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### Course Costs:

Oklahoma Company: \$690

Out-of- State Company:  
\$890

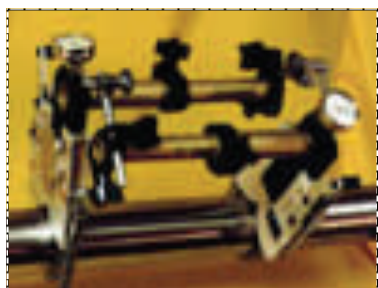
### Level 1 Certification Exam:

**\$275**

### Who Should Attend:

- Maintenance Managers
- Foremen
- Technicians
- Engineers

Anyone  
in the maintenance field



# 3-Day Program: "Basic Level I Shaft Alignment"

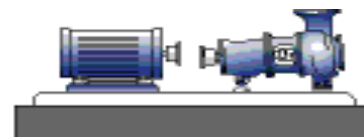
August 16-18, 2010

*Certification Exam on the 19th if desired*

*Hosted by*

**Tulsa Tech Center**  
3638 South Memorial Drive, Tulsa OK

Instructor: John Piotroski  
Turvac Inc. Oregonia, Ohio



This two day Basic Alignment course and the Level 1 certification Preparatory Course are designed to train students ranging from those who have little or marginal experience in shaft alignment up to people who have been doing alignment for years but have not been exposed to all of the different dial indicatory alignment methods; have not understood how to check or correct a 'soft foot' condition or used the alignment graphical/modeling technique and the details of all the alignment systems available on the market today.

**Registration will be limited to the first 15 OPMUG members that register**

Attendees will receive a Certificate of Completion with credit for contact and professional hours. Register on this website to reserve a seat for this session

<http://www.opmug.net/> Or Call Charles Madison  
(918) 828-5411

# Basic/Level 1 Shaft Alignment Training Course Objectives

**The Basic or Level 1 Certification Preparatory Shaft Alignment Training Course** is a lecture and lab workshop where the students will be doing hands-on work with machinery alignment demonstrators. After completing this course, the students will ...

- be able to recognize the symptoms of misaligned rotating machinery

- understand how shaft misalignment causes failures in equipment such as: motors, pumps, gears, turbines, fans, compressors, and other types of rotating machinery

- have a clear definition of shaft misalignment and how to quantify the amount of misalignment to determine if machinery is within acceptable tolerance limits

- possess a step-by-step procedure to guide them through the alignment process

- have a sense of approximately how much time each step of the alignment process requires

- understand how to measure run-out on mechanical couplings and machinery shafts

- recognize different kinds of faults that cause excessive run-out conditions and understand when the problem is severe enough to warrant correction

- be able to measure and correct machine case to base-plate interface problems such as 'soft foot' conditions that distort machine casings and shift the position of rotating machinery shafts when torquing down the foot bolts

- practice measuring run-out on alignment demonstrators

- practice measuring and correcting 'soft foot' problems on alignment demonstrators

- see how three commonly used shaft position measurement techniques are performed : the face-peripheral, reverse indicator, and shaft to coupling spool methods

be able to measure bracket sag and adjust the shaft positions measurement readings taken from dial indicators to compensate for this phenomena

- practice the reverse indicator shaft position dial indicator measurement technique on alignment demonstrators

- learn how to plot the positions of machinery shafts onto scaled graphs using data from the reverse dial indicator method to easily visualize the vertical and lateral positions of the machinery

- be able to determine a variety of possible realignment solutions from the graph to best suit the specific conditions encountered on different machinery designs and installations eliminating unnecessary tasks (such as grinding base-plates to lower machinery) thereby minimizing the amount of time required to align machinery

- practice moving machinery from calculations made using the graphing technique on the alignment demonstrators

- know how to adjust the graphing set up to plot readings from asymmetrical bracket arrangements

- understand the importance of adjusting the positions of the machinery to maintain proper vertical, lateral, and axial alignment

- learn about tools and techniques to control lateral movement of machinery

- understand how to maintain accurate records to determine if machinery is moving out of alignment over a period of time and if so, how to look for the cause of this movement

- be able to recognize and correct induced piping stress problems

- be given a review of the available alignment systems currently on the market that include laser, or electromechanical sensors and understand the advantages and disadvantages of each system and the approximate cost of these systems

- review new computer software programs specifically designed for shaft alignment

## FOR ADDITIONAL COURSE INFORMATION CONTACT

Charles Madison Tulsa Tech Center  
(918) 828-5411

**\*\*Course Cancellation Policy\*\***

**A training class can be cancelled when, less than 75% funded and is less than 30 days from the start of class (training). In this case there will be a 100% fee refund for registered participants. If a registered participant cancels less than 10 days before the start of class (training) they will forfeit 50% of the registration fee.**