



PERFORMANCE | SAFETY | RELIABILITY

PSR INTERACTIVE



EQUIPMENT 02 - HEAT TRANSFER

This program is designed to give your production personnel the knowledge, skills and focus to maximize the performance, safety and reliability of your fired heaters, furnaces, boilers, heat exchangers, fin fans and cooling towers, covering in detail topics such as:

- equipment components
- principles of combustion
- mechanisms of heat transfer
- operating & maintenance problems
- routine & non-routine operations

CONTENT	DESCRIPTION
Introduction	A brief introduction designed to prepare trainees for the modules that follow
Module 01 - Fuel Gas Combustion	Combustion chemistry, excess air, limits of flammability, ignition temperature, flame speed and flame color
Module 02 - Fuel Oil Combustion	5 stages of combustion, atomizing steam, excess air, combustion air ΔP , viscosity, flame shape and color, effects of solids, burner turndown, effects of sodium and vanadium
Module 03 - Radiation, Convection & Refractory	The role of radiation, convection and refractory
Module 04 - Fouling	Ash & soot deposits, flame impingement, loss of process flow, phase separation and radiant tube temperature profile
Module 05 - Burner Flame Stability	Flashback, liftoff, afterburning, flame-out, change in fuel gas hydrogen or hydrocarbon content and firebox puffing
Module 06 - Routine Operations	Lighting & extinguishing burners, instrumentation, radiant tube supports/hotspots/bowing, refractory, burner tiles, excess air levels, sootblowing, draft, firebox appearance, burner floor areas, firing pattern and load changes

PROGRAM INFO

CATEGORY:
Equipment

MODULES:
12

PROGRAM DURATION:
300-480 mins (approx)

As with all our programs, the content is self-paced. Users are able to validate their understanding of the material through embedded interactive quizzes

Our programs are based on internationally recognized best practices and are designed to enable your production personnel to make a personal contribution to maximizing your profits and minimizing your losses

For further details of the style and methodology of our training programs, please refer to our website, where you can watch a demo video and apply for a free trial:

www.psrinteractive.com
sales@psr-refiningservices.com

PSR Refining Services Pty Ltd
Suite 45
377 Kent St
Sydney, NSW 2000
AUSTRALIA

CONTENT	DESCRIPTION
Module 07 - Burner Maintenance	Removal, disassembly, cleaning, checking, tip repair or replacement, reassembly and reinstallation of fuel gas and fuel oil burners
Module 08 - Refinery Fuel Economics	Energy Intensity Index, relative values of fuel gas, fuel oil and LPG, good and bad fuel characteristics, balancing the process unit and power plant fuel systems
Module 09 - Heat Exchanger Design	Tubes and tubesheets, baffles, shell and tube flow arrangements and configurations, laminar and turbulent flow, tube wall temperature profile, fixed tubesheets, u-tube and floating head tube bundle arrangements
Module 10 - Heat Exchanger Operation	Kettle reboilers and steam generators, thermosyphon reboilers, waste heat boilers, air coolers and condensers, plate and frame exchangers
Module 11 - Cooling Towers	Principles of operation, atmospheric draft, natural draft, mechanical draft and multi-cell arrangements, peripheral equipment and materials of tower construction
Module 12 - Boilers	Firebox configuration and main components, fuel and combustion air systems, routine, non-routine and emergency operations, load shedding, efficiency, load distribution, optimization, fouling, boiler feed water deaeration, chemical treatment, intermittent and continuous blowdown, steam quality
Test	Trainees answer a random selection of questions to demonstrate understanding of the content covered throughout the modules