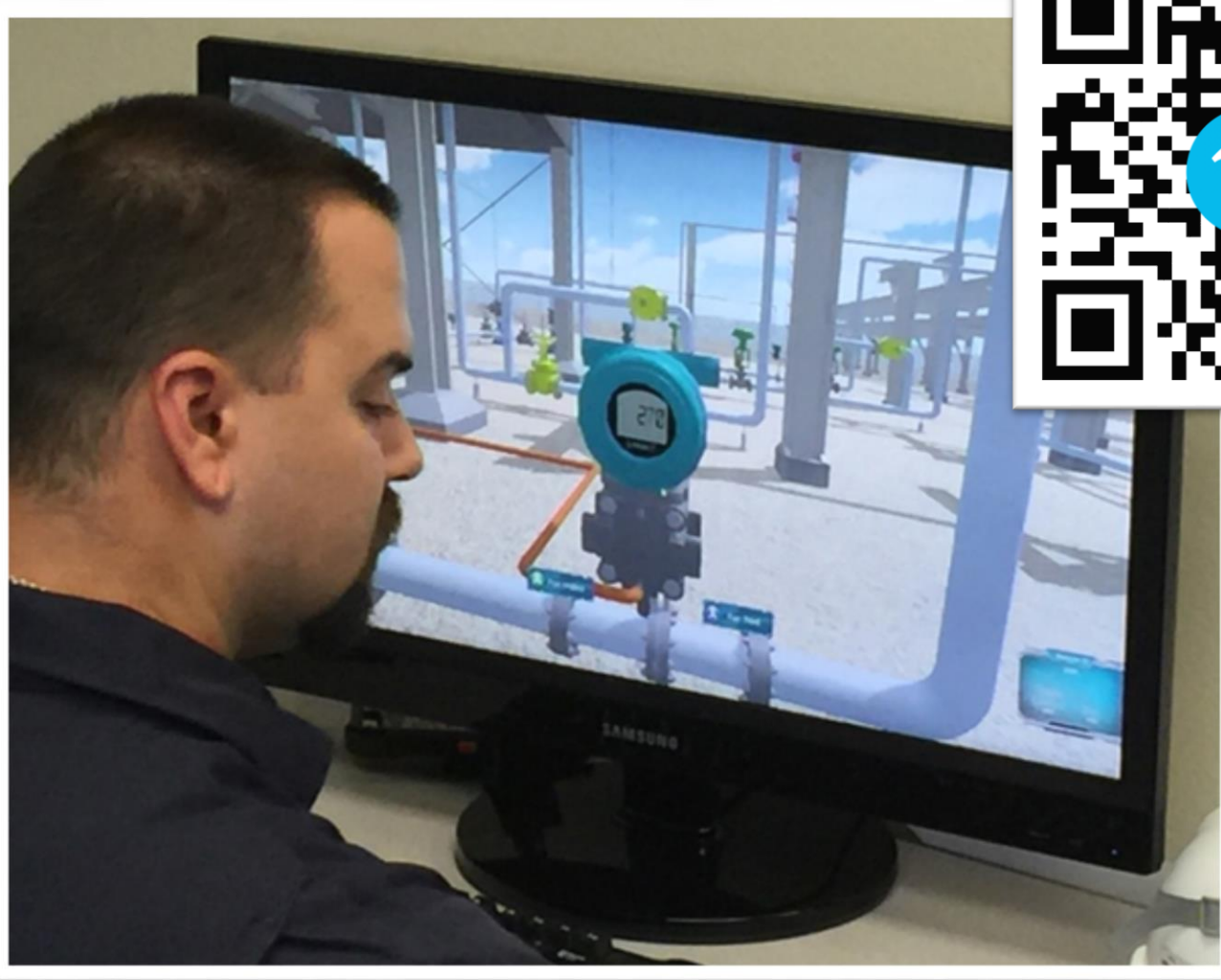
## 3D Virtual Field Operator



**Board operators and field technician/operators work together in a virtual environment**

**Startup | Shutdown | Troubleshooting Abnormal Situations**

# Virtual Environments



# Millennials Like Competition



## Competition

### Top eight college teams from across U.S. compete in 2016 National Troubleshooting Competition

## NSF Grant

The top eight teams from college process technology programs competed in the 3rd National Troubleshooting Competition April 22nd-23rd at Lone Star College in Kingwood, TX.

## PTSE Summary

A team from South Central Louisiana Technical College took top honors during the competition, which involved the three-student teams troubleshooting computer simulator-based scenarios. Two Alaska teams, Kenai Peninsula College - Anchorage and Kenai Peninsula College - Kenai River, came in 2nd and 3rd, respectively.

## Learning Materials



This material is based upon work supported by the National Science Foundation under Grant No. 1457711. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Other competitors included teams from:

- Bellingham Technical College (Washington)
- ITI Technical College (Louisiana)
- Los Medanos College (California)
- Mississippi Gulf Coast Community College
- University of Alaska Community & Technical College



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### Industry, education team develops energy-related troubleshooting skills

Process Technology education and related industry representatives have teamed to form the Process Troubleshooting Skills in Energy (PTSE) organization and are developing a series of equipment and process-specific troubleshooting scenarios, along with basic troubleshooting methodologies and tools, through a NSF grant "Developing Students' Troubleshooting Skills in Energy Programs."



# Competitive Performance Scoring



# Millennials Like Competition and...

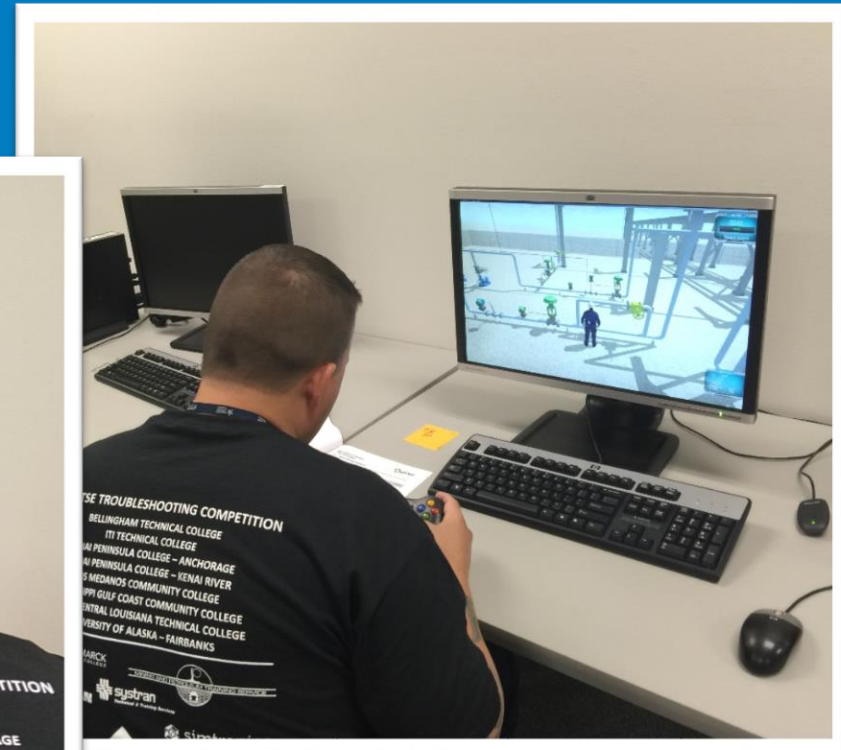




# Interactive, Experiential, Collaborative Learning



# Interactive, Experiential, Collaborative Learning



# 3 Person Teams

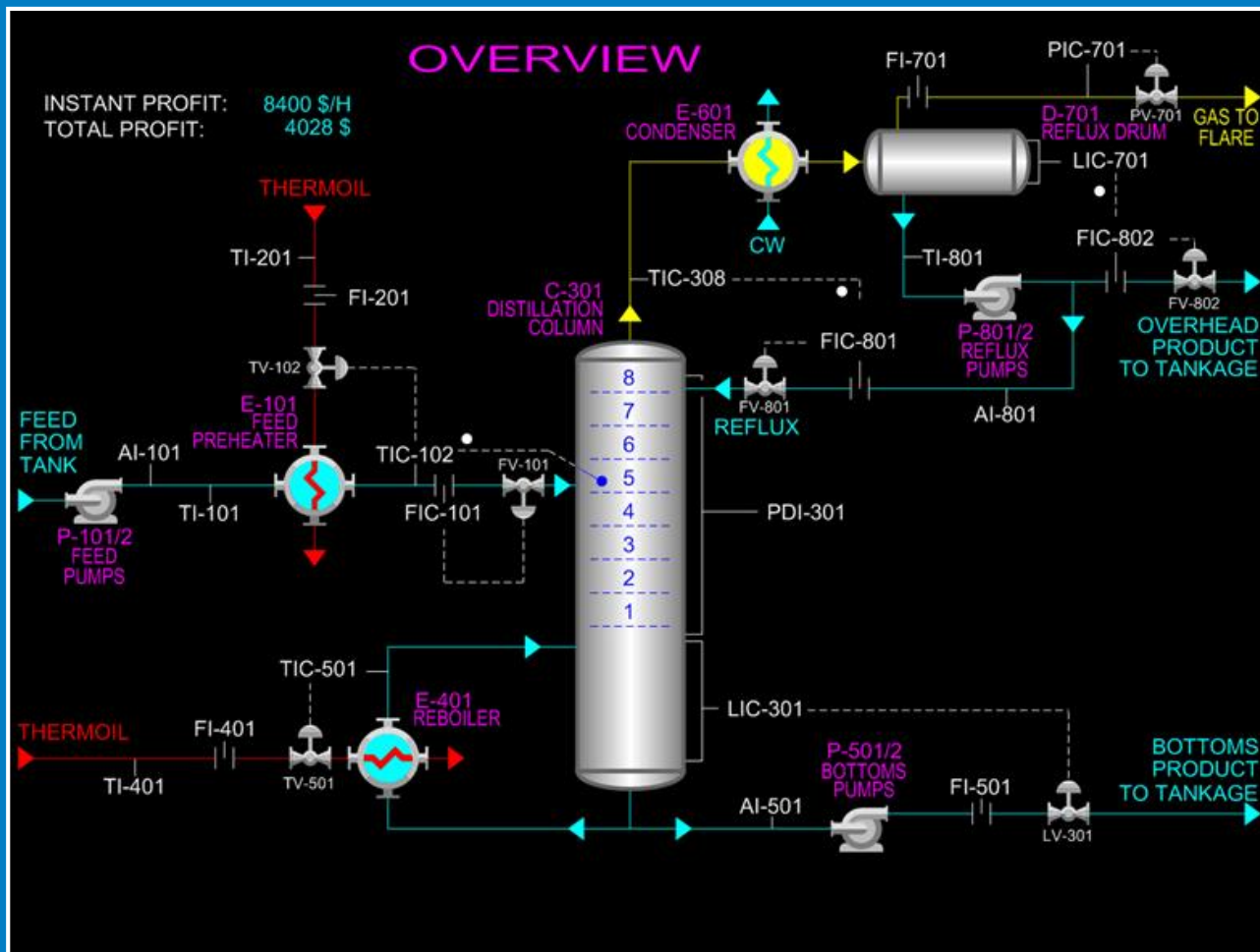




Process Simulation Gamification

# THE “GAMES” OF SAFETY AND P&L

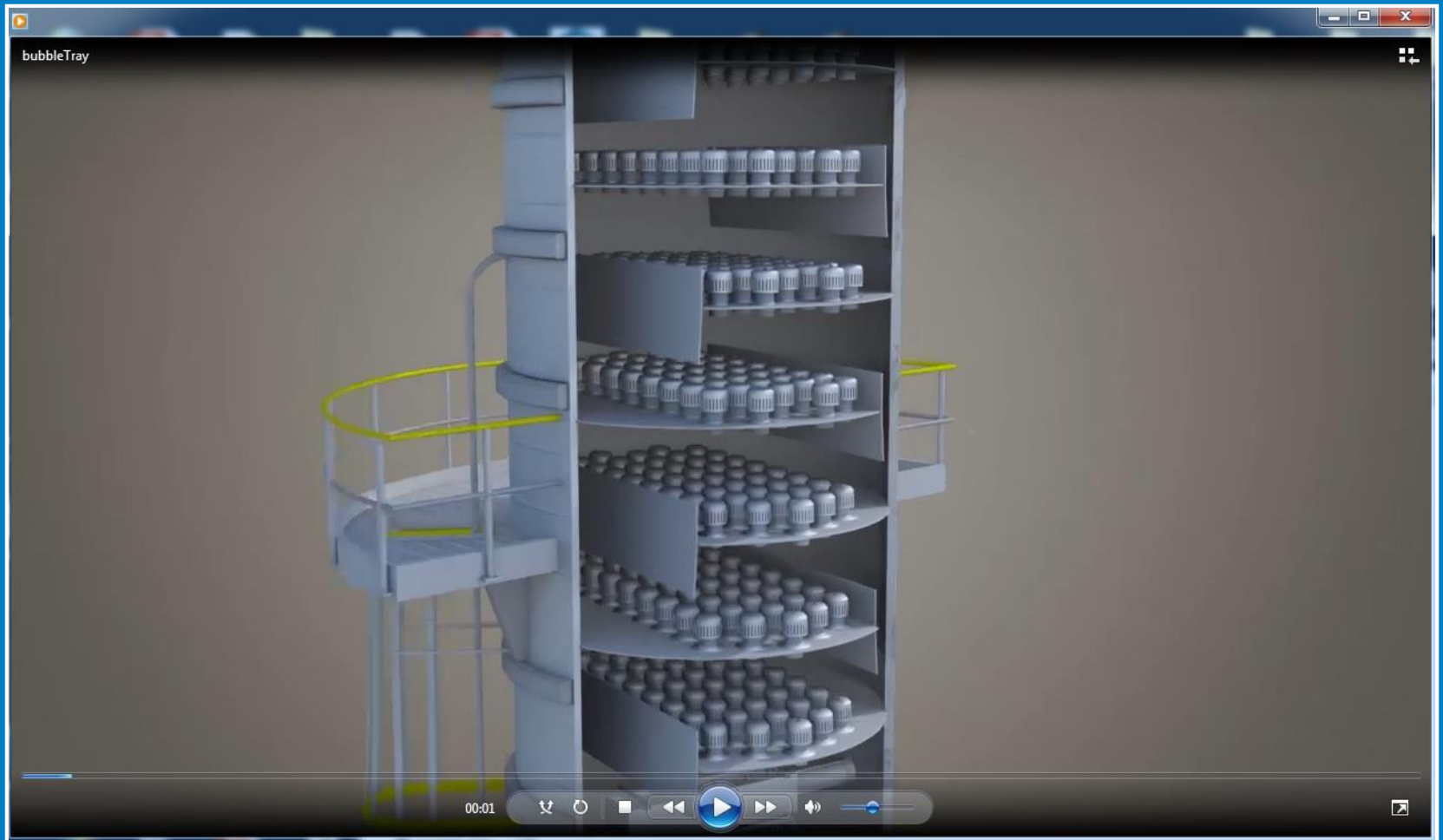
# Distillation Column P&L Overview

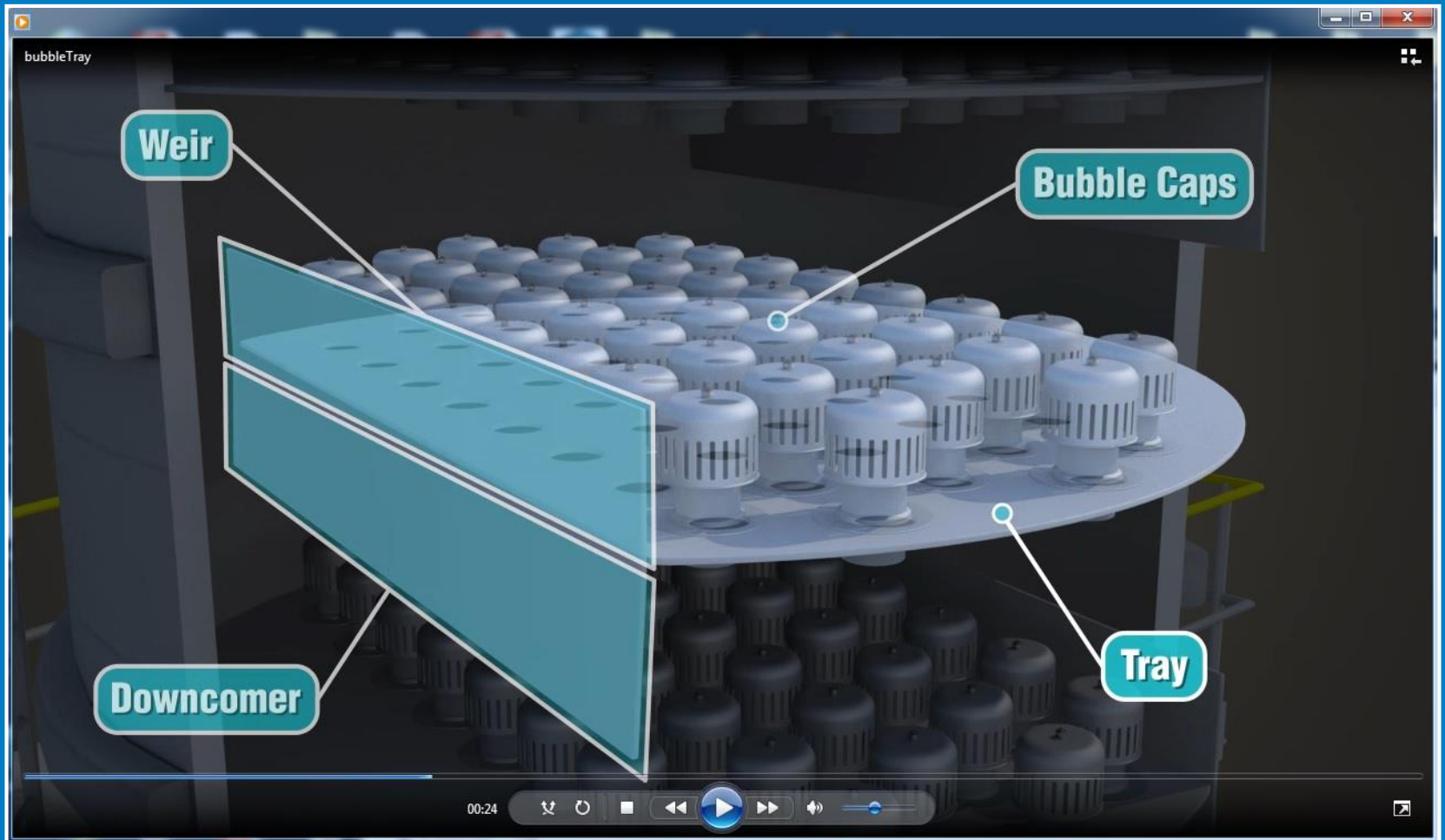




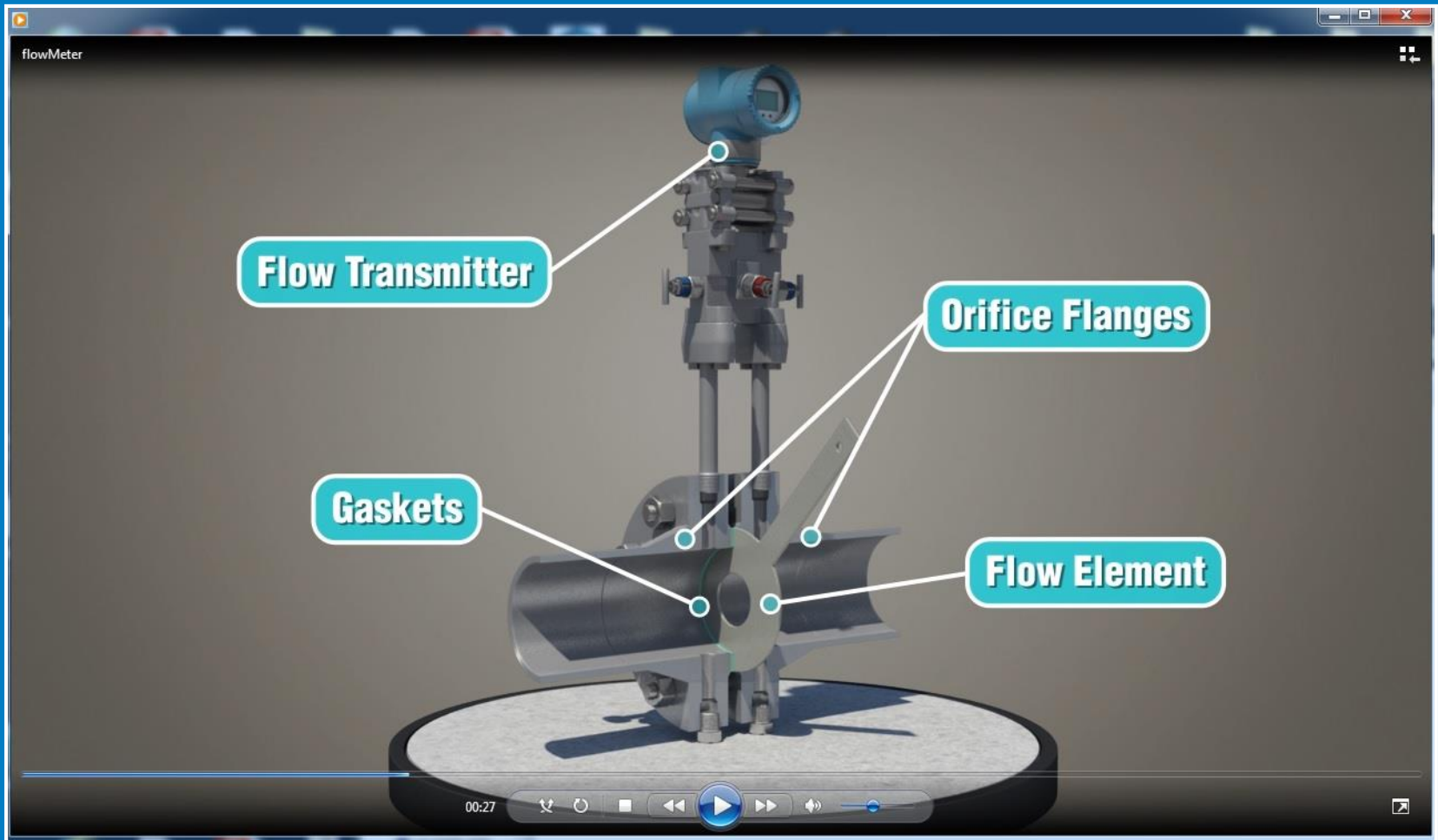
Micro-Learning via Workbooks on Millennial's Devices of Choice

# **“MICRO-MOBILE LEARNING”**

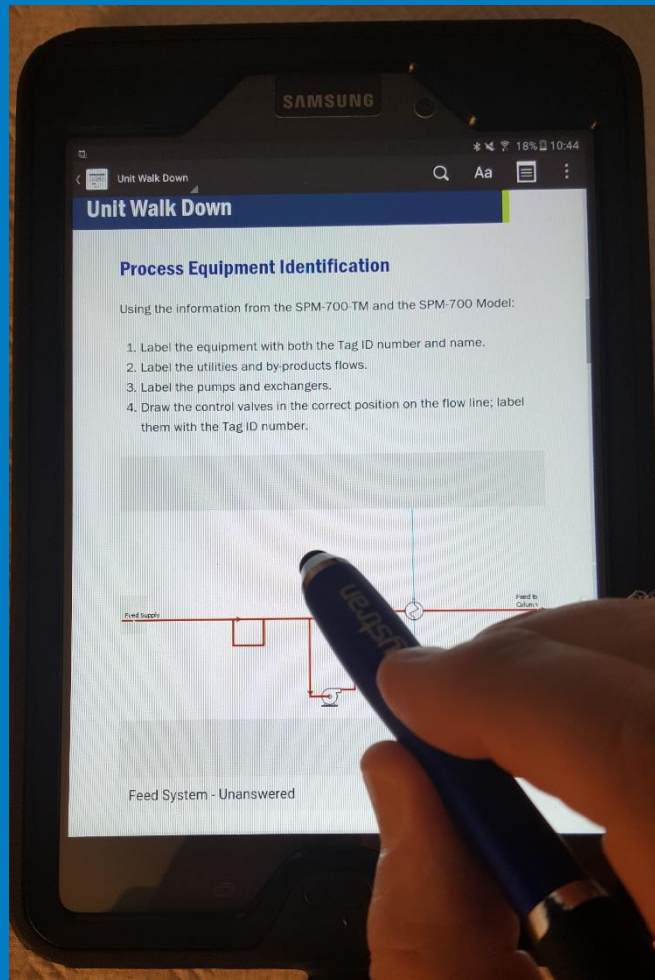








# iOS & Android Workbook Applications




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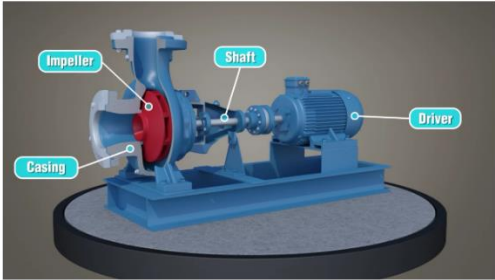
**Equipment Specifications**

**Feed Pumps**

A primary feed pump (P-101) is rated at 25 horsepower kilowatts and is capable of supplying a maximum of approximately 500 GPM of feed to the distillation column (C-301). A spare feed pump (P-102) with the same rating as the primary feed pump is provided. Block valves (BV-101 and BV-102) are provided to block in the feed. Feed flow to the column is modulated by a feed control valve (FCV-101) with linear flow characteristics.



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**Feed Pump**

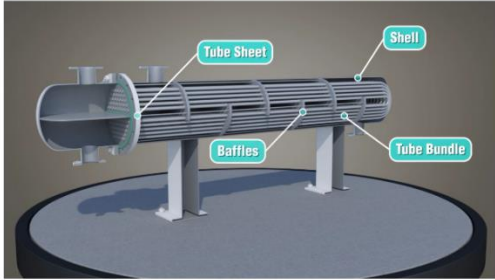
**Preheater**

The preheater (E-101) is a countercurrent tube and shell type heat exchanger. The feed passes through the preheater on the shell side while the hot ThermOil passes through on

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The preheater (E-101) is a countercurrent tube and shell type heat exchanger. The feed passes through the preheater on the shell side while the hot ThermOil passes through on the tube side. The ThermOil flow rate is modulated by a temperature control valve (TCV-102) with linear flow characteristics. Block valves (BV-201 and BV-202) are provided to block in the hot ThermOil. The ThermOil flow loop is designed to provide a maximum of approximately 1000 GPM of hot ThermOil to the preheater (E-101).



# 3D Virtual Environments & OTS

## iOS / Android Apps

### Performance Scoring





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**Thank you!**

