2012 Dresser-Rand

Training Catalog

2012 product training catalog

Custom Product Training

Please contact us to request a custom training proposal. We can tailor the program to meet your desired class dates, number of students, student mix (operators, mechanics, engineers, etc.), student experience level, machine-specific technical information, overall job scope, and any special transportation/shipping requirements. You select the location that best suits your training needs – your plant, a regional location, the Dresser-Rand factory, or a D-R service center.

Hands-on Training

Our portable training units and workstations are full-size D-R equipment that can be transported directly to your facility to reduce overall training costs and associated trainee travel expenses. (This is available in the United States and Canada only.) This practical approach to learning is the method of instruction preferred by maintenance personnel.

Web-based Training (WBT) Courses

Dresser-Rand offers OEM-developed WBT courses covering operation and maintenance of reciprocating compressors, steam turbines and turbomachinery. These courses are designed for the intermediate to advanced level student and include many learning interactivities that will enhance knowledge retention. Designed by our experienced factory training personnel and approved by in-house subject matter experts, these courses provide an excellent means to quickly train your operators and mechanics in established Dresser-Rand "best practices."

We have established a business relationship with Coastal Training Technologies Corp. Coastal is recognized as a global leader in flexible learning solutions and will deliver the Dresser-Rand WBT courses in their award-winning ClarityNet HD® eLearning format. All courses will be AICC- and SCORM-certified—enabling integration with a variety of learning management systems.

Dresser-Rand product training programs are designed for a wide range of client operations, maintenance, and engineering personnel. Our full-time instructors and field service engineers use "building block" and "team teaching" techniques to go from equipment fundamentals for the new employee, all the way to complete machinery overhauls and design concepts for more experienced attendees. Programs and training manuals are presented in English with translations into other languages upon request.

For more information on Coastal and their more than 450 industrial skills training titles, visit www.coastalskills.com.

Open registration and Client-hosted Regional Classes

In addition to United States-based factory, regional, and machine-specific on-site training, Dresser-Rand can hold open registration courses hosted by clients in heavily equipment-populated areas. Courses can be hosted at a client's site with open registration for other D-R clients within that area. Dresser-Rand supplies all training materials such as manuals, hands-on equipment, and tools. All advertising and registrations are the responsibility of Dresser-Rand.

Contents

DRESSER-RAND

Bringing energy and the environment into harmony.®

Registrar, payment, and travel information

Registration, Payment, and Cancellation Policy

(visit www.dresser-rand.com for additional information)

- **Dresser-Rand policy only permits us to offer training to employees of Dresser-Rand and employees of owners and operators of D-R equipment with whom we have a business relationship.**
- All registrations will be confirmed upon receipt of the payment arrangements for the specific program
- Substitutions with personnel from the same company may be made at any time; with notification to the appropriate registrar.
- Class size and duration are determined by the type of school and the training location.
- Registrations cancelled by the client less than fifteen (15) days before the program are subject to one-half of the registration fee. "No shows" are subject to the entire program fee.
- D-R reserves the right to cancel or reschedule a program up to 10 days before the requested program.

Payments

- All payments for U.S. programs must be in U.S. dollars.
- Purchase orders must be received by the appropriate registrar 15 days before the requested program.
- MasterCard, Visa, and American Express are accepted in the U.S. only, as are company checks on the first day of class. Company checks should be made out to "Dresser-Rand Company".
- Prices include instruction, training manual, and lunches. Asia Pacific programs include accommodations and local transportation.

Asia Pacific Programs

- Purchase orders must be received by the appropriate registrar 15 days in advance of the requested program.
- Payment is required by US dollar bank draft with beneficiary to "Dresser-Rand Asia Pacific Sdn Bhd" or by telegraphic transfer. Please contact the Asia Pacific registrar for further details.
- Prices subject to change without notice. Please verify all prices with the appropriate registrar at the time of registration.

Travel Information

- Classes/labs are generally held from 8 am to 4 pm daily. Those traveling by air should make their reservations for departure no earlier than 3:30 p.m. on the last day of class. Please account for the estimated airport travel times listed above when making reservations.
- Reduced rate hotel accommodations are available for Painted Post and Olean schools. Participants are responsible for payment. Hotels, phone numbers and rates are available upon request.
- Airport ground transportation is available at some locations; however, rental cars are recommended for U.S.-based programs. Rental car agencies in the U.S. require the driver to have a valid U.S. or international driver license and a valid credit card.
- Participants in hands-on labs are required to bring safety shoes, safety glasses and work clothes/coveralls. Gloves are provided when necessary.
- Check with the registrar for specific class dates, times, site information and travel accommodations.

Driving directions are available at www.dresser-rand.com

Additional Information

- Participants in classroom-based courses are required to wear business casual clothes or jeans (shorts not permitted), and leather-upper shoes (neither open-toe nor open-heel shoes are permitted – no clogs or sandals).
- Participants in hands-on labs are required to bring safety shoes, safety glasses, and work clothes/coveralls (shorts not permitted). Gloves are provided when necessary.
- Contact your local training registrar (see page 12) for any questions you may have with regards to proper attire.
- **All safety and security policies at each location must be followed by all students.**

Asia Pacific Promotions:

(applies to all AP locations):

- 5% discount for early registration (one month before the start of class).
- 5% discount for a minimum of three-person enrollment from same company.

Prices subject to change without notice.

Clients can receive a 5% discount by registering 60 days or more before the start of class (US-based programs). Group discounts are available; ask your Training Registrar for details.

Training Registrars

Reciprocating Compressors and Integral Gas Engines
Dresser-Rand
Product Training
100 Chemung Street
Painted Post, NY 14870
Tel: (Int'l +1) 607-937-2303
Fax: (Int'l +1) 607-937-2047

Turbomachinery/Steam Turbine Products
Dresser-Rand
Product Training
Paul Clark Drive
Olean, NY 14760-0560
Tel: (Int'l +1) 716-375-3975
Fax: (Int'l +1) 716-375-3979

Control Systems
Dresser-Rand
Product Training
1202 W. Sam Houston Pkwy. N.
Houston, TX 77043
Tel: (Int'l +1) 713-365-2645
Fax: (Int'l +1) 713-365-2660

Dresser-Rand S.A.
Training Administrator
31, Boulevard Winston Churchill
76080 Le Havre Cedex 7013 France
Tel: (Int'l +33) 2-35-25-5296
Fax: (Int'l +33) 2-35-25-5887
E-mail: pdiesnis@dresser-rand.com

Dresser-Rand Asia Pacific Sdn Bhd
Unit 9-4, 9th Floor, Bangunan Malaysian Re
17 Lorong Dungun, Damansara Heights
50490 Kuala Lumpur, Malaysia
Tel: (Int'l+60) 3-2093-6633
Fax: (Int'l+60) 3-2093-2622
E-mail: trainingAP@dresser-rand.com

Dresser-Rand Company Ltd.
85 Papyrus Road
Peterborough, Cambridgeshire
PE4 5BH, United Kingdom
Tel: (Int'l +44) 1733-292215
Fax: (Int'l +44) 1733-292234
E-mail: dgoodwin@dresser-rand.com

Note: Register for courses online at: www.dresser-rand.com.

Reciprocating compressors & integral engines

Instructor-led recip training courses
Four-day to one week courses

Reciprocating Compressor School (RCS-105)
This classroom-based program for process reciprocating compressors covers a wide range of maintenance and operational concerns related to all components of all Dresser-Rand process reciprocating compressors (previous Ingersoll-Rand – HHE/ESH/HSE, and previous Worthington – BDC). Topics include: journal bearings; compressor cylinders, pistons, rods and rings; packing/oil wiper rings; compressor valves; capacity control devices; and lubrication and cooling systems. Also included are discussions on cylinder theory, valve failure analysis and general compressor maintenance.
This course is a prerequisite for Reciprocating Compressor Lab (RCL-215).
Price: $2,350 USD ($2,675 CAD in Canada)

Reciprocating Compressor Lab (RCL-215)
This hands-on program requires the students to disassemble, evaluate, repair and reassemble many compressor components via structured workstations. This program reinforces many of the maintenance concepts and procedures learned during Reciprocating Compressor School. Each student is required to exhibit competence in a variety of knowledge, skill and performance areas. Students are afforded the opportunity to work on the following: HHE-style frame and running gear; compressor cylinders (rider bands and piston rings); a variety of valve inspection/evaluating workstations; several capacity control devices (plug, finger and clearance pocket unloaders); piston nut tightening; piston rod run-out; pressure packing; and connecting rod bolt stretch. Students are also required to properly install a variety of valve covers and adjust crosshead shoes. Throughout the course, instructors focus on the proper use of tools and measuring devices that include torque wrenches, micrometers, crankshaft distortion dial gages, bolt-stretch micrometers and dial indicators.
Prerequisite Reciprocating Compressor School (RCS-105) or equivalent, as determined by D-R Reciprocating Products Training Department.
Price: $2,520 USD

High-speed (Gas Field) Reciprocating Compressor School (HRS-105)
Geared toward maintenance and reliability personnel, this four-day, classroom-based course offers a good understanding of the physical, operational and maintenance aspects of the HOS/HOSS/BOS and VIP compressors manufactured by D-R. Topics include: basic theory of operation, principles of compression using PV diagrams, cylinder clearance, rod loads, multi-staging, rod reversal, frame and running gear component review and maintenance procedures, cylinder and component review and maintenance procedures, piston rods and ring maintenance, pressure packing maintenance, cylinder and frame lubrication systems, compressor valve operation and troubleshooting.
Price: $2,350 USD

High-speed (Gas Field) Reciprocating Compressor Hands-on (HRL-215)
In this four-day course, students apply what they learned in the Dresser-Rand High-Speed Reciprocating Compressor School through hands-on training. Students participate in the disassembly, evaluation and reassembly of a variety of machine components, including a compressor frame, HOS and VIP compressor cylinders, pressure packing. They also receive instruction in proper use of precision tools used in the field. Prerequisite: High-Speed Reciprocating Compressor School (HRS-105) or equivalent, as determined by D-R Reciprocating Products Training Department.
Price: $2,520 USD

Integral Engine Theory (IET-103) (formerly IES-105)
This three-day school covers gas engine cycle and combustion theory and a wide range of important operational and maintenance topics specific to D-R two stroke (formerly Dresser-Clark) and four stroke (formerly Ingersoll-Rand) integral gas engines. This program is focused on the power end and includes the following topics: two and four stroke cycle theory, assembly and maintenance of power cylinders, power pistons, rods, and rings, Lubrication and cooling systems, fuels and fuel systems, power cylinder balancing, camshaft timing, journal bearings and running gear, crankshaft web deflections, valve train systems, and general engine maintenance and troubleshooting.
Price: $2,350 USD

Integral Engine Lab (IEL-215)
This hands-on program requires students to disassemble, evaluate and reassemble many gas engine components specific to the power end. Both two-stroke cycle (TCV/TLA/HBA) and four-stroke cycle (KVG/KVS) engine components are incorporated into the program. The students are given the opportunity to perform the following tasks: Ingersoll-Rand two-piece and Clark three-piece piston assembly; main bearing assembly; bearing crush; power piston and rod removal; liner bore measurement and evaluation; piston ring clearance measurements; camshaft timing; oil pump maintenance; shimmable connecting rod bearing assembly; and web deflection measurements. A full-size training model is used for the students to learn proper maintenance techniques. Several classroom sessions are included to reinforce the concepts and procedures practiced in the hands-on sessions.
Price: $2,520 USD

Wire Alignment School (WAS-245)
This one-week classroom and hands-on certification program teaches principles and procedures of wire alignment. Specific requirements for successful completion include evaluation and approval of various cylinder examples, and actual finished wires. A six throw frame, a barrel and steel billet-type cylinders are used for hands-on certification.
Price: $2,520 USD

Reciprocating Compressor School/Lab Combo (RCSL-225)
This one-week program covers a wide range of maintenance and operational concerns related to frame components of all Dresser-Rand process compressors (previous I-R - HHE/ESH/HSE and previous Worthington - BDC). Topics include: journal bearings, compressor cylinders, pistons, rods and rings, packing/oil wiper rings, compressor valves, capacity control devices, and lubrication and cooling systems, compressor cylinder theory, valve failure analysis, and general compressor maintenance. In conjunction with these lectures, the lab portion requires the students to disassemble, evaluate, repair, and reassemble many compressor components via structured workstations, thus reinforcing many of the maintenance concepts and procedures learned during the lecture portion of the program. Each student must exhibit competence in a variety of knowledge, skill and performance areas. Each student is afforded the opportunity to work on the following equipment: two-throw HHE-style frame and running gear, non-lube cylinders (split and solid rider bands), a variety of valve rebuilding/evaluation workstations, several capacity control devices (plug, port and clearance pocket unloaders), piston nut tightening, piston rod run-out and rod drop indicator, high-pressure water-cooled packing, connecting rod for bolt stretch, install a variety of valve covers, evaluate an oil pump assembly, and adjust crosshead shoes. Throughout the week, instructors stress the proper use of tools and measuring devices that include torque wrenches, micrometers, web deflection indicators, bolt-stretch micrometers, and piston rod run-out indicators.
Price: $2,520 USD

Reciprocating compressors & integral engines

Recip courses (Europe)
Four-day courses

Reciprocating Compressor Operation & Maintenance (RC-THEO)

This four-day course (although based on the D-R product range) is generic in subject matter. The information presented may be applied to a variety of manufacturers' machines. Topics covered include reciprocating compressor theory, frame and running gear, cylinders, pistons and packing rings, valves, capacity control, frame and cylinder lubrication systems and operation, cooling systems, maintenance and rod run-out. **Price: £1,430**

Reciprocating Compressor Hands-On (RC-PRAC)

This four-day course is based on the D-R four-cylinder RDS process reciprocating gas compressor. Activities undertaken include removal of piston rod, crosshead and connecting rod; removal of main bearings and crankshaft; piston removal and refitting; piston clearance checks; piston rod run-out; valve removal; removal and assembly of packings; cylinder clearances; and maintenance procedures.
Price: £1,430

Recip courses (Asia Pacific)
Four-day course

Reciprocating Compressor Operation & Maintenance Training

This four-day classroom program covers a wide range of maintenance and operational concerns related to frame components of all D-R process compressors (previous Ingersoll-Rand – HHE/ESH/HSE, and previous Worthington – BDC). Topics include journal bearings; compressor cylinders; pistons; rods and rings; packing/oil wiper rings; compressor valves; capacity control devices; and lubrication and cooling systems. Also included are discussions on compressor cylinder theory, valve failure analysis, compressor installation and general compressor maintenance and troubleshooting.
Price: See schedule below

Reciprocating compressors & integral gas engines schedule

Cincinnati, Ohio, USA	
Sept 18-20	Integral Engine (IET-103)
Cilegon, Indonesia	
May 28-31	Recip Compressor Operation & Maintenance
Edmonton, Alberta, Canada	
Nov 5-9	Recip Compressor School (RCS-105)
Garyville, Louisiana, USA (MAP location)	
Apr 16-19	Recip Compressor School (RCS-105)
Apr 23-26	Recip Compressor Lab (RCL-215)
Houston, Texas, USA	
Feb 7-10	High-Speed Recip Compressor School (HRS-105)
Feb 13-16	High-Speed Recip Compressor Lab (HRL-215)
Mar 12-16	Wire Alignment School (WAS-245)
Mar 20-23	Recip Compressor School (RCS-105)
Mar 26-30	Recip Compressor Lab (RCL-215)
Aug 1-3	Integral Engine Theory (IET-103)
Aug 6-10	Integral Engine Lab (IEL-215)
Sept 11-14	Recip Compressor School (RCS-105)
Sept 17-21	Recip Compressor Lab (RCL-215)
Oct 1-5	Wire Alignment School (WAS-245)
Nov 6-9	High-Speed Recip Compressor School (HRS-105)
Nov 12-15	High-Speed Recip Compressor Lab (HRL-215)

Kuala Lumpur, Malaysia	
Mar 26-29	Recip Compressor Operation & Maintenance
Oct 15-18	Recip Compressor Operation & Maintenance
Los Angeles, California, USA	
Mar 27-29	Integral Engine Theory (IET-103)
Odessa, Texas, USA	
May 7-11	Recip Compressor School/Lab (RCSL-225)
Painted Post, New York, USA	
Feb 28 - Mar 1	Integral Engine Theory (IET-103)
June 4-8	Recip Compressor School (RCS-105)
June 11-15	Recip Compressor Lab (RCL-215)
Oct 8-12	Recip Compressor School (RCS-105)
Oct 15-19	Recip Compressor Lab (RCL-215)
Peterborough, United Kingdom	
March 6-9	Reciprocating Compressor Operation and Maintenance (RC-THEO)
March 12-15	Reciprocating Compressor Hands On (RC-PRAC)
Sept 4-7	Reciprocating Compressor Operation and Maintenance (RC-THEO)
Sept 10-13	Reciprocating Compressor Hands On (RC-PRAC)
Shanghai, China	
June 20-23	Reciprocating Compressor Operation and Maintenance

To arrange short courses for your group, contact one of the training registrars listed in the back of this catalog.

See "registrar, payment and travel" page for Asia Pacific promotions

Asia Pacific Pricing:

Malaysia Price: US $2,420 includes daily meals and training materials only.

Indonesia Price: US $1,500 includes daily meals and training materials only.

Shanghai Price: (Optional) Item 1 Price: US $1,612 / RMB 11,000 include daily lunches, accommodation, and training materials.
Item 2 Price: US $1,932 / RMB 13,200 include daily meals (lunch & dinner), accommodation and training materials.

Steam turbines

Instructor-led steam training
Multi-day courses

Steam Turbine Operation & Maintenance (STC-225)
This five-day course is intended for operators, mechanics, supervisors and process and mechanical engineers with emphasis on the practical aspects of machinery operation and maintenance. The first three days in a classroom setting offer the following topics: steam turbine fundamentals, components and functions, applications, equipment variations, steam turbine control systems, detailed operation and maintenance procedures, safety practices, disassembly, inspection, evaluation and reassembly sequence.

The two-day, hands-on lab gives participants an opportunity to apply knowledge previously learned in the Steam Turbine Operation & Maintenance Program. Students are required to make all necessary clearance checks, evaluate the condition of components, and keep accurate records of the equipment. Individual tasks are reinforced through various workstations to gain actual assembly/disassembly experience. Specific tasks include maintenance sequence review; maintenance safety; component removal; inspection; and installation of casing, thrust bearings, journal bearings, shaft seals, rotor, hand valves, nozzle rings, and governor assemblies.
Price: $2,350 USD

Multi-stage Steam Turbine Class/Hands-on (MST-315)
This five-day course is intended for operators, mechanics, supervisors and process and mechanical engineers with emphasis on the practical aspects of multi-stage machinery operation and maintenance. Two days are devoted to classroom presentations that include steam turbine fundamentals, detailed operation and maintenance procedures (disassembly, component evaluation and re-assembly). The last three days are dedicated to a hands-on lab workshop with two roundtable discussion sessions. Participants are required to inspect and disassemble a valve rack and governor linkage; remove bearings, rotor, diaphragms, labyrinth glands and springs, etc; and install bearings and diaphragms using an alignment mandrel. Valve lead will be checked and adjusted.
Price: $2,520 USD

Multi-stage Steam Turbine Class/Theory (MST-103)
This three-day course is intended for operators, mechanics, supervisors and process and mechanical engineers with emphasis on the practical aspects of multi-stage machinery operation and maintenance. Three days are devoted to classroom presentations that include steam turbine fundamentals, detailed operation, maintenance procedures (disassembly, component evaluation, and reassembly), and trouble-shooting techniques. Classroom discussion will cover the inspection and disassembly of the valve rack and governor linkage; removal of bearings, rotor, diaphragms, labyrinth glands, and springs. Installation of bearings, diaphragm checks using a mandrel, and checks and adjustments of the valve rack will also be covered.
Price: $1,550 USD

COPPUS Steam Turbine Operations & Maintenance (CST-225)
This five day combined classroom and hands-on course is intended for operators, mechanics and millwrights. The course will focus on the COPPUS product line of Dresser-Rand steam turbines. During the first two days using electronic and video presentations, we will cover the detailed assembly and test procedures for the horizontal RLA, RLHA and the vertical RLVA steam turbines as well as pre-start and operational checks checks, indicators of potential problems and preventative maintenance. Then during the three day hands-on lab you will gain practical experience in the disassembly, inspection and reassembly of actual COPPUS turbines. You will also learn the major fits and clearances, how to adjust the throttle linkage and the overspeed trip mechanism and learn how to utilize the inspection checklist and the troubleshooting guide to help keep your turbine on line.
Price: $2,350 USD

Steam Turbine Overspeed Trip Systems (STOT-204)
This four day classroom and hands-on course is intended for operators, mechanics and supervisors. The course will familiarize you with the components and function of both electronic and mechanical overspeed trip systems for steam turbines. This course will compare the various styles of overspeed trips and the operation of their sensing devices along with their interconnecting mechanisms and valves. During the hands-on lab portion, each participant will be able to disassemble and inspect the moving parts, reassemble the trip with the correct clearances and spring tensions for the required speed. Then test, adjust and confirm this setting.
Price: $2,350 USD

Steam courses (Asia pacific)
Four-day course

Steam turbine Operation and Maintenance
This four-day course emphasizes the practical aspects of machinery operation and maintenance. It is designed for the following groups: operators, supervisors, and mechanical engineers. Three days of classroom training cover the following topics: steam turbine fundamentals, components and functions, applications, equipment variations, steam turbine control systems, detailed operation and maintenance procedures, safety practices, disassembly, inspection, evaluation, and reassembly sequence. During one day of hands-on training, participants will disassemble and assemble a single-stage steam turbine. Special tasks include maintenance sequence review, maintenance safety, component removal, inspection, and installation of casing, thrust bearings, journal bearings, shaft seals, and nozzle rings assemblies.
Price: See schedule (facing page)

Steam courses (Europe)
Four-day course

Steam Turbine Operation & Maintenance (ST-THEO)

This four-day course is intended for operators, mechanics, supervisors, and process and mechanical engineers with an emphasis on the practical aspects of machinery operation and maintenance. Topics include steam turbine fundamentals, components and functions, applications, equipment variations, steam turbine control systems, detailed operation, maintenance procedures, safety practices, disassembly, inspection, evaluation, and reassembly sequence.

Price: £1,430

Steam Turbine Operation & Maintenance Hands-on (ST-PRAC)

This four-day course is intended for mechanics, supervisors, and mechanical engineers with emphasis on the practical aspects of machinery operation and maintenance. The first two days in a classroom setting offer topics that include steam turbine fundamentals, components and functions, applications, equipment variations, steam turbine control systems, detailed operation and maintenance procedures, safety practices, disassembly, inspection, evaluation, and reassembly sequence.

The remaining two days of the hands-on labs give participants an opportunity to apply knowledge previously learned. Trainees are required to make all necessary clearance checks, evaluate the condition of components, and keep accurate records of the equipment. Specific tasks include component removal, inspection, and reassembly sequence of these components.

Price: £1,430

Steam turbine schedule

Cilegon, Indonesia	
Sept 24-27	Steam Turbine Operation & Maintenance
Horsham, Pennsylvania, USA	
Aug 20-24	Steam Turbine O&M (STC-225)
Los Angeles, California, USA	
July 23-27	Steam Turbine O&M (STC-225)
Olean, New York, USA	
April 16-19	Overspeed Trip School Class/Hands-on (STOT-204)
June 11-14	COPPUS Steam Turbine School (CST-104)
Sept 10-14	Multi-Stage Steam Turbine Class/Hands-On (MST-315)
Oct 1-5	Steam Turbine O&M (STC-225)
Oct 29-Nov 2	Multi-Stage Steam Turbine Class/Hands-On (MST-315)
Peterborough, United Kingdom	
April 17-20	Steam Turbine Operation and Maintenance (ST-THEO)
April 23-26	Steam Turbine O&M Hands-On (ST-PRAC)
October 2-5	Steam Turbine Operation and Maintenance (ST-THEO)
October 8-11	Steam Turbine O&M Hands-On (ST-PRAC)
Sarnia, Ontario, Canada	
Mar 5-9	Steam Turbine O&M (STC-225)

To arrange short courses for your group, contact one of the training registrars listed in the back of this catalog.

See "registrar, payment and travel" page for Asia Pacific promotions

Asia Pacific Pricing:

Indonesia

Price: US $1,500 includes daily meals and training materials only.

Instructor-led turbo training courses
Multi-day courses

Centrifugal Compressor Operation & Maintenance (CCS-105)
This five-day intermediate-level, classroom-style course introduces students to centrifugal compressor fundamentals and principles of operation. Students will review various models of centrifugal compressors manufactured by Clark, Worthington, Dresser Clark, Dresser, Ingersoll-Rand and Dresser-Rand. The course provides in-depth coverage of all existing support systems such as lube oil, seal oil and dry gas seal systems, as well as the instrumentation systems required to keep these units in operation. Students can learn the correct procedures to perform routine maintenance or a complete teardown and reassembly for scheduled overhauls.
Price: $2,350 USD

Centrifugal Compressor Hands-on LAB (CCL-215)
This interactive five-day course requires the students to participate in the complete disassembly/reassembly of horizontally and vertically split D-R compressors. They can learn how to use all of the special tooling required to perform the maintenance techniques when working with both hydraulic and polygon-fit components, as well as how to use all the normal measuring instruments to evaluate the condition of a compressor's internal components. This course also provides separate workstations for removal/installation of a dry gas seal and for checking the clearance of tilt pad radial bearings.
Price: $2,520 USD

Gas Turbine Operation & Maintenance (GTC-225)
This four-day intermediate-level, combination classroom and hands-on course provides a basic introduction and familiarization with D-R power turbines and the opportunity to participate in a hands-on lab. Students can gain knowledge of the major components of gas turbines and the fundamentals of their operation. The course covers the construction of various gas generators such as General Electric LM2500 and LM1600, Allison 501, and the Rolls-Royce Avon, plus construction of the DR-61 and the DR-22 (GT-22) power turbines. Students will interpret and trace all of the support system diagrams such as airflow, fuel and start gas system, gas generator lube oil system, water wash system, instrumentation, enclosure airflow and the fire and gas suppression system. During the hands-on lab, students will participate in the complete disassembly/reassembly of a DR-22 power turbine. Students will have the opportunity to handle nearly every part of the power turbine and become familiar with all required tools used in the maintenance procedures.
Price: $2,350 USD

Hot Gas Expanders (HGE-103)
During this three-day intermediate-level, classroom-style course, students will receive an overview on high-temperature power recovery expanders used for service in the worldwide energy and fertilizer industries. The training will focus on the Dresser-Rand power recovery product line for the fluid catalytic cracking (FCC) process in the petroleum refining industry, and the nitric acid process used in the fertilizer industry. Topics will include: principles of operation, basic construction, function of components and auxiliary support systems such as cooling and sealing, lube oil, and machinery protection. Monitoring of operating conditions, safety considerations, performance monitoring to detect catalyst deposition, and routine maintenance will be explained. Disassembly, inspection of components, identification of potential problems, maintenance recommendations and reassembly of the expanders also will be covered.
Price: $1,550 USD

Machinery Alignment (MA-103)
This two-phase three-day course was developed to teach coupling alignment of turbomachinery. The first phase is designed to teach students how to acquire the necessary data and manually construct a graphical interpretation of the machinery alignment. There are exercises using two-body, three-body and four-body trains. The second phase is a hands-on lab that covers both the reverse indicator mechanical alignment method and laser shaft alignment. Students perform actual data acquisition, operator interface and machinery movements.
Price: $1,550 USD

Dry Gas Seal Installation Course (DGS-102)
This combined classroom and hands-on maintenance course is designed to provide an understanding how dry gas seals operate and the practical experience necessary to correctly remove and replace a dry gas seal in a centrifugal compressor. Using cut away models and animations, we will look at the construction of various dry gas seal arrangements and determine if the seals spiral grooves make them unidirectional or bidirectional. Then we will examine the support systems that provide the different gasses used in the seals and monitor the health of the seals in operation. Lastly each participant will use the special tooling and remove a tandem dry gas seal from a compressor seal cavity, learn how to exercise the seal to prevent hang-up and then reinstall the seal.
Price: $ 1,150 USD

Pipeline Booster Operation and Maintenance (PBS-103)
Designed for gas transmission industry, this three-day course will identify the all different types of centrifugal compressors designed to boost the gas pressure in the pipeline in order increase pipeline capacity and meet the demand for gas starting with the old CVS-12 designed for the little inch and big inch pipeline to today's modern close-coupled DATUM compressor using magnetic bearings and dry gas seals. We will examine all of the internal components of single-stage and multi-stage boosters and illustrate their function during operation. Then explore the support systems and identity the major components and their set points for normal operation as well as prestart inspections, operational checks and indicators of potential problems. During the maintenance portion we will illustrate the correct maintenance procedures and special tooling required to perform routine maintenance or a complete overhaul.
Price: $1,550 USD

Turbo courses (Asia Pacific)
Four-day courses

Centrifugal Compressor Operation & Maintenance
This four-day course introduces students to centrifugal compressor fundamentals and their principles of operation. The students will review the various models of centrifugal compressors manufactured by Clark, Dresser, Dresser-Clark, Dresser-Rand, Ingersoll-Rand, and Worthington. It provides in-depth coverage of all existing support systems such as lube oil, seal oil and dry gas seal systems as well as the instrumentation systems required to keep these units in operation. The students will learn the correct procedures to perform routine maintenance or a complete tear-down and re-assembly for scheduled overhauls.
Price: See schedule below

Turbomachinery Vibration Diagnostics
This four-day course was created to provide fundamental understanding of the dynamic behavior of turbo machinery such as steam turbines, gas turbines, generators, turbo compressors, etc. The basics of vibration measurement and the interpretation of data are also discussed.

This course is for engineers and technicians who are involved in analysis and trouble-shooting of vibration problems. Operators can also benefit from a better understanding on the dynamic behavior of the machinery gained in this course.
Price: See schedule below

Turbo courses (Europe/Middle East)
Four-day courses (all in English)

Centrifugal Compressor Operation & Maintenance (CC-THEO)
This four-day course covers both vertically and horizontally split compressors manufactured by Clark, Worthington, Ingersoll Rand and Dresser-Rand. Centrifugal compressor theory covers basic aerodynamics, compressor surge, lubricating and sealing systems, dry gas seals, mechanical build, and operation.
Price: €2,010

Centrifugal Compressor Hands-On (CC-PRAC)
This four-day course is based on a vertically split 451B Line compressor. After pre-strip procedures, the compressor is completely dismantled and rebuilt using the following procedures: removal of bearings; hydraulic thrust disc; seals – oil film and dry gas; bundle rotor; internal clearance inspection and rebuild. Maintenance and special tooling are discussed in detail.
Price: €2,010

Turbomachinery schedule

Abu Dhabi , UAE

Mar 5-8	Centrifugal Compressor O&M (CC-THEO)
Mar 11-14	Centrifugal Compressor Hands-on (CC-PRAC)

Cilegon, Indonesia

April 16-19	Centrifugal Compressor Operation & Maintenance
July 16-19	Turbomachinery Vibration Diagnostics

Houston, Texas, USA

Jan 9-13	Centrifugal Compressor O&M (CCS-105)
Jan 16-20	Centrifugal Compressor Hands-On Lab (CCL-215)
Dec 3-7	Centrifugal Compressor O&M (CCS-105)
Dec 10-14	Centrifugal Compressor Hands-On Lab (CCL-215)

Kuala Lumpur, Malaysia

April 2-5	Centrifugal Compressor Operation & Maintenance
May 21-24	Turbomachinery Vibration Diagnostics
July 2-5	Centrifugal Compressor Operation & Maintenance
Nov 26-29	Centrifugal Compressor Operation & Maintenance

Le Havre, France

Sept 4-7	Centrifugal Compressor O&M (CC-THEO)
Sept 10-13	Centrifugal Compressor Hands-on (CC-PRAC)

Olean, New York, USA

Mar 6-8	Pipeline Booster School (PBS-103)
April 16-20	Centrifugal Compressor O&M (CCS-105)
April 23-27	Centrifugal Compressor Hands-On Lab (CCL-215)
June 4-8	Gas Turbine O&M (GTC-225)
July 17-18	Dry Gas Seal Installation (DGS-102)
Aug 6-10	Centrifugal Compressor O&M (CCS-105)
Aug 13-17	Centrifugal Compressor Hands-On Lab (CCL-215)
Oct 8-12	Centrifugal Compressor O&M (CCS-105)
Oct 15-19	Centrifugal Compressor Hands-On Lab (CCL-215)
Nov 6-7	Dry Gas Seal Installation (DGS-102)

Shanghai, China

Oct 17-20	Centrifugal Compressor Operation & Maintenance

To arrange short courses for your group, contact one of the training registrars listed in the back of this catalog.

See "registrar, payment and travel" page for Asia Pacific promotions

Asia Pacific Pricing:

Malaysia Price: US $2,420 includes daily meals and training materials only.

Indonesia Price: US $1,500 includes daily meals and training materials only.

Shanghai Price: (Optional) Item 1 Price: US $1,612 / RMB 11,000 include daily lunches, accommodation, and training materials.
Item 2 Price: US $1,932 / RMB 13,200 include daily meals (lunch & dinner), accommodation and training materials.

Web-based training: recip & integral engine

Web-based reciprocating compressor and integral engine training courses
Learn at your own pace

Operation and Major Components Identification (RWB001)
Level: Basic **Focus:** Operations/Maintenance
This entry-level course is designed to give the student a fundamental understanding of how a reciprocating compressor operates. Through detailed descriptions and interactivities, the student can become familiar in the function and various styles of each component of the compressor cylinder and the frame and running gear.

Reciprocating Compressor Theory (RWB002)
Level: Intermediate **Focus:** Operations/Maintenance
This intermediate level course has been designed to give the student an understanding of the basic theory of compression as it relates to a reciprocating compressor. After a brief understanding of how the compressor operates, students will interact with several lessons to help them understand basic gas behaviors, piston displacement, principles of compression, valve losses, rod loads, and the relationship of pressure, volume and temperature. Other lessons will offer the students information on how clearance volume and compression ratios affect capacity and horsepower, and how multi-staging increases a compressor's efficiency. Review questions throughout the course will help prepare the student for the final examination.

Piston End Clearance (RWB003)
Level: Intermediate **Focus:** Maintenance
This comprehensive maintenance-oriented course describes piston end clearance in a reciprocating compressor cylinder. It also lists the effects of improperly adjusted end clearances, addresses end clearance specifications and tolerances, and provides step-by-step procedures on how to adjust the clearance. In addition, the course covers both feeler blade and lead-wire methods of gauging and measuring the frame-end and outer-end clearances.

Piston Rod Runout (RWB004)
Level: Intermediate **Focus:** Maintenance
This course is designed to help maintenance technicians understand the meaning and effects of piston rod runout on the operation of reciprocating compressors. The course also teaches how to measure both vertical and horizontal runout, identify the factors that influence runout, and correct an out-of-specification runout condition. The course contains guidelines to help the students interpret the runout readings and provides a calculation to aid them in shimming a crosshead to correct a runout that is out of tolerance.

Bolt Torque (RWB005)
Level: Intermediate **Focus:** Maintenance
This comprehensive maintenance-oriented course provides the student an opportunity to learn the characteristics of threaded fasteners, the various methods of properly tensioning them, the variables that influence the tensioning process, and the procedures used to ensure accurate tensioning. The course also contains lessons on how certain variables such as lubrication, wrench extensions, damaged threads, tool calibration, and self-locking fasteners affect the torque applied to the fastener. Although many types of torquing tools will be discussed, the proper use of the clicker-type torque wrench is emphasized throughout the program.

Frame Lubrication System (RWB006)
Level: Intermediate **Focus:** Operations/ Maintenance
This course is designed to provide the student with a complete understanding of the frame lubrication system on a common, process-type reciprocating compressor. This intermediate level course explains the critical properties of lubricants and their additives, and through the use of animation and graphics, details the flow of the lubricant as it progresses from the sump to the crosshead. This course offers lessons on the importance and function of each system component, and addresses operational issues related to the lubricating system. Interactivities and periodic review questions are included to enhance the student's learning experience.

Reciprocating Crankshaft Web Deflection (RWB007)
Level: Intermediate **Focus:** Maintenance
This course defines crankshaft web deflections in gas engines and reciprocating compressors. Many of the root causes of web deflection are explored and described. A representative list of maximum allowable web deflections is provided, along with recommended time intervals between crankshaft inspections. The student is introduced to several methods used to measure web deflections and provided with an example of a typical recording chart. This course also lists the major causes of a bent crankshaft and provides methods for determining whether a crankshaft is bent.

Packing Fundamentals (RWB008)
Level: Intermediate **Focus:** Maintenance
This intermediate level maintenance course describes the components that make up a pressure packing assembly and how they work together to form a seal around the piston rod. Detailed lessons, challenging interactivities, and periodic review questions will aid the students in understanding the location and orientation of the various ring set styles within the packing case. To offer the student an understanding of pressure packing fundamentals, the course will conclude with a lesson on packing case lubrication and cooling.

Piston Rod Packing Reconditioning (RWB009)
Level: Intermediate **Focus:** Maintenance
This course describes the procedures used to properly disassemble and reassemble a packing case within the compressor or on a workbench. The course instructions will explain the correct procedure for safely removing a packing case. The critical inspection points for the components will be identified and used to determine whether reconditioning is required. The student will be introduced to the procedures used to recondition the packing cups and the steps to properly reinstall the packing case in a compressor. Because of the advanced level of this course, it is recommended that the student first take the Reciprocating Compressor Packing Fundamentals Training Course (RWBT-008).

Wedge-Type, Packing Ring Assembly (RWB010)
Level: Intermediate **Focus:** Maintenance
This course is offered as a higher-level piston rod packing program. It offers a description of what wedge-type packing rings are, when they are required, how they seal, and what type of inert buffer gas system is needed to make them most effective. The student will be made aware of the location of these rings and will be instructed on their proper orientation and installation. Because of the advanced level of this course, it is recommended that the student first take the packing fundamentals courses.

Web-based reciprocating compressor and integral engine training courses
Learn at your own pace

Reciprocating Compressor Cylinder & Packing Divider Valve Lubrication System (RWB011)

Level: Intermediate **Focus:** Operations/Maintenance
This operations-focused course has been designed to familiarize operators and maintenance technicians with a typical reciprocating compressor, divider valve type, cylinder and packing lubrication system. Students will be presented with information regarding the identification, purpose, operation, and adjustment of the various components that make up this system. Interactivities, animation, and review questions strategically placed throughout the course, and a step-by-step, interactive demonstration of the divider valve operation, will challenge the learner to thoroughly understand the many aspects of cylinder and packing lubrication and the divider valve system.

Reciprocating Compressor Pump-to-Point Cylinder & Packing Lubrication System (RWB012)

Level: Intermediate **Focus:** Operations/Maintenance
This operations-focused course has been designed to familiarize operators and maintenance technicians with a typical reciprocating compressor, pump-to-point type cylinder and packing lubrication system. Students will be presented with information regarding the identification, purpose, operation, and adjustment of the various components that make up this system. Interactivities, animation, and review questions strategically placed throughout the course will challenge the learner to thoroughly understand the many aspects of cylinder and packing lubrication and the pump-to-point system.

Setscrew-Type Valve Cover Removal & Installation (RWB013)

Level: Intermediate **Focus:** Maintenance
This detailed maintenance course offers an overview of the setscrew-type valve cover, provides step-by-step instruction on how to remove and install the cover, lists the consequences of improper removal and installation procedures, and addresses proper torque values and procedures for the applicable fasteners. A variety of interactivities challenge the learner to recognize common valve cover components, identify areas damaged by incorrect installation procedures, and correctly list the order of major disassembly and re-assembly steps.

Crosshead and Piston Supernuts (RWB015)

Level: Intermediate **Focus:** Maintenance
In this comprehensive maintenance course, students can learn where supernuts are applied in a reciprocating compressor, what advantages they have over standard hex nuts, where to find the proper torque values and jackbolt lubricant, and how to properly tighten and loosen the supernuts in both crosshead and piston nut applications. Challenging interactivities and review questions will increase the student's retention of the complex procedures and sequential patterns that Dresser-Rand recommends to accurately tighten these fasteners while maintaining piston rod and crosshead alignment.

Two-Cycle Integral Gas Engine Theory (EWB002)

Level: Intermediate **Focus:** Operations/Maintenance
This intermediate-level course has been designed to offer the student a comprehensive understanding of the theory of two-cycle gas engines. The course begins with a brief review of components specific to two-cycle engines and how they differ from those used in four-cycle gas engines. This is followed by a basic introduction to combustion theory and the natural gas laws. After instruction in these important concepts the course proceeds to describe the two-stroke cycle process in detail through the use of P-V and P-T diagrams and animation. Review questions and interactive activities throughout the course will help prepare the student for the final examination.

Four-Cycle Integral Gas Engine Theory (EWB003)

Level: Intermediate **Focus:** Operations /Maintenance
This intermediate-level course has been designed to offer the student a comprehensive understanding of the theory of four-cycle gas engines. The course begins with a brief review of components specific to four-cycle engines and how they differ from those used in two-cycle gas engines. This is followed by a basic introduction to combustion theory and the natural gas laws. After instruction in these important concepts the course proceeds to describe the two-stroke cycle process in detail through the use of P-V and P-T diagrams and animations. Review questions and interactive activities throughout the course will help prepare the student for the final examination.

Engine Pre-ignition & Detonation (EWB010)

Level: Intermediate **Focus:** Maintenance
This course describes both normal and abnormal combustion processes in large-bore gas engines. The differences between pre-ignition and detonation are also clearly defined. The course explains the various causes of these destructive combustion processes, and suggests methods that can be used to reduce their frequency and severity.

Engine Balancing (EWB011)

Level: Intermediate **Focus:** Maintenance
This intermediate-level, maintenance-focused, two and four-cycle engine balancing course provides information that will help the student understand the importance of a properly balanced engine, the consequences of an unbalanced engine, component and system conditions that can affect engine balancing, and the recommended procedure for obtaining a well-balanced engine. Several interactivities and challenging review questions will help the student learn and retain the detailed information outlined in this course.

Journal Bearings for Reciprocating Products

Level: Basic/Intermediate **Focus:** Operations/Maintenance
This course will provide the student with information on the major types of journal bearings found in gas engines and compressors. The course describes the attributes desired in a journal bearing and defines certain aspects of bearing geometry. The student will be introduced to many of the causes of bearing failure. The primary modes of bearing failure and their underlying causes are illustrated through the use of photographs and drawings. The student will also be instructed in several recommended methods for measuring critical bearing clearances, bearing crush, and the proper procedures for removing and/or installing journal bearings. Review questions and interactive activities throughout the course will help prepare the student for the final examination.

Web-based training: turbo / steam

Web-based turbo courses
Learn at your own pace

Surge and Surge Control (TWB002)
Level: Intermediate **Focus:** Operations/Maintenance
This intermediate operator-oriented course discusses the surge phenomena that can occur when operating a centrifugal compressor. It describes the warning signs of surge, the consequences of surge and the strategies and benefits of controlling it. The course also identifies the components of a typical performance curve and their relationship to the operation of a centrifugal compressor. A variety of interactivities and periodic review questions challenge the learner to recognize the characteristics of surge and how to avoid it during normal operation.

Basic Centrifugal Compressor Types (TWB001)
Level: Intermediate **Focus:** Operations/Maintenance
This entry-level course identifies the different types of centrifugal compressors, examines the major components used in their construction and illustrates an assortment of flow path arrangements used in various process applications. A variety of interactivities and periodic review questions challenge the learner to distinguish between several groups of centrifugal compressors and how they are applied in process machinery.

Web-based steam turbine training courses
Learn at your own pace

Steam Turbine Fundamentals & Major Components (SWB001)
Level: Intermediate **Focus:** Operations/Maintenance
This course describes steam turbine fundamentals associated with impulse and reaction-type turbines, and explains the major components associated with a steam turbine, including turbine cases, internal steam path components, safety devices, bearings, seals and valves.

Steam Turbine Operation (SWB002)
Level: Intermediate **Focus:** Operations
This intermediate-level course is designed to offer the student an understanding of how to start, load, and stop a steam turbine. Lesson topics include preparations for starting, starting and warm-up, overspeed testing, normal operation and loading, and unloading and stopping. Each lesson is designed with interactivities and review questions to reinforce learning concepts.

Steam Turbine Overspeed Trip Settings (SWB003)
Level: Intermediate **Focus:** Maintenance
This intermediate level course describes the components that make up mechanical and electrical overspeed trip systems for steam turbines. Detailed lessons, interactivities, and periodic review questions can help students understand the purpose of overspeed systems, as well as what adjustments and testing are required for the systems.

Control systems

The D-R Controls Training Department, located in Houston, Texas, offers a wide range of training options custom-tailored to your needs, based on the type of equipment you have purchased from Dresser-Rand. Our proximity to the D-R Control System division allows for training coordination that is unique, and customized for the control system that was integrated to a specific piece of rotating equipment.

From operational fundamentals to in-depth programming, surge control, and load sharing, our professional instructors can help your personnel better troubleshoot and maintain your control panels. Whether you need training for operators to optimize your equipment, or controls training for your technical or engineering staff, Dresser-Rand can meet your specific training needs.

Our Houston classroom is located adjacent to our panel manufacturing center and is equipped with computer stations for hands-on training. A control panel is available for set-up and configuration. Our limited class size allows one-on-one training and instructor interaction, and subject matter experts are available for consultation. We can also travel to your site, which allows a greater number of students to be trained at a lower cost.

D-R Controls Training relates the control system supplied by Dresser-Rand to the mechanical aspects of your rotating equipment to allow for a complete understanding of the control system, in relation to mechanical requirements unique to a specific piece of rotating equipment. A technical mixture of mechanical, instrumentation, and controls allows for an encompassing view of a complete system.

D-R Controls training can increase your employees' knowledge and skills, thereby improving the reliability of your control panels and associated equipment. Please contact our Controls Training Department or your regional Dresser-Rand account manager for more information.

Complete schedule: chronological

January 2012

Jan 9-13	(CCS-105)	Houston, TX, USA
Jan 16-20	(CCL-215)	Houston, TX, USA

February 2012

Feb 7-10	(HRS-105)	Houston, TX, USA
Feb 13-16	(HRL-215)	Houston, TX, USA
Feb 28 - Mar 1	(IET-103)	Painted Post, NY, USA

March 2012

Mar 5-8	CC-THEO	Abu Dhabi, UAE
Mar 5-9	(STC-225	Sarnia, ON, Canada
Mar 6-8	(PBS-103)	Olean, NY, USA
Mar 6-9	(RC-THEO)	Peterborough, UK
Mar 11-14	CC-PRAC	Abu Dhabi, UAE
Mar 12-15	(RC-PRAC)	Peterborough, UK
Mar 12-16	(WAS-245)	Houston, TX, USA
Mar 20-23	(RCS-105)	Houston, TX, USA
Mar 26-30	(RCL-215)	Houston, TX, USA
Mar 26-29	Recip Comp O&M	Kuala Lumpur, Malaysia
Mar 27-29	(IET-103)	Los Angeles, CA, USA

April 2012

April 2-5	Centrifugal Comp O&M	Kuala Lumpur, Malaysia
April 16-19	(STOT-204)	Olean, NY, USA
April 16-19	(RCS-105)	Garyville, LA, USA
April 16-19	Centrifugal Comp O&M	Cilegon, Indonesia
April 16-20	(CCS-105)	Olean, NY, USA
April 17-20	(ST-THEO)	Peterborough, UK
April 23-27	(CCL-215)	Olean, NY, USA
April 23-26	(RCL-215)	Garyville, LA, USA
April 23-26	(ST-PRAC)	Peterborough, UK

May 2012

May 7-11	(RCSL-225)	Odessa, TX, USA
May 21-24	Turbo Vib Diag	Kuala Lumpur, Malaysia
May 28-31	Recip Comp O&M	Cilegon, Indonesia

June 2012

June 4-8	(GTC-225)	Olean, NY, USA
June 4-8	(RCS-105)	Painted Post, NY, USA
June 11-15	(RCL-215)	Painted Post, NY, USA
June 11-14	(CST-104)	Olean, NY, USA
June 20-23	Recip Comp O&M	Shanghai, China

July 2012

July 2-5	Centif Comp O&M	Kuala Lumpur, Malaysia
July 16-19	Turbo Vib Diag	Cilegon, Indonesia
July 17-18	(DGS-102)	Olean, NY, USA
July 23-27	(STC-225)	Los Angeles, CA, USA

August 2012

Aug 1-3	(IET-103)	Houston, TX, USA
Aug 6-10	(IEL-215)	Houston, TX, USA
Aug 6-10	(CCS-105)	Olean, NY, USA
Aug 13-17	(CCL-215)	Olean, NY, USA
Aug 20-24	(STC-225)	Horsham, PA, USA

September 2012

Sept 4-7	CC-THEO	Le Havre, France
Sept 4-7	(RC-THEO)	Peterborough, UK
Sept 10-13	CC-PRAC	Le Havre, France
Sept 10-13	(RC-PRAC)	Peterborough, UK
Sept 10-14	(MST-315)	Olean, NY, USA
Sept 11-14	(RCS-105)	Houston, TX, USA
Sept 17-21	(RCL-215)	Houston, TX, USA
Sept 18-20	(IET-103)	Cincinnati, OH, USA
Sept 24-27	Steam Turbine O&M	Cilegon, Indonesia

October 2012

Oct 1-5	(WAS-245)	Houston, TX, USA
Oct 1-5	(STC-225)	Olean, NY, USA
Oct 2-5	(ST-THEO)	Peterborough, UK
Oct 8-12	(CCS-105)	Olean, NY, USA
Oct 8-11	(ST-PRAC)	Peterborough, UK
Oct 8-12	(RCS-105)	Painted Post, NY, USA
Oct 15-18	Recip Comp O&M	Kuala Lumpur, Malaysia
Oct 15-19	(CCL-215)	Olean, NY, USA
Oct 17-20	Centrifugal Comp O&M	Shanghai, China
Oct 15-19	(RCL-215)	Painted Post, NY, USA
Oct 29- Nov 2	(MST-315)	Olean, NY, USA

November 2012

Nov 6-7	(DGS-102)	Olean, NY, USA
Nov 6-9	(RCS-105)	Edmonton, AB, Canada
Nov 6-9	(HRS-105)	Houston, TX, USA
Nov 12-15	(HRL-215)	Houston, TX, USA
Nov 26-29	Centrifugal Comp O&M	Kuala Lumpur, Malaysia

December 2012

Dec 3-7	(CCS-105)	Houston, Texas, USA
Dec 10-14	(CCL-215)	Houston, Texas, USA

Reciprocating compressors & integral gas engines schedule (pages 5 & 6)

Cincinnati, Ohio, USA	
Sept 18-20	IET-103
Cilegon, Indonesia	
May 28-31	Recip Comp O & M
Edmonton, Alberta, Canada	
Nov 6-9	RCS-105
Garyville, Louisiana, USA (MAP location)	
Apr 16-19	RCS-105
Apr 23-26	RCL-215
Houston, Texas, USA	
Feb 7-10	HRS-105
Feb 13-16	HRL-215
Mar 12-16	WAS-245
Mar 20-23	RCS-105
Mar 26-30	RCL-215
Aug 1-3	IET-103
Aug 6-10	IEL-215
Sept 11-14	RCS-105
Sept 17-21	RCL-215
Oct 1-5	WAS-245
Nov 6-9	HRS-105
Nov 12-15	HRL-215

Kuala Lumpur, Malaysia	
Mar 26-29	Recip Comp O & M
Oct 15-18	Recip Comp O & M
Los Angeles, California, USA	
Mar 27-29	IET-103
Odessa, Texas, USA	
May 7-11	RCSL-225
Painted Post, New York, USA	
Feb 28 - Mar 1	IET-103
June 4-8	RCS-105
June 11-15	RCL-215
Oct 8-12	RCS-105
Oct 15-19	RCL-215
Peterborough, United Kingdom	
March 6-9	(RC-THEO)
March 12-15	(RC-PRAC)
Sept 4-7	(RC-THEO)
Sept 10-13	(RC-PRAC)
Shanghai, China	
June 20-23	Recip Comp O & M

Steam turbine schedule (pages 7 & 8)

Cilegon, Indonesia	
Sept 24-27	Steam Turbine O&M
Horsham, Pennsylvania, USA	
Aug 20-24	(STC-225)
Los Angeles, California, USA	
July 23-27	(STC-225)
Olean, New York, USA	
April 16-19	(STOT-204)
June 11-14	(CST-104)
Sept 10-14	(MST-315)
Oct 1-5	(STC-225)
Oct 29-Nov 2	(MST-315)
Peterborough, United Kingdom	
April 17-20	(ST-THEO)
April 23-26	(ST-PRAC)
October 2-5	(ST-THEO)
October 8-11	(ST-PRAC)
Sarnia, Ontario, Canada	
Mar 5-9	(STC-225)

Turbomachinery schedule (pages 9 & 10)

Abu Dhabi, UAE	
Mar 5-8	(CC-THEO)
Mar 11-14	(CC-PRAC)
Cilegon, Indonesia	
April 16-19	Centrif Comp O&M
July 16-19	Turbo Vib Diag
Houston, Texas, USA	
Jan 9-13	(CCS-105)
Jan 16-20	(CCL-215)
Dec 3-7	(CCS-105)
Dec 10-14	(CCL-215)
Kuala Lumpur, Malaysia	
April 2-5	Centrif Comp O&M
May 21-24	Turbo Vib Diag
July 2-5	Centrif Comp O&M
Nov 26-29	Centrif Comp O&M

Le Havre, France	
Sept 4-7	(CC-THEO)
Sept 10-13	(CC-PRAC)
Olean, New York, USA	
Mar 6-8	(PBS-103)
April 16-20	(CCS-105)
April 23-27	(CCL-215)
June 4-8	(GTC-225)
July 17-18	(DGS-102)
Aug 6-10	(CCS-105)
Aug 13-17	(CCL-215)
Oct 8-12	(CCS-105)
Oct 15-19	(CCL-215)
Nov 6-7	(DGS-102)
Shanghai, China	
Oct 17-20	Centrifugal Compressor Operation & Maintenance

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For current information about D-R product training, visit: **www.dresser-rand.com**.

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