



Waukesha

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Waukesha Advisor

WEDA 471
November 10, 201

CFR Training Programs & Class Schedule for 2011

NEW FOR 2011 CFR COURSES

Dresser Waukesha has announced its 2011 CFR training programs along with several new features. For the first time, Dresser Waukesha is taking CFR training on the road and will offer training at customer locations. Dresser Waukesha also will accommodate special requests for classes requiring translation. To learn more about on-site training, please contact me at (262) 650-5603 or dan.bemis@dresser.com.

CFR COURSE OFFERINGS

Dresser Waukesha will continue to offer a full schedule of classes at the company's Product Training Center in Waukesha, Wisconsin, USA. This facility is 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. Each class provides extensive hand-on experience and detailed supplemental training materials.

Following is a brief description of each of the CFR classes offered:

- **Octane Operation** – Designed for lab personnel who need 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.
- **Octane Maintenance** – Designed for CFR personnel who need further knowledge and experience concerning overhaul of the CFR Octane Rating Unit cylinder, clamping sleeve, and carburetor.
- **Cetane Operation** – 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.
- **Cetane Maintenance** – Designed for CFR personnel who need knowledge and experience concerning the top-end overhaul.
- **Crankcase Overhaul and Maintenance** – Designed for more experienced CFR maintenance personnel who need additional knowledge and understanding of the requirements for overhauling a CFR-48 crankcase.
- **FIT Unit Operation and Maintenance** – Designed for lab personnel who need knowledge of the basic function and operation of the FIT Unit.

2011 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 2011 on the dates listed below. All courses are conducted at the Dresser Waukesha - Product Training Center in Waukesha, Wisconsin.

- **April 4-7 - Octane Maintenance**
- **May 16-19 - Octane Operation**
- **June 6-9 - Crankcase Overhaul**
- **June 13-16 - Octane Maintenance**
- **July 11-14 - Octane Operation**
- **August 8-11 - Octane Maintenance**
- **August 22-25 - Cetane Operation**
- **September 19-22 - Cetane Maintenance**
- **October 3-6 - FIT Operation/Maintenance**

Detailed course descriptions, along with complete information on prerequisites, fees, accommodations and registration, are available on WEDlink (www.WEDlink.net).

Class sizes are limited and openings are filled on a first-come, first-served basis. Please apply early to assure availability.

If you have any questions or require further details concerning the training courses, please contact Chrissy Hayne at (262) 549-2665 or chrissy.hayne@dresser.com.

Best Regards,

Dan Bemis
CFR Service Engineer





NEW FOR 2011 CFR COURSES

- Waukesha is able to offer onsite training and can also accommodate special request for classes requiring translation. For more information please contact Dan Bemis at (262) 650-5603 or dan.bemis@dresser.com.
- 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.
- **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.

GENERAL OVERVIEW

- All courses listed 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 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.

Prerequisite: *Students taking this course should already have taken Octane Operation or should have some knowledge of the operation of the CFR Octane Rating Unit according to the most current ASTM Methods D2699 and D2700.*

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.

Prerequisite: Students taking this course should already have taken Cetane Operation or should have some knowledge of the operation of the F5 Cetane Diesel Rating Unit according to the most current ASTM Method D613.

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.
- Discussion covering unit safety and personal safety, while operating the FIT Unit.
- Detailed Review of the current version ASTM D7170 test method with emphasis on operational aspects including basic unit and instrumentation settings and setups.
- Hands-on operation of the FIT including adjustment of critical variables as required by the most current method of D7170.
- Review of basic preventative maintenance and troubleshooting techniques that help to ensure consistent and accurate ratings.

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July 11-14	Octane Operation
August 8-11	Octane Maintenance
August 22-25	Cetane Operation
September 19-22	Cetane Maintenance
October 3-6	FIT Operation/Maintenance

Waukesha is also able to conduct on-site training at your facility. Please call Dan Bemis at (262) 650-5603 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 sole responsibility 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 email or by phone using the form below. Please contact Chrissy Hayne at (262) 549-2665 or by email at **Chrissy.Hayne@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.



Registration Form

Course Title: _____

Course Dates: _____

Student's Name: _____

Company: _____

Address: _____

Telephone: () _____

Fax: () _____