科目： 293007
知能類： K1.01 [3.2/3.2]
序號： B87

The dominant heat transfer mechanism that occurs when film boiling is present is...
A. convection.
B. radiation.
C. conduction.
D. induction.
ANSWER: B

當薄膜沸騰發生時，其主要熱傳機制是____。
A. 對流
B. 輻射
C. 傳導
D. 感應
答案： B.

科目： 293007
知能類： K1.01 [3.2/3.2]
序號： B144

The heat-transfer mechanism using direct contact transfer of kinetic energy from molecular motion is...
A. radiation.
B. convection.
C. transmission.
D. conduction.
ANSWER: D

利用分子運動動能直接接觸傳遞的熱傳機制為____。
A. 輻射
B. 對流
C. 透射（transmission）
D. 傳導
答案： D.

科目： 293007
知能類： K1.01 [3.2/3.2]
序號： B188

Which one of the following methods of heat transfer is defined as “the exchange of energy between bodies of electromagnetic waves through an intervening space”?
A. Conduction
B. Convection
C. Electrokinetics
D. Radiation
ANSWER: D

下列何種熱傳方式的定義為「在兩個電磁波體之間交換的能量」？
A. 傳導
B. 對流
C. 電子動能(electrokinetics)
D. 輻射
答案： D.

科目： 293007
知能類： K1.01 [3.2/3.2]
序號： B285

The heat transfer mechanism that accounts for the majority of core heat removal during a loss of coolant accident after total core voiding is...
A. conduction.
B. convection.
C. radiolysis.
D. radiation.
ANSWER: D

發生冷卻水流失事故，在反應爐完全充滿蒸汽之後，爐心熱移除的主要熱傳機制為____。
A. 傳導
B. 對流
C. 輻射分解（radiolysis）
D. 輻射
答案： D.

科目： 293007
知能類： K1.01 [3.2/3.2]
序號： B482

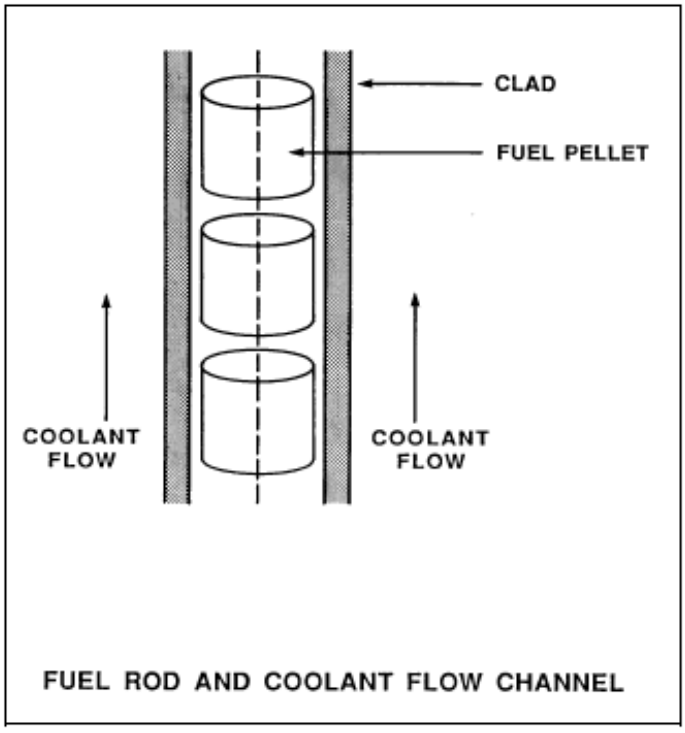
The primary mode of heat transfer from the fuel cladding surface during steam blanketing conditions is...
A. radiation.
B. convection.
C. ionization.
D. conduction.
ANSWER: A

在蒸汽圍包(steam blanketing)狀況時，燃料護套表面的主要熱傳模式為____。
A. 輻射
B. 對流
C. 游離(ionization)
D. 傳導
答案： A.

科目： 293007
知能類： K1.01 [3.2/3.2]
序號： B882 (P584)

Refer to the drawing of a fuel rod and coolant flow channel at beginning of core life (see figure below). Which one of the following is the primary method of heat transfer through the gap between the reactor fuel and the fuel clad?
A. Conduction
B. Convection
C. Radiation
D. Natural circulation
ANSWER: A

參考在爐心生命週期初的燃料棒和冷卻水通道圖（見下圖）。下列何者為在反應爐燃料和燃料護套之間隙熱傳的主要方法？
A. 傳導
B. 對流
C. 輻射
D. 自然循環
答案： A.



科目： 293007
知能類： K1.01 [3.2/3.2]
序號： B1282

The predominant mode of heat transfer from the fuel-clad surface to the coolant during full power operating conditions is...
A. radiation.
B. conduction.
C. forced convection.
D. natural convection.
ANSWER: C

在全功率運轉時，從燃料護套表面傳熱到冷卻水的主要模式為____。
A. 輻射
B. 傳導
C. 強迫對流
D. 自然對流
答案： C.

科目： 293007
知能類： K1.01 [3.2/3.2]
序號： B1582

During normal plant operating conditions, which one of the following is the major mode of heat transfer occurring as reactor steam travels from the reactor vessel to the main turbine?
A. Radiolysis
B. Radiation
C. Conduction
D. Convection
ANSWER: D

在正常核電廠的運轉狀態時，對於從反應爐槽到主汽機的反應爐蒸汽而言，下列何者為其主要熱傳模式？
A. 輻射分解
B. 輻射
C. 傳導
D. 對流
答案： D.

科目： 293007
知能類： K1.01 [3.2/3.2]
序號： B1982 (P985)

The fuel rods are normally charged with _____ gas to improve the heat transferred by _____ from the fuel pellets to the cladding.
A. helium; convection
B. helium; conduction
C. nitrogen; convection
D. nitrogen; conduction
ANSWER: B

燃料棒通常會充____氣以改善從燃料丸到護套的____熱傳。
A. 氦；對流
B. 氦；傳導
C. 氮；對流
D. 氮；傳導
答案： B.

科目： 293007
知能類： K1.01 [3.2/3.2]
序號： B2282 (P2284)

Which one of the following describes a heat transfer process in which convection is the most significant heat transfer mechanism?

A. From the reactor fuel to the core barrel during core uncovery
B. Through the tube walls in a main condenser during normal operation at 100% power
C. From the reactor fuel to the steam outlet of the reactor vessel during a station blackout
D. From the fuel pellet centerline to the fuel clad during normal operation at 100% power

ANSWER: C

下列哪一個敘述的熱傳過程中，對流是最明顯的熱傳機制？

A. 當爐心外露時，從反應爐燃料到爐心筒(core barrel)
B. 以100%功率正常運轉時，從主冷凝器內的管壁傳出
C. 當核電廠全黑時，從反應爐燃料到反應爐槽出口蒸汽
D. 以100%功率正常運轉時，從燃料丸中心到燃料護套

答案： C.

科目： 293007
知能類： K1.01 [3.2/3.2]
序號： B2882 (P2884)

Which one of the following describes a heat transfer flow path in which conduction is the most significant heat transfer mechanism?
A. From the reactor fuel to the core barrel during core uncovery
B. From the main turbine exhaust steam to the atmosphere via main condenser cooling water and a cooling tower during normal operation
C. From the reactor fuel to the steam outlet of the reactor vessel during a station blackout
D. From a fuel pellet to the fuel clad via the fuel rod fill gas during normal operation
ANSWER: D

在下列熱傳流徑中，那一個的主要熱傳機制為傳導？
A. 當爐心外露時，從反應爐燃料到爐心筒
B. 正常運轉時，從主汽機排出的蒸汽，經由主冷凝器冷卻水和冷卻塔到大氣中
C. 當核電廠全黑時，從反應爐燃料到反應爐槽出口蒸汽
D. 正常運轉時，從燃料丸經由燃料棒之充氣到燃料護套
答案： D.

科目： 293007
知能類： K1.02 [2.4/2.6]
序號： B1185

In an operating cooling water system, an increased stagnant fluid film thickness _____ heat transfer because conduction heat transfer is _____ efficient than convective heat transfer.
A. enhances; more
B. enhances; less
C. inhibits; more
D. inhibits; less
ANSWER: D

運轉中的冷卻水系統中，增加靜止液體的薄膜厚度會____熱傳，因為傳導比對流____效率。
A. 增加；有
B. 增加；無
C. 抑制；有
D. 抑制；無
答案： D.

科目： 293007
知能類： K1.02 [2.4/2.6]
序號： B1682

The buildup of fission gases in a fuel rod causes thermal conductivity of the fuel pellets to _____ and thermal conductivity of the fill gas to _____. (Consider only the direct effect of the fission gases.)
A. decrease; decrease
B. decrease; increase
C. increase; decrease
D. increase; increase
ANSWER: A

燃料棒內分裂氣體的累積會使燃料丸的熱傳導性能____，以及填充氣體的熱傳導性能____。（只考慮分裂氣體的直接影響。）
A. 降低；降低
B. 降低；提升
C. 提升；降低
D. 提升；提升
答案： A.

科目： 293007
知能類： K1.02 [2.4/2.6]
序號： B2582

Consider the temperature profile for a typical fuel rod. Which one of the following has the largest thermal conductivity?
A. Fuel pellet
B. Fuel clad
C. Fuel rod fill gas
D. Fission product gases
ANSWER: B

考量典型燃料棒的溫度分佈，下列何者的熱傳導性能最高？
A. 燃料丸
B. 燃料護套
C. 燃料棒填充氣體
D. 分裂產生的氣體
答案： B.

科目： 293007
知能類： K1.03 [2.7/2.8]
序號： B86

The order of reactor coolant heat transfer mechanisms, from the most efficient to the least efficient, is...
A. nucleate boiling, transition boiling, stable film boiling.
B. stable film boiling, nucleate boiling, transition boiling.
C. nucleate boiling, stable film boiling, transition boiling.
D. stable film boiling, transition boiling, nucleate boiling.
ANSWER: A

將反應爐冷卻水的熱傳機制排序，由最有效到最無效：
A. 核沸騰、變態沸騰、穩定薄膜沸騰
B. 穩定薄膜沸騰、核沸騰、變態沸騰
C. 核沸騰、穩定薄膜沸騰、變態沸騰
D. 穩定薄膜沸騰、變態沸騰、核沸騰
答案： A.

科目： 293007
知能類： K1.03 [2.7/2.8]
序號： B286

As fluid flow rate decreases through the tubes of a shell-and-tube heat exchanger, the laminar film thickness _____, which causes heat transfer rate to _____.
A. increases; decrease
B. increases; increase
C. decreases; decrease
D. decreases; increase
ANSWER: A

在殼—管熱交換器中，管內的液體流速降低時，laminar薄膜厚度會____，導致熱傳率____。
A. 增加；降低
B. 增加；提升
C. 減少；降低
D. 減少；提升
答案： A.

科目： 293007
知能類： K1.03 [2.7/2.8]
序號： B1483

Which one of the following is the order of core heat transfer mechanisms, from the least desirable to the most desirable?
A. Film boiling, single-phase convection, nucleate boiling
B. Film boiling, nucleate boiling, single-phase convection
C. Single-phase convection, nucleate boiling, film boiling
D. Single-phase convection, film boiling, nucleate boiling
ANSWER: A

下列何者為最不理想到最理想的爐心熱傳機制排序？
A. 薄膜沸騰、單相對流、核沸騰
B. 薄膜沸騰、核沸騰、單相對流
C. 單相對流、核沸騰、薄膜沸騰
D. 單相對流、薄膜沸騰、核沸騰
答案： A.

科目： 293007
知能類： K1.03 [2.7/2.8]
序號： B2782

The order of reactor coolant heat transfer mechanisms, from the least efficient to the most efficient, is...
A. transition boiling, stable film boiling, nucleate boiling.
B. transition boiling, nucleate boiling, stable film boiling.
C. stable film boiling, nucleate boiling, transition boiling.
D. stable film boiling, transition boiling, nucleate boiling.
ANSWER: D

下列何者為最無效到最有效的反應爐冷卻水熱傳機制排序：
A. 變態沸騰、穩定薄膜沸騰、核沸騰
B. 變態沸騰、核沸騰、穩定薄膜沸騰
C. 穩定薄膜沸騰、核沸騰、變態沸騰
D. 穩定薄膜沸騰、變態沸騰、核沸騰
答案： D.

科目： 293007
知能類： K1.06 [2.7/2.8]
序號： B149

Which one of the following describes parallel and/or counter-flow heat exchangers?
A. Counter-flow heat exchangers are more efficient than parallel-flow heat exchangers due to the high initial ΔT.
B. Counter-flow heat exchangers allow the exiting cooled fluid temperature to be below the exiting cooling fluid temperature.
C. Parallel-flow heat exchangers are more efficient than counter-flow heat exchangers due to the high initial ΔT.
D. Parallel-flow heat exchangers allow the exiting cooled fluid temperature to be below the exiting cooling fluid temperature.
ANSWER: B

下列何者描述平行流和/或逆流(counter-flow)熱交換器？
A. 逆流熱交換器比平行流熱交換器有效，因為起始的ΔT很高。
B. 逆流熱交換器允許被冷卻液體的出口溫度低於冷卻水的出口溫度。
C. 平行流熱交換器比逆流熱交換器有效，因為起始的ΔT很高。
D. 平行流熱交換器允許被冷卻液體的出口溫度低於冷卻水的出口溫度。
答案： B.

科目： 293007
知能類： K1.06 [2.7/2.8]
序號： B199

Which one of the following formulas is representative of the heat-transfer rate across the tubes of a heat exchanger?
Where:
h_t = fluid enthalpy inside tubes
h_{ss} = fluid enthalpy on heat exchanger shell side
T_t = fluid temperature inside tubes
T_{ss} = fluid temperature on heat exchanger shell side
A. $Q = mc_p (h_t - h_{ss})$
B. $Q = UA (h_t - h_{ss})$
C. $Q = mc_p (T_t - T_{ss})$
D. $Q = UA (T_t - T_{ss})$
ANSWER: D

下列哪一個公式代表熱交換器管殼/管側間的熱傳率？
公式內代號代表：
h_t = 管內液體焓
h_{ss} = 熱交換器殼側的液體焓
T_t = 管內的液體溫度
T_{ss} =熱交換器殼側的溫度
A. $Q = mc_p (h_t - h_{ss})$
B. $Q = UA (h_t - h_{ss})$
C. $Q = mc_p (T_t - T_{ss})$
D. $Q = UA (T_t - T_{ss})$
答案： D.

科目： 293007
知能類： K1.06 [2.7/2.8]
序號： B1083

A counterflow lubricating oil heat exchanger is in operation when the cooling water flow rate is reduced to one-half of its former value. Which one of the following will decrease as a result?
A. Lube oil outlet temperature
B. Cooling water outlet temperature
C. Lube oil ΔT
D. Cooling water ΔT
ANSWER: C

當逆流(counterflow)潤滑油熱交換器正在運轉時，冷卻水流量降到原有值的一半。下列何者會因此而降低（減小）？
A. 潤滑油出口溫度
B. 冷卻水出口溫度
C. 潤滑油的ΔT
D. 冷卻水的ΔT
答案： C.

科目： 293007
知能類： K1.06 [2.7/2.8]
序號： B1283

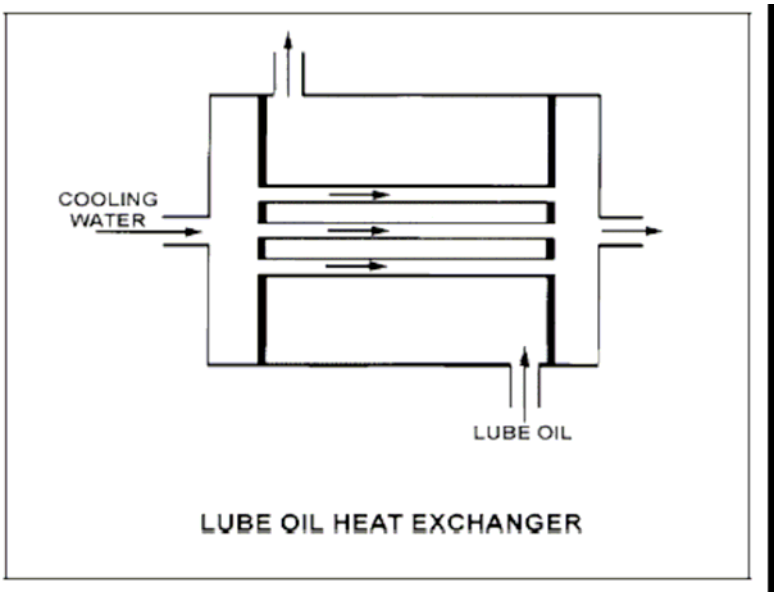
Which one of the following formulas includes the heat transfer coefficient of the tubes in a heat exchanger?
A. $Q = m\Delta h$
B. $Q = m\Delta T$
C. $Q = mc_p\Delta T$
D. $Q = UA\Delta T$
ANSWER: D

下列哪一個公式包含了熱交換器內的管束(tubes)熱傳係數？
A. $Q = m\Delta h$
B. $Q = m\Delta T$
C. $Q = mc_p\Delta T$
D. $Q = UA\Delta T$
答案： D.

科目： 293007
知能類： K1.06 [2.7/2.8]
序號： B1782

Refer to the drawing of a lube oil heat exchanger (see figure below).
The lube oil heat exchanger is in operation when the cooling water flow rate is increased to twice its former value. Which one of the following will increase as a result?
A. Lube oil outlet temperature
B. Cooling water outlet temperature
C. Lube oil ΔT
D. Cooling water ΔT
ANSWER: C

參考潤滑油熱交換器圖（見下圖）。
潤滑油熱交換器正在運轉時，冷卻水流量增加到原有值的兩倍。下列何者也會跟著增加（變大）？
A. 潤滑油出口溫度
B. 冷卻水出口溫度
C. 潤滑油的ΔT
D. 冷卻水的ΔT
答案： C.



科目： 293007
知能類： K1.06 [2.7/2.8]
序號： B2583

During a nuclear power plant outage, 6% of the main condenser tubes were plugged. The following 100% power conditions existed before the outage:

Main condenser pressure: 1.10 psia
Cooling water inlet temperature: 60˚F
Cooling water outlet temperature: 86˚F

After the outage, the plant was returned to 100% power. The following 100% power conditions existed after the outage:

Main condenser pressure: 1.20 psia
Cooling water inlet temperature: 60˚F
Cooling water outlet temperature: ?

If the total heat transfer rate in the main condenser is the same, which one of the following will be the approximate final cooling water outlet temperature?

A. 86˚F
B. 88˚F
C. 90˚F
D. 92˚F
ANSWER: B

在核電廠停機時， 6%的主冷凝器管塞管。在停機前，電廠以100%供電的狀態為：

主冷凝器壓力: 1.10 psia
冷卻水進口溫度: 60˚F
冷卻水出口溫度: 86˚F

停機後，電廠恢復100%的供電，狀態為；

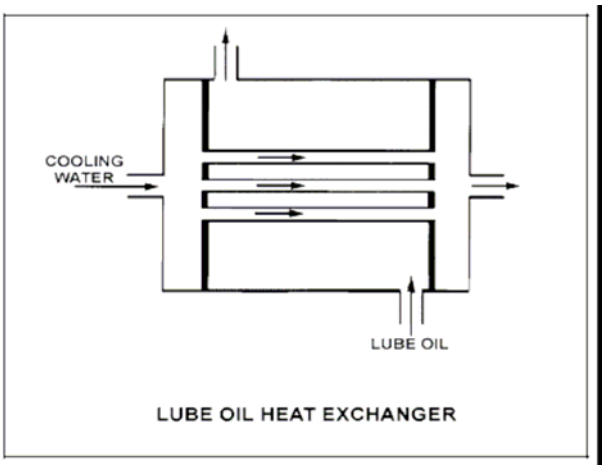
主冷凝器壓力: 1.20 psia
冷卻水進口溫度: 60˚F
冷卻水出口溫度: ?

如果主冷凝器內的總熱傳率為固定的,下列何者為冷卻水出口的最終大約溫度？

A. 86˚F
B. 88˚F
C. 90˚F
D. 92˚F
答案： B.

科目： 293007
知能類： K1.06 [2.7/2.8]
序號： B3082 (P3034)
Refer to the drawing of a lube oil heat exchanger (see figure below).
Given the following lube oil cooling system conditions:
The lube oil flow rate in the lube oil heat exchanger is 200 lbm/min.
The lube oil enters the heat exchanger at 140˚F.
The lube oil leaves the heat exchanger at 100˚F.
The specific heat of the lube oil is 0.8 Btu/lbm-˚F.
The cooling water flow rate is 400 lbm/min.
The cooling water enters the lube oil heat exchanger at 60˚F.
The specific heat of the cooling water is 1.0 Btu/lbm-˚F.
What is the approximate temperature of the cooling water leaving the lube heat exchanger?
A. 76˚F
B. 85˚F
C. 92˚F
D. 124˚F
ANSWER: A

參考潤滑油熱交換器的圖（見下圖）。
根據下列潤滑油冷卻系統的狀態：
潤滑油熱交換器內的潤滑油流量為 200 lbm/min.
進入熱交換器時的潤滑油溫度為 140˚F.
離開熱交換器時的潤滑油溫度為 100˚F.
潤滑油的比熱為 0.8 Btu/lbm-˚F.
冷卻水的流量為 400 lbm/min.
進入潤滑油熱交換器時的冷卻水溫度為 60˚F.
冷卻水的比熱為 1.0 Btu/lbm-˚F.
離開潤滑油熱交換器時的冷卻水溫度大約為多少？
A. 76˚F
B. 85˚F
C. 92˚F
D. 124˚F
答案： A.



科目： 293007
知能類： K1.07 [2.7/2.9]
序號： B484

Excessive amounts of entrained gases passing through a single-phase (liquid) heat exchanger are undesirable because...
A. flow blockage can occur in the heat exchanger.
B. the laminar layer will increase in the heat exchanger.
C. the heat transfer coefficient will increase in the heat exchanger.
D. the temperature difference across the tubes will decrease through the heat exchanger.
ANSWER: A

單相(液態)熱交換器中不希望通過太多夾帶氣體(entrained gases)的原因是____。
A. 熱交換器中可能產生流量阻塞。
B. 熱交換器中的薄片層會增加。
C. 熱交換器內的熱傳係數會增加。
D. 在熱交換器內的管子的溫差會降低。
答案： A.

科目： 293007
知能類： K1.07 [2.7/2.9]
序號： B1882 (P1184)

Why is bulk boiling in the tubes of a single-phase heat exchanger undesirable?
A. The bubble formation will break up the laminar layer in the heat exchanger tubes.
B. The thermal conductivity of the heat exchanger tubes will decrease.
C. The ΔT across the tubes will decrease through the heat exchanger.
D. The turbulence will restrict fluid flow through the heat exchanger tubes.
ANSWER: D

為何單相熱交換器的管子內不希望發生整體沸騰(bulk boiling)？
A. 形成的泡泡會破壞熱交換器管道內的薄片層。
B. 熱交換器管道的熱傳導性能會降低。
C. 熱交換器的跨管ΔT會減小。
D. 擾流(turbulence)會限制熱交換器管內的液體流動。
答案： D.

科目： 293007
知能類： K1.07 [2.7/2.9]
序號： B2084

The following 100% power conditions existed before a plant outage:
Main condenser pressure: 1.20 psia
Cooling water inlet temperature: 60˚F
Cooling water outlet temperature: 92˚F
During the outage, 6% of the main condenser tubes were plugged. After the outage, the following 100% rated power conditions exist:
Main condenser pressure: 1.31 psia
Cooling water inlet temperature: 60˚F
Cooling water outlet temperature: ?
Which one of the following is the approximate cooling water outlet temperature after the outage?
A. 92˚F
B. 94˚F
C. 96˚F
D. 98˚F
ANSWER: B

在停機前，電廠以100%供電的狀態為：
主冷凝器壓力: 1.20 psia
冷卻水進口溫度: 60˚F
冷卻水出口溫度: 92˚F
在核電廠停機時， 6%的主冷凝器管塞管。停機後，核電廠恢復100%的供電，狀態為：
主冷凝器壓力: 1.31 psia
冷卻水進口溫度: 60˚F
冷卻水出口溫度: ?
下列何者為恢復功率運轉後大約的冷卻水出口溫度？
A. 92˚F
B. 94˚F
C. 96˚F
D. 98˚F
答案： B.

科目： 293007
知能類： K1.07 [2.7/2.9]
序號： B2184 (P2184)

Which one of the following pairs of fluids undergoing heat transfer through comparable heat exchangers will yield the greatest heat exchanger overall heat transfer coefficient?
A. Oil to water
B. Air to water
C. Steam to water
D. Water to water
ANSWER: C

下列哪一組液體在相似的熱交換器裡進行熱傳時，其熱交換器整體熱傳係數會最大？
A. 油到水
B. 空氣到水
C. 蒸汽到水
D. 水到水
答案： C.

科目： 293007
知能類： K1.07 [2.7/2.9]
序號： B2383 (P2384)

Which one of the following pairs of fluids undergoing heat transfer in typical cross-flow design heat exchangers will yield the smallest heat exchanger overall heat transfer coefficient?
A. Oil to water in a lube oil cooler
B. Air to water in an air compressor after-cooler
C. Steam to water in a turbine exhaust steam condenser
D. Water to water in a cooling water heat exchanger
ANSWER: B

下列哪一組液體在典型的交流型熱交換器裡進行熱傳時，其熱交換器整體熱傳係數會最小？
A. 油到水，在潤滑油冷卻器內
B. 空氣到水，在空壓機後冷卻器(after-cooler)內
C. 蒸汽到水，在汽機排放蒸汽冷凝器內
D. 水到水，在冷卻水熱交換器內
答案： B.

科目： 293007
知能類： K1.07 [2.7/2.9]
序號： B3084 (P3084)

A reactor plant is operating at 100% rated power. Main turbine extraction steam is being supplied to a feedwater heater. Extraction steam parameters are as follows:

Steam pressure: 750 psia
Steam flow rate: 7.5 x 10^5 lbm/hr
Steam enthalpy: 1150 Btu/lbm

Saturated liquid condensate at 448˚F leaves the feedwater heater via a drain line. What is the approximate heat transfer rate from the extraction steam to the feedwater in the feedwater heater?

A. 3.8 x 10^7 Btu/hr
B. 8.6 x 10^7 Btu/hr
C. 5.4 x 10^8 Btu/hr
D. 7.2 x 10^8 Btu/hr
ANSWER: C

電廠以100%功率運轉。從主汽機抽取蒸汽提供給飼水加熱器。抽取蒸汽的參數如下：

蒸汽壓力: 750 psia
蒸汽流量: 7.5 x 10^5 lbm/hr
蒸汽焓: 1150 Btu/lbm

飽和液體冷凝水在經由排水管路離開飼水加熱器時的溫度為448˚F。
抽取蒸汽在飼水加熱器內移轉給飼水的熱傳率大約為多少？

A. 3.8 x 10^7 Btu/hr
B. 8.6 x 10^7 Btu/hr
C. 5.4 x 10^8 Btu/hr
D. 7.2 x 10^8 Btu/hr
答案： C.

科目： 293007
知能類： K1.07 [2.7/2.9]
序號： B3383 (P3384)

A reactor plant was operating at a steady-state power level with the following main condenser parameters:

Main condenser pressure: 1.2 psia
Cooling water inlet temperature: 60˚F
Cooling water outlet temperature: 84˚F

As a result of increased condenser air inleakage, the overall heat transfer coefficient of the main condenser decreases by 25%. Main condenser heat transfer rate and cooling water temperatures are unchanged. Which one of the following is the approximate resulting pressure in the main condenser?

A. 1.7 psia
B. 2.3 psia
C. 3.0 psia
D. 4.6 psia
ANSWER: A

電廠以穩定狀態運轉，主冷凝器的參數如下：

主冷凝器壓力: 1.2 psia
冷卻水進口溫度: 60˚F
冷卻水出口溫度: 84˚F

當冷凝器滲入的空氣增加時，主冷凝器的總熱傳係數降低了25%。主冷凝器熱傳率和冷卻水溫度不變。

下列何者為改變後的主冷凝器的大約壓力？

A. 1.7 psia
B. 2.3 psia
C. 3.0 psia
D. 4.6 psia
答案： A.

科目： 293007
知能類： K1.08 [3.0/3.1]
序號： B378
Which one of the following actions will decrease plant efficiency?
A. Reducing turbine inlet steam moisture content
B. Reducing condensate depression
C. Increasing turbine exhaust pressure
D. Increasing temperature of feed-water entering the reactor vessel
ANSWER: C

下列那種行為會降低電廠效能？
A. 減少汽機進口蒸汽之水份含量
B. 降低冷凝水次冷度（depression）
C. 增加汽機排氣壓力
D. 提高進入反應爐槽的飼水溫度
答案： C.

科目： 293007
知能類： K1.08 [3.0/3.1]
序號： B1585
Which one of the following actions will increase plant efficiency?
A. Increasing turbine inlet steam moisture content
B. Increasing condensate depression
C. Decreasing turbine exhaust pressure
D. Decreasing temperature of feed water entering the reactor vessel
ANSWER: C

下列何種行為可以增加電廠的效能？
A. 增加汽機進口蒸汽之水份含量
B. 提高冷凝水的次冷度
C. 降低汽機排氣的壓力
D. 降低進入反應爐槽的飼水溫度
答案： C.

科目： 293007
知能類： K1.09 [2.5/2.7]
序號： B147

Which one of the following statements explains why condensate subcooling is necessary in the steam condensing phase of a plant cycle?
A. To increase overall secondary efficiency
B. To provide an improved condenser vacuum
C. To allow use of a higher circulating water temperature
D. To provide net positive suction head to the condensate pumps
ANSWER: D

下列哪一個論述可以解釋在電廠循環的蒸汽冷凝階段時，為何冷凝水次冷是必要的？
A. 要提升二次側的整體效能
B. 要提供更佳的冷凝器真空度
C. 允許使用更高溫的循環水
D. 要提供冷凝器泵淨正吸水頭
答案： D.

科目： 293007
知能類： K1.09 [2.5/2.7]
序號： B583

Which one of the following statements describes condensate depression (subcooling) in the main condenser?
A. Increasing condensate depression improves the available net positive suction head for the condensate pumps.
B. Decreasing condenser vacuum increases condensate depression.
C. Increasing circulating water temperature increases condensate depression.
D. Decreasing condensate depression decreases plant efficiency.
ANSWER: A

下列哪一個敘述為描寫主冷凝器中冷凝水的次冷度？
A. 提高冷凝水的次冷度可以改善冷凝器泵的可用淨正吸水頭。
B. 降低冷凝器真空可以提高冷凝水的次冷度。
C. 提高循環水溫可以提高冷凝水的次冷度。
D. 降低冷凝水次冷度會降低電廠效能。
答案： A.

科目： 293007
知能類： K1.09 [2.5/2.7]
序號： B883

A condenser is operating at 28 inches of Hg vacuum and a condensate outlet temperature of 88˚F. Which one of the following most closely approximates the value for the condensate depression?
A. 8˚F
B. 14˚F
C. 24˚F
D. 38˚F
ANSWER: B

冷凝器以28英吋汞柱的真空運轉，冷凝水的出口溫度為88˚F。下列何者最接近冷凝水的次冷度？
A. 8˚F
B. 14˚F
C. 24˚F
D. 38˚F
答案： B.

科目： 293007
知能類： K1.09 [2.5/2.7]
序號： B1084
The purpose of condensate depression in the turbine/condenser phase of the plant steam cycle is to...
A. maximize condenser vacuum.
B. maximize total plant efficiency.
C. minimize cavitation of the condensate pumps.
D. minimize thermal gradients in the condenser hotwell.
ANSWER: C

電廠蒸汽循環中汽機/冷凝器階段的冷凝水凝結用意為____。
A. 儘量增加冷凝器真空度。
B. 儘量提高整體電廠效能。
C. 儘量降低冷凝器泵孔蝕現象。
D. 儘量降低冷凝器熱井的熱梯度（thermal gradients）。
答案： C.

科目： 293007
知能類： K1.09 [2.5/2.7]
序號： B1484 (P3576)

A main condenser is operating at 28 inches of Hg vacuum with a condensate outlet temperature of 92˚F. Which one of the following is the approximate amount of condensate depression?
ANSWER: B

冷凝器以28 英吋汞柱的真空運轉，冷凝水的出口溫度為92˚F。下列何者最接近冷凝水的次冷度？
A. 6˚F
B. 10˚F
C. 13˚F
D. 17˚F
答案： B.

科目： 293007
知能類： K1.09 [2.5/2.7]
序號： B2483

A condenser is operating at 28.5 inches of Hg vacuum with a condensate outlet temperature of 88˚F. Which one of the following is the approximate value of condensate depression?
A. 2˚F
B. 9˚F
C. 13˚F
D. 17˚F
ANSWER: A

冷凝器以28.5英吋汞柱的真空運轉，冷凝水的出口溫度為88˚F。下列何者最接近冷凝水的次冷度？
A. 2˚F
B. 9˚F
C. 13˚F
D. 17˚F
答案： A.

科目： 293007
知能類： K1.10 [2.7/2.9]
序號： B684

The measure of heat input per unit time from the reactor core to the reactor coolant in units of megawatts defines...
A. specific heat.
B. power density.
C. core thermal power.
D. percent reactor power.
ANSWER: C

單位時間內由反應爐爐心輸入到反應爐冷卻水的熱（單位：megawatts），為__的定義。
A. 比熱
B. 功率密度
C. 爐心熱功率
D. 反應爐功率百分比
答案： C.

科目： 293007
知能類： K1.11 [2.6/3.1]
序號： B385

Which one of the following is the most accurate indication of mass flow rate through the reactor for calculating core thermal power during reactor power operation?
A. Core flow rate
B. Steam flow rate
C. The sum of feed water and control rod drive flow rates
D. The sum of both recirculation loop flow rates
ANSWER: C

反應爐功率運轉時，下列何者為代表爐心流量的最精確測量值，該值是用來計算爐心熱功率？
A. 爐心流量
B. 蒸汽流量
C. 飼水與控制棒驅動流量的和
D. 兩個再循環回路流量的和
答案： C.

科目： 293007
知能類： K1.11 [2.6/3.1]
序號： B984

Which one of the following expressions describes core thermal power?
A. $Q_{core} = Q_{Feedwater} - Q_{Steam} - Q_{CRD} - Q_{Recirc} + Q_{Ambient} + Q_{RWCU}$
B. $Q_{core} = Q_{Steam} - Q_{Feedwater} + Q_{CRD} + Q_{Recirc} - Q_{Ambient} - Q_{RWCU}$
C. $Q_{core} = Q_{Steam} - Q_{Feedwater} - Q_{CRD} - Q_{Recirc} + Q_{Ambient} + Q_{RWCU}$
D. $Q_{core} = Q_{Steam} - Q_{Feedwater} - Q_{CRD} - Q_{Recirc} - Q_{Ambient} - Q_{RWCU}$
ANSWER: C

下列哪一個算式代表爐心熱功率？
(core:爐心; feedwater:飼水; steam:蒸汽; CRD: control rod drive控制棒驅動; recirc: 再循環; ambient:周圍; RWCU爐水淨化:)
A. $Q_{core} = Q_{Feedwater} - Q_{Steam} - Q_{CRD} - Q_{Recirc} + Q_{Ambient} + Q_{RWCU}$
B. $Q_{core} = Q_{Steam} - Q_{Feedwater} + Q_{CRD} + Q_{Recirc} - Q_{Ambient} - Q_{RWCU}$
C. $Q_{core} = Q_{Steam} - Q_{Feedwater} - Q_{CRD} - Q_{Recirc} + Q_{Ambient} + Q_{RWCU}$
D. $Q_{core} = Q_{Steam} - Q_{Feedwater} - Q_{CRD} - Q_{Recirc} - Q_{Ambient} - Q_{RWCU}$
答案： C.

科目： 293007
知能類： K1.11 [2.6/3.1]
序號： B2984 (P2985)

A reactor is operating at power. The feedwater flow rate to the reactor vessel is 7.0 x 10^6 lbm/hr at a temperature of 440˚F. The steam exiting the reactor vessel is at 1000 psia with 100% steam quality. Ignoring all other heat gain and loss mechanisms, what is the core thermal power?
A. 1335 MWt
B. 1359 MWt
C. 1589 MWt
D. 1612 MWt
ANSWER: C

反應爐功率運轉中。進入反應爐槽的飼水流量為7.0 x 10^6 lbm/hr，溫度為440˚F。離開反應爐槽的蒸汽壓力為1000 psia、100%蒸汽乾度。忽略其它的熱得/失機制，爐心熱功率為多少？
A. 1335 MWt
B. 1359 MWt
C. 1589 MWt
D. 1612 MWt
答案： C.

科目： 293007
知能類： K1.12 [2.6/3.1]
序號： B1384

Given the following data for a typical steam condenser:

Total tube area = 500,000 ft^2

Cooling water flow rate = 200,000 gpm

Condenser pressure = 1 psia

Specific heat of cooling water (c_p) = 1 Btu/lbm-˚F

Cooling water inlet temperature = 60˚F

Cooling water outlet temperature = 80˚F

Steam condensing rate = 3,000,000 lbm/hr

Mass of cooling water = 8.34 lbm/gal

What is the condenser heat load in megawatts thermal (MWt)?

A. 587 MWt

B. 629 MWt

C. 671 MWt

D. 733 MWt

ANSWER: A

根據下列典型蒸汽冷凝器的資料：

冷凝管的總表面積= 500,000 ft^2

冷卻水體積流量 = 200,000 gpm

冷凝器壓力 = 1 psia

冷卻水比熱 (c_p) = 1 Btu/lbm-˚F

冷卻水進口溫度 = 60˚F

冷卻水出口溫度 = 80˚F

蒸汽冷凝率 = 3,000,000 lbm/hr

冷卻水質量 = 8.34 lbm/gal

冷凝器熱負載為多少MWt？（meagawatts thermal）

A. 587 MWt

B. 629 MWt

C. 671 MWt

D. 733 MWt

答案： A.

科目： 293007
知能類： K1.13 [2.3/2.9]
序號： B150

Given the following data for a typical steam condenser, select the approximate heat load rejected in megawatts thermal.

Total tube area = 500,000 ft^2
Cooling water flow rate = 200,000 gpm
Condenser pressure = 1 psia
Specific heat of cooling water (c_p) = 1 Btu/lbm-˚F
Cooling water inlet temperature = 60˚F
Cooling water outlet temperature = 85˚F
Steam condensing rate = 3,000,000 lbm/hr
Mass of cooling water = 8.34 lbm/gal

A. 704 MWt
B. 734 MWt
C. 784 MWt
D. 834 MWt
ANSWER: B

根據下列典型蒸汽冷凝器的資料，選出熱棄載（heat load rejected）的大約值。（以megawatts thermal為單位）

冷凝管的總表面積 = 500,000 ft^2
冷卻水體積流量 = 200,000 gpm
冷凝器壓力 = 1 psia
冷卻水比熱 (c_p) = 1 Btu/lbm-˚F
冷卻水進口溫度 = 60˚F
冷卻水出口溫度 = 85˚F
蒸汽冷凝率 = 3,000,000 lbm/hr
冷卻水質量 = 8.34 lbm/gal

A. 704 MWt
B. 734 MWt
C. 784 MWt
D. 834 MWt
答案： B.

科目： 293007
知能類： K1.13 [2.3/2.9]
序號： B386 (P384)

The power range nuclear instruments have been adjusted to 100% based on a calculated heat balance. Which one of the following will result in indicated reactor power being greater than actual reactor power?

A. The feedwater temperature used in the heat balance calculation was higher than actual feedwater temperature.
B. The reactor recirculation pump heat input term was omitted from the heat balance calculation.
C. The feedwater flow rate used in the heat balance calculation was lower than actual feedwater flow rate.
D. The steam pressure used in the heat balance calculation is higher than actual steam pressure.

ANSWER: B

依據熱平衡的計算，已經將功率階中子偵測器校正到100%。
下列何者會導致反應爐功率讀數大於實際反應爐功率？
A. 用來計算熱平衡的飼水溫度比實際飼水溫度高。
B. 在計算熱平衡時遺漏了反應爐再循環泵的熱輸入。
C. 用來計算熱平衡的飼水流量比實際飼水流量低。
D. 用來計算熱平衡的蒸汽壓力比實際蒸汽壓力高。
答案： B.

科目： 293007
知能類： K1.13 [2.3/2.9]
序號： B1684

The power range nuclear instruments have been adjusted to 100% based on a calculated heat balance. Which one of the following will result in indicated reactor power being lower than actual reactor power?

A. The feedwater temperature used in the heat balance calculation was 10˚F lower than actual feed water temperature.
B. The reactor recirculation pump heat input term was omitted from the heat balance calculation.
C. The feed flow rate used in the heat balance calculation was 10% lower than actual feed flow rate.
D. The steam pressure used in the heat balance calculation was 50 psi lower than actual steam pressure.

ANSWER: C

依據熱平衡的計算，已經將功率階中子偵測器校正到100%。
下列何者會導致反應爐功率讀數小於實際反應爐功率？
A. 用來計算熱平衡的飼水溫度比實際飼水溫度低10˚F。
B. 在計算熱平衡時遺漏了反應爐再循環泵的熱輸入。
C. 用來計算熱平衡的飼水流量比實際飼水流量低10%。
D. 用來計算熱平衡的蒸汽壓力比實際蒸汽壓力低50 psi。
答案： C.

科目： 293007
知能類： K1.13 [2.3/2.9]
序號： B2183 (P2185)

The power range nuclear instruments have been adjusted to 100% based on a calculated heat balance. Which one of the following will result in indicated reactor power being lower than actual reactor power?

A. The feedwater temperature used in the heat balance calculation was 20˚F higher than actual feedwater temperature.
B. The reactor recirculation pump heat input term was omitted from the heat balance calculation.
C. The feed water flow rate used in the heat balance calculation was 10% higher than actual flow rate.
D. The steam pressure used in the heat balance calculation was 50 psi lower than actual steam pressure.

ANSWER: A

依據熱平衡的計算，將功率階中子偵測器校正到100%。
下列何者會導致反應爐功率讀數小於實際反應爐功率？
A. 用來計算熱平衡的飼水溫度比實際飼水溫度高20˚F。
B. 在計算熱平衡時遺漏了反應爐再循環泵的熱輸入。
C. 用來計算熱平衡的飼水流量比實際飼水流量高10%。
D. 用來計算熱平衡的蒸汽壓力比實際蒸汽壓力低50 psi。
答案： A.

科目： 293007
知能類： K1.13 [2.3/2.9]
序號： B2284 (P2685)

The power range nuclear instruments have been adjusted to 100% based on a calculated heat balance. Which one of the following will result in indicated reactor power being lower than actual reactor power?

A. The feedwater temperature used in the heat balance calculation was 20˚F higher than actual feedwater temperature.
B. The reactor recirculation pump heat input term used in the heat balance was 10% lower than actual.
C. The steam and feedwater flow rates used in the heat balance calculation were 10% higher than actual flow rates.
D. The operator miscalculated the enthalpy of the steam exiting the reactor vessel to be 10 Btu/lbm higher than actual.

ANSWER: A

依據熱平衡的計算，將功率階中子偵測器校正到100%。
下列何者會導致反應爐功率讀數小於實際反應爐功率？
A. 用來計算熱平衡的飼水溫度比實際飼水溫度高20˚F。
B. 用來計算熱平衡的反應爐再循環泵熱輸入比實際低10%。
C. 用來計算熱平衡的蒸汽和飼水流率比實際流率高10%。
D. 操作員誤算了離開反應爐槽的蒸汽焓，比實際高10 Btu/lbm。
答案： A.

科目： 293007
知能類： K1.13 [2.3/2.9]
序號： B2484

The power range nuclear instruments have been adjusted to 100% based on a calculated heat balance. Which one of the following will result in indicated reactor power being lower than actual reactor power?

A. The feed water temperature used in the heat balance calculation was 20˚F lower than actual feed water temperature.
B. The reactor recirculation pump heat input term was omitted from the heat balance calculation.
C. The ambient heat loss value used in the heat balance calculation was only half the actual ambient heat loss.
D. The feed water flow rates used in the heat balance calculation were 10% higher than actual flow rates.

ANSWER: C

依據熱平衡的計算，將功率階中子偵測器校正到100%。
下列何者會導致反應爐功率讀數小於實際反應爐功率？
A. 用來計算熱平衡的飼水溫度比實際飼水溫度低20˚F。
B. 在計算熱平衡時遺漏了反應爐再循環泵的熱輸入。
C. 在計算熱平衡時所使用的周圍熱損失值只有實際周圍熱損失值的一半。
D. 用來計算熱平衡的飼水流率比實際飼水流率高10%。
答案： C.

科目： 293007
知能類： K1.13 [2.3/2.9]
序號： B2684 (P2485)

The power range nuclear instruments have been adjusted to 100% based on a heat balance calculation. Which one of the following will result in indicated reactor power being higher than actual reactor power?

A. The feedwater temperature used in the heat balance calculation was 20˚F higher than actual feedwater temperature.
B. The reactor recirculation pump heat input term was omitted from the heat balance calculation.
C. The feedwater flow rate used in the heat balance calculation was 10% lower than actual feedwater flow rate.
D. The ambient heat loss term was omitted from the heat balance calculation.

ANSWER: B

依據熱平衡的計算，將功率階中子偵測器校正到100%。
下列何者會導致反應爐功率讀數高於實際反應爐功率？
A. 用來計算熱平衡的飼水溫度比實際飼水溫度高20˚F。
B. 在計算熱平衡時遺漏了反應爐再循環泵的熱輸入。
C. 用來計算熱平衡的飼水流率比實際飼水流率低10%。
D. 計算熱平衡時遺漏了周圍熱損失的條件。
答案： B.

科目： 293007
知能類： K1.13 [2.3/2.9]
序號： B2785

The power range nuclear instruments have been adjusted to 100% based on a calculated heat balance. Which one of the following will result in indicated reactor power being lower than actual reactor power?

A. The reactor recirculation pump heat input term was omitted from the heat balance calculation.
B. The feed water temperature used in the heat balance calculation was 20˚F lower than actual feed water temperature.
C. The reactor vessel pressure used in the heat balance calculation was 30 psia higher than actual reactor vessel pressure.
D. The steam and feed water flow rates used in the heat balance calculation were 10% higher than actual flow rates.

ANSWER: C

依據熱平衡的計算，將功率階中子偵測器校正到100%。
下列何者會導致反應爐功率讀數小於實際反應爐功率？
A. 在計算熱平衡時遺漏了反應爐再循環泵的熱輸入。
B. 用來計算熱平衡的飼水溫度比實際飼水溫度低20˚F。
C. 用來計算熱平衡的反應爐槽壓力比實際壓力高30 psi。
D. 用來計算熱平衡的蒸汽和飼水流量比實際流量高10%。
答案： C.

科目： 293007
知能類： K1.13 [2.3/2.9]
序號： B2884 (P137)

The power range nuclear instruments have been adjusted to 100% based on a calculated heat balance. Which one of the following will result in indicated reactor power being greater than actual reactor power?

A. The operator miscalculated the enthalpy of the feed water to be 10 Btu/lbm higher than actual feed water enthalpy.
B. The reactor recirculation pump heat input term was omitted from the heat balance calculation.
C. The steam and feed water flow rates used in the heat balance calculation were 10% lower than actual flow rates.
D. The steam pressure used in the heat balance calculation was 50 psi higher than actual steam pressure.

ANSWER: B

依據熱平衡的計算，將功率階中子偵測器校正到100%。
下列何者會導致反應爐功率讀數高於實際反應爐功率？
A. 運轉員誤算了飼水的焓，比實際飼水焓多10 Btu/lbm。
B. 在計算熱平衡時遺漏了反應爐再循環泵的熱輸入。
C. 用來計算熱平衡的蒸汽和飼水流量比實際流量低10%。
D. 用來計算熱平衡的蒸汽壓力比實際蒸汽壓力高50 psi。
答案： B.

科目/題號：293007/1 (2016新增)
知能類：K1.06 [2.7/2.8]
序號：B6143 (P6116)

A counter-flow heat exchanger is being used to cool the lube oil for a main turbine and generator.
The main turbine and generator was initially operating at 100 percent load with the following stable heat exchanger conditions:

Toil in = 174°F
Toil out = 114°F
Twater in = 85°F
Twater out = 115°F

Main turbine and generator load was reduced, and the heat exchanger cooling water mass flow rate was decreased to one-half of its initial value, resulting in the following stable current conditions:

Toil in = 178°F
Toil out = 138°F
Twater in = 85°F
Twater out = ?

Assume that the lube oil mass flow rate and the specific heats of both fluids did not change.
Which one of the following is the current cooling water outlet temperature?
A. 115°F
B. 125°F
C. 135°F
D. 145°F
ANSWER: B.

一逆流式熱交換器用以冷卻主汽機和發電機之潤滑油。
主汽機和發電機原以100%的負載，熱交換器並以下列初始穩定條件運轉：

Toil in = 174°F
Toil out = 114°F
Twater in = 85°F
Twater out = 115°F

當主汽機和發電機的負載降低，且熱交換器的冷卻水的質量流率降低至初始值的一半，導致下列穩定條件：

Toil in = 178°F
Toil out = 138°F
Twater in = 85°F
Twater out = ?

假設潤滑油質量流量率和兩種流體的比熱都沒有改變，下列何者為冷卻水出口溫度？
A. 115°F
B. 125°F
C. 135°F
D. 145°F

答案： B

科目/題號：293007/2 (2016 新增)
知能類：K1.07 [2.7/2.9]
序號：B3684 (P3684)

Which one of the following pairs of fluids undergoing heat transfer in similar cross-flow design heat exchangers will yield the greatest heat exchanger overall heat transfer coefficient? (Assume comparable heat exchanger sizes and fluid flow rates.)
A. Oil to water in a lube oil cooler.
B. Steam to water in a feedwater heater.
C. Water to air in a ventilation cooling unit.
D. Water to water in a cooling water heat exchanger.
ANSWER: B.

下列何者流體組合在相似正交流(cross-flow)設計的熱交換器中，將產生熱交換器最大總熱傳係數？(假設熱交換器的大小和流體的流量率均相當)
A.在潤滑油冷卻器中油對水
B.在飼水加熱器中蒸汽對水
C.在通風冷卻單元中水對空氣
D.在熱交換器中的水對水

答案： B

科目/題號：293007/3 (2016 新增)
知能類：K1.07 [2.7/2.9]
序號：B5143 (P5144)

A nuclear power plant is operating near 100 percent power. Main turbine extraction steam is being supplied to a feedwater heater. Extraction steam parameters are as follows:

Steam pressure = 500 psia
Steam flow rate = 7.0×10^5 lbm/hr
Steam enthalpy = 1,135 Btu/lbm

The extraction steam condenses to saturated water at 500 psia, and then leaves the feedwater heater via a drain line.
What is the heat transfer rate from the extraction steam to the feedwater in the feedwater heater?
A. 3.2×10^8 Btu/hr
B. 4.8×10^8 Btu/hr
C. 5.3×10^8 Btu/hr
D. 7.9×10^8 Btu/hr
ANSWER: B.

核能電廠以近100%功率運轉，主汽機的抽汽供給至一飼水加熱器。抽汽的參數如下：

蒸汽壓力= 500 psia
蒸汽流量率=7.0×10^5 lbm/hr
蒸汽熱焓=1135 Btu/lbm

抽汽在500 psia冷凝成飽和水，然後經洩水管離開飼水加熱器。在飼水加熱器內從抽汽至飼水的熱傳率為多少？
A. 3.2×10^8 Btu/hr
B. 4.8×10^8 Btu/hr
C. 5.3×10^8 Btu/hr
D. 7.9×10^8 Btu/hr

答案： B

科目/題號：293007/4 (2016 新增)
知能類：K1.11 [2.6/3.1]
序號：B684

When performing a heat balance calculation to determine core thermal power, the measured thermal power is _____ by a value associated with the recirculation pumps; the adjustment is needed because _____ of the flow energy added to the reactor coolant by the recirculation pumps is converted to thermal energy of the reactor coolant.
A. decreased; nearly all
B. decreased; a small fraction
C. increased; nearly all
D. increased; a small fraction
ANSWER: A

在進行熱平衡計算以分析爐心熱功率時，所計算熱功率_____值與再循環泵相關；此修正是必要的，因為再循環泵加到反應器冷卻水之流動能，____被轉換為反應器冷卻水之熱能。
A.減少的；幾乎全部
B.減少的；小部分
C.增加的；幾乎全部
D.增加的；小部分

答案： A

科目/題號：293007/5 (2016 新增)
知能類：K1.13 [2.3/2.9]
序號：B5043

Two of the parameters listed below are used for calculating core thermal power using the standard heat balance method. Which one of the following identifies the two parameters?

	Reactor Core Mass Flow Rate	Feedwater Temperature	Reactor Vessel Pressure	Reactor Vessel Water Level
A.	Yes	No	Yes	No
B.	No	Yes	Yes	No
C.	Yes	No	No	Yes
D.	No	Yes	No	Yes

ANSWER: B.

下面所列那兩個是用於標準熱平衡法計算爐心熱功率的參數？

	爐心質量流量率	飼水溫度	反應爐槽壓力	反應爐槽水位
A.	是	否	是	否
B.	否	是	是	否
C.	是	否	否	是
D.	否	是	否	是

答案： B

科目/題號：293007/6 (2016 新增)
知能類：K1.13 [2.3/2.9]
序號：B6043 (P6044)

The power range nuclear instruments have been adjusted to 100 percent based on a heat balance calculation. Which one of the following will result in indicated reactor power being higher than actual reactor power?
A. The steam pressure used in the heat balance calculation was 50 psi higher than actual steam pressure.
B. The ambient heat loss value used in the heat balance calculation was twice the actual ambient heat loss.
C. The feedwater flow rate used in the heat balance calculation was 10 percent lower than actual feedwater flow rate.
D. The feedwater temperature used in the heat balance calculation was 20°F higher than actual feedwater temperature.
ANSWER: B.

以熱平衡功率計算為基準，將核儀功率階調整至100％，以下何者會使指示的反應爐功率比實際反應爐功率高？
A.熱平衡計算時，使用的蒸汽壓力比實際蒸汽壓力高50 psi
B.熱平衡計算時，使用的環境熱損失值是實際環境的熱損失的兩倍.
C.熱平衡計算時，使用的飼水流量率比實際飼水流量率低10％
D.熱平衡計算時，使用的飼水溫度，比實際的飼水溫度高20°F

答案： B

科目/題號：293007/7 (2016 新增)
知能類： K1.13 [2.3/2.9]
序號： B7639

A nuclear power plant is operating with the following stable reactor vessel (RV) and feedwater (FW) parameters:

RV pressure = 1,000 psia
RV steam flow rate = 1.0 x 10^7 lbm/hr (dry, saturated steam)
FW inlet temperature = 470°F

Based on the above information, what is the thermal power output of the reactor?
A. 740 MW
B. 1,328 MW
C. 2,169 MW
D. 3,497 MW
ANSWER: C.

核能電廠在以下的反應爐槽(RV)和飼水(FW)參數穩定運轉：

RV壓力=1000 psia
RV蒸汽流量率=1.0×10^7lbm/hr(乾飽和蒸汽)
FW進口溫度=470°F

依據上述資料，反應爐的熱功率輸出為多少？
A. 740 MW
B. 1,328 MW
C. 2,169 MW
D. 3,497 MW

答案： C