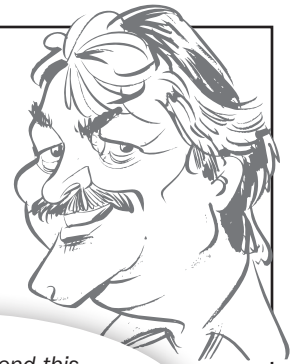


# Got **Pump** Problems?



## **GET ANSWERS** at the **Pump Guy Seminar**

Attend the Pump Guy Seminar in 2016:  
January 12-14, 2016 – Houston  
June 7-9, 2016 – Indianapolis

Visit [FlowControlNetwork.com/PumpGuy](http://FlowControlNetwork.com/PumpGuy)  
for more details and to register.

### Who Is the **Pump Guy**?

**Larry Bachus** (a.k.a. “Pump Guy”) is a regular contributor to *Flow Control* magazine and [FlowControlNetwork.com](http://FlowControlNetwork.com) and has nearly 40 years’ experience working with industrial pumps. Larry began his career as a pump mechanic apprentice in a southern steel mill, and he continued working on pumps while serving in the US Navy. Larry has spent time selling and installing pumps and running his own pump rebuild shop. His training course, the Pump Guy Seminar, provides practical solutions learned through many years of hands-on experience working with pumping systems.

“I Would recommend this course for any and all process engineers, operators, maintenance and even engineering purchasing.”

– attendee feedback, 2015

“This is an excellent course. I spent three years in maintenance not knowing how to troubleshoot pumps. Now I feel confident being able to help troubleshoot pumps and can confidently challenge operations and maintenance to return the pump to the zone of best efficiency.”

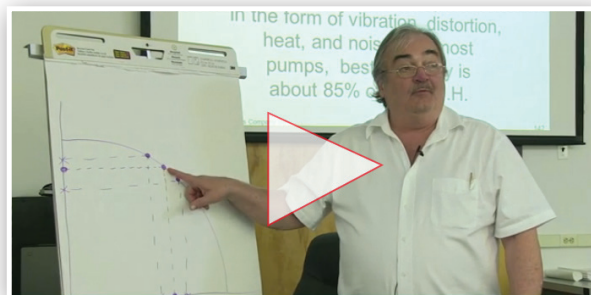
– attendee feedback, 2015

“Worth the investment (and I am talking in dollars). I knew a bit how to use pump curves, though I never thought there would be so much operating/design data that I could wiggle out of the curves. Definitely a must for anybody whose involve with pumps.”

– attendee feedback, 2015

### Wondering Whether the **Pump Guy Seminar** Is for You?

Check out the “**Pump Guy Insights**” video series @ [flwctrl.com/pginsights](http://flwctrl.com/pginsights)



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For more information and to register, please contact:  
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[adavidson@grandviewmedia.com](mailto:adavidson@grandviewmedia.com)

[FlowControlNetwork.com/PumpGuy](http://FlowControlNetwork.com/PumpGuy)

See Page 2 for a Full Course Outline

# Pump Guy Seminar

## COURSE OUTLINE

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### DAY ONE

#### 1. Basic Pump Principles

- How Pumps Work
- Head vs. Pressure
- Pressure Measurement
- Absolute and Gauge Pressures
- Vacuum

#### 2. NPSH

- NPSH required
- NPSH available

#### 3. Cavitation

- Vapor Pressure
- Types of Cavitation
- Effects & Prevention

#### 4. Affinity Laws

- The Laws
- Speed & Diameter
- Practical Applications

### DAY TWO

#### 5. Work & Efficiency

- Flow & Head
- Efficiency formula / application
- Energy & Work
- Power formula / application

#### 6. Pump Classification

- PD types
- Centrifugal types
- Impellers
- Specific Speed
- Suction Specific Speed

#### 7. Pump Curves

- H-Q, Eff., BHp & NPSHr
- Curve types
- Curve Interpretation

#### 8. System Curves

- TDH
- Elevation, Pressure & Losses
- Dynamic systems & pump behavior
- System changes
- Pumps in Series & Parallel

#### 9. Shaft Deflection

- Interpreting the Evidence
- Maintenance Operation & Design

### DAY THREE

#### 10. Pump-Motor Alignment

- Types of Misalignment
- Alignment Techniques

#### 11. Bearings

- Types & Services
- Lubrication
- Maintenance & Seals

#### 12. Pump Packing

- Components
- Packing Procedures
- Failure & Leakage

#### 13. Mechanical Seals

- Components
- Single & Double Seals
- Support Systems

#### 14. Seal Failure Analysis

- Causes & Prevention
- Environmental Controls

#### 15. Practical Maintenance

#### 16. Avoiding Wear

#### 17. Pump Piping

- Draining Tanks & Vessels
- Suction pipe arrangement
- Discharge pipe arrangement