

# NEWS BULLETIN

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Title: Revised CFR Training Programs  
& Class Schedule for 2009

Bulletin No. 08-03A  
Date: January 22, 2009

Please review and carefully note the changes for the 2009 CFR School classes.

## NEW FOR 2009 CFR COURSES

- **Effective immediately Dan Bemis CFR Senior Product Engineer will assume all roles and aspects of CFR Training.**
- **A minimum of 5 students will be required to hold an individual class. Enrollment to each class will be reviewed 60 days prior to the date it will be held. If it is determined that there are not at least 5 participants the class will be canceled and students will be notified. Upon notification, students will have the choice to be completely withdrawn from the class or to be moved to the next available class of their choice. Substitutions where available are accepted.**
- **Reservations that are not cancelled in writing at least 60 days prior to the starting date of the course will result in a full charge for the course fee.**
- **Class dates as listed below and in the previous bulletin remain the same.**
- **MANDATORY: All students are required to wear safety glasses with side shields and safety shoes during hands on training and are encouraged to bring their own personal safety equipment for comfort and convenience. Shorts, sandals and open toe footwear will not be permitted. Appropriate casual attire is recommended. NOMEX and or fire retardant clothing is not required to attend and participate in classes.**
- **Prerequisites concerning knowledge of Micrometers and specialty tools are not required to attend CFR classes.**

## GENERAL OVERVIEW

- All courses are conducted at the Dresser Waukesha - Product Training Center in Waukesha, Wisconsin. This facility is fully equipped with a F1/F2 CFR Combination Research/Motor Method Octane Rating Unit, a F5 CFR Cetane Method Diesel Fuel Rating Unit, and FIT Unit, a full range of maintenance tools/equipment, and modern classrooms with complete audio/visual capabilities.



- Extensive hands-on experience will be provided to all students in each of the courses. Students are encouraged to actively participate in the course and ask questions to promote a better understanding of the material.
- Each student will receive supplemental training materials for use during the course and to take back to the workplace. These include the latest version of all CFR related ASTM test methods, CFR Training Course Manual, CFR Operations and Maintenance Manual, CFR Tool Catalog, copies of all power point slides presented during the course, and Waukesha CFR Product Brochures.
- Each course starts on Monday and is scheduled for four full days. Classes start at 8:30 a.m. and end at 4:00 p.m. The student's travel plans should be arranged accordingly.

**Octane Operation** – This course is designed for lab personnel who need additional knowledge of the basic function and operation of the CFR Octane Rating Units and a better understanding of the ASTM Research and Motor test methods. Topics covered in this course include:

- Classroom lecture and discussion covering, the theory of octane testing with the CFR engine, description and function of major engine components and instrumentation, and a review of recent improvements to the CFR Octane Rating Units.
- Discussion covering engine safety, as well as personal safety, while operating or maintaining the CFR engine.
- Detailed review and discussion of the ASTM Research (D 2699) and Motor (D 2700) test methods with particular emphasis on operational aspects including basic engine and instrumentation setup, Toluene Standardization Fuel qualification requirements, and details of the equilibrium bracketing, falling level (dynamic) bracketing, and compression ratio testing procedures.
- Hands-on operation of the CFR Combination Research/Motor Octane Rating Unit by all students with sample ratings obtained using the equilibrium bracketing, falling level (dynamic) bracketing, and compression ratio testing procedures.
- Review of basic preventive maintenance and troubleshooting techniques that help to ensure consistent and accurate octane ratings.

**Octane Maintenance** – This course is designed for CFR personnel who need further knowledge and experience concerning overhaul of the CFR Octane Rating Unit cylinder, clamping sleeve, and carburetor. Topics covered in this course include:

- Classroom lecture and discussion covering the theory of octane testing with the CFR engine, description and function of major engine components and instrumentation, and a review of recent improvements to the CFR Octane Rating Units.
- Discussion covering engine safety, as well as personal safety, while operating or maintaining the CFR engine.
- Hands-on cylinder and clamping sleeve overhaul including removal from the crankcase, measurement of all critical components, grinding of valves and valve seats, valve guide and seat removal and replacement; and reassembly of the cylinder and clamping sleeve on the crankcase.
- Hands-on carburetor overhaul including description and function of all critical components of the new equilibrium/falling level carburetor system.
- Review of routine crankcase inspection and maintenance requirements including changing oil and filter; operation and maintenance of the oil pressure control and crankcase breather systems; and measurement of crankshaft endplay and main bearing clearances.

***Cetane Operation*** – This course is designed for CFR personnel who need additional knowledge of the basic function and operation of the CFR Cetane Rating Unit and coverage of the latest D613 test method.

Topics covered in this course include:

- Classroom lecture and discussion covering the theory of Cetane testing with the CFR Cetane Unit, description and function of major engine components and instrumentation, and a review of recent improvements made to the CFR Cetane Rating Unit.
- Discussion covering engine safety and personal safety, while operating the CFR Cetane Rating Unit.
- Detailed Review of the ASTM D613 test method with emphasis on operational aspects including basic engine and instrumentation settings and setups.
- Hands-on operation of the CFR Cetane Unit by all students with sample ratings
- Review of basic preventative maintenance and troubleshooting techniques that help to ensure consistent and accurate ratings.

***Cetane Maintenance*** – This course is designed for CFR personnel who need knowledge and experience concerning the top-end overhaul. Topics covered in this course include:

- Classroom lecture and discussion covering the description and function of major engine components/instrumentation, and review of recent improvements to the CFR Cetane Rating Units.
- Discussion covering engine safety and personal safety, while operating or maintaining the Cetane Unit.
- Hands-on cylinder, cylinder head, and hand-wheel maintenance to include the use of measuring equipment critical to the proper tolerances of all components, valve grinding and seat grinding techniques, valve guide and seat removal and replacement, and assembling of the cylinder and head to maintain the proper over-travel. This will also include discussion of the fuel-injection system and techniques on proper maintenance.
- Review of routine crankcase inspection and maintenance requirements including oil and filter changes, operation of the oil pressure control and crankcase breather systems, and a measure of crankshaft endplay and main bearing clearances.

***Crankcase Overhaul and Maintenance*** – This course is designed for more experienced CFR maintenance personnel who need additional knowledge and understanding of the requirements for overhauling a CFR-48 crankcase. Topics covered in this course include:

- Classroom lecture and discussion covering description and function of major crankcase components, and the critical wear specifications and measurements used to determine when replacement is required.
- Discussion covering engine and personal safety while operating or maintaining the CFR engine.
- Hands-on crankcase overhaul including complete disassembly, discussion on the function and measurement of all critical components, and assembly of the crankcase using the required tolerance and torque specifications.
- Review of routine preventive maintenance and inspection practices required between crankcase overhauls.

***FIT Unit Operation and Maintenance***– This course is designed for lab personnel who need knowledge of the basic function and operation of the FIT Unit. Topics covered in this course include:

- Classroom lecture and discussion covering the theory of Constant Volume Combustion Chamber, (CCVC) testing with the FIT – For determining Derived Cetane Number (DCN), description and function of major components and instrumentation; and a review of recent improvements made to the FIT Unit.
- Hands-on operation of the FIT including adjustment of critical variables as required by the most current method of D7170.
- Discussion covering unit safety and personal safety, while operating the FIT Unit.
- Review of basic preventative maintenance and troubleshooting techniques that help to ensure consistent and accurate ratings.
- Detailed Review of the current version ASTM D7170 test method with emphasis on operational aspects including basic unit and instrumentation settings and setups.

## **2009 CFR TRAINING SCHEDULE AND REGISTRATION**

### **Schedule**

**CFR courses are held from 8:30 a.m. – 4:00 p.m. each day of the course.** Each four-day course will be offered in 2009 on the dates listed below. All courses are conducted at the Dresser Waukesha - Product Training Center in Waukesha, Wisconsin.

<b>May 4 - 7</b>	<b>Octane Operation</b>
<b>May 11 - 14</b>	<b>Octane Maintenance</b>
<b>July 13 - 16</b>	<b>Octane Operation</b>
<b>July 20 - 23</b>	<b>Octane Maintenance</b>
<b>August 10 - 13</b>	<b>Crankcase Overhaul</b>
<b>September 14 - 17</b>	<b>Cetane Operation</b>
<b>September 21 - 24</b>	<b>Cetane Maintenance</b>
<b>October 5 - 8</b>	<b>Octane Operation</b>
<b>October 12 - 15</b>	<b>Octane Maintenance</b>

Waukesha can also conduct on-site training at your facility. Please call us at (262) 650-5603 or (262) 549-2915 for more details.

### **Course Fee**

The fee for each of our training courses is \$1,200 per student. This fee covers four days of instruction, all supplemental training materials, and lunch each day of the course. ***This fee does not cover travel and living expenses, which are the responsibilities of the student.***

**Cancellation**

*\*Reservations not cancelled in writing at least 60 days prior to the starting date of the course will result in a full charge for the course fee. Substitutions where available are accepted.*

**Hotel Accommodations**

Waukesha has arranged a special rate at the Comfort Suites Hotel in Pewaukee, WI, for students attending our CFR training courses. The hotel will provide free transportation to and from Mitchell International Airport in Milwaukee and daily transportation between the hotel and the Waukesha Product Training Center. Please contact the Comfort Suites Hotel at (262) 506-2000 or 1-888-506-2005 to make your room reservation and be sure to mention Dresser Waukesha to obtain the special rate.

**Registration**

Course registration can be sent by mail, fax, or by email using the form below. Please contact Judy Wesley at (262) 549-2915 or by email at **Judy.Wesley@dresser.com** if you have questions or require further details concerning the training courses. Class size is limited and openings are filled on a first come, first served basis. Please apply early to assure availability.

Mail registration form to: Judy Wesley, Waukesha Engine, Dresser Inc., 1101 West St. Paul Avenue, Waukesha, WI 53188 or fax to Judy Wesley at (262) 549-2960.



**Registration Form**

**Course Title:** \_\_\_\_\_

**Course Dates:** \_\_\_\_\_

**Student's Name:** \_\_\_\_\_

**Company:** \_\_\_\_\_

**Address:** \_\_\_\_\_

\_\_\_\_\_

**Telephone:** ( ) \_\_\_\_\_

**Fax:** ( ) \_\_\_\_\_