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Area : **Data File**

File Name	Description	Remarks
fluidproperties	includes Fluid Properties	
materials ASTM	includes Allowable Stress Values for ASTM / ASME Material	
materials common	includes Information such as Specific Gravity, Thermal Conductivity, Modulus of Elasticity, etc	
materials JIS	includes Allowable Stress Values for JIS Materials	
materials KS	includes Allowable Stress Values for KS Materials	
materials standard design	includes Data of Pipe, Structural Steel, etc	
combustion data	includes Combustion Constants	
air pollutant data	includes Combustion Constants of Air Pollutants	
estimate Fabrication Cost	includes Fabrication Cost	
estimate Material Cost	includes Material Cost	
estimate Process Cost	includes Process Cost	

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File Name	Description		Remarks
cal. dew point	calculates	**Water / Sulfuric Acid / Hydrochloric Acid Dew Points**	
Process Calculator	calculates	**Unit Conversion, Fluid Properties, Simple Processes and so on**	
FP gas mixture	calculates	**Properties of Gas Mixture**	
heat transfer HTC	calculates	**Various Heat Transfer Coefficients**	
HMB FWH	calculates	**Heat and Mass Balance for Feedwater Heater**	
LMTD correction factor 'F'	calculates	**LMTD Correction Factor using Analytic Formulas**	
psychrometrics basic	calculates	**Thermodynamic Properties of Moist Air based on ASHRAE**	
psychrometrics process	calculates	**Processes involving Moist Air based on ASHRAE**	
steam table IAPWS-IF97	calculates	**Properties of Water and Steam using IAPWS - IF97 Formulation**	
VBA functions	presents	**some VBA used in NTES Softwares**	

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File Name		Description	Remarks
Data Sheet			
data sheet Blowdown Tank	sizes	**Blowdown Tank**	
data sheet Flash Tank	sizes	**Flash Tank**	
data sheet Orifice	sizes	**Orifice**	
data sheet Pipe Distributor	sizes	**Pipe Distributor such as Header and Manifold**	
data sheet SD +Cyclone +Demister	sizes	**Cyclone + Demister**	
data sheet SD Internals	sizes	**Steam Drum Internals**	
data sheet Silencer	sizes	**Steam Vent Silencer**	
data sheet Steam Drum	sizes	**Steam Drum**	
data sheet Vacuum Breaker	sizes	**Vacuum Breaker**	
data sheet VSL H	produces	**Data Sheet of Vessel, Horizontal Type**	
data sheet VSL V	produces	**Data Sheet of Vessel, Vertical Type**	
data sheet Tank Rect.	produces	**Data Sheet of Rectangulat Tank**	
data sheet Tank V	produces	**Data Sheet of Vertical Cylindrical Tank**	
Calculation			
calculation BWC boiler	calculates	**Boiler Water Circulation**	
cal. hold-up volume & retention time VSL	calculates	**Hold-up Volume & Retention Time for Vessel**	
cal. Hydraulics in Piping	calculates	**Typical Hydraulics in Piping**	
cal. Noise	calculates	**Noise of Vent discharged to Atmosphere**	
cal. Thermal Expansion HE	calculates	**Thermal Expansion for S&T Type H/E**	
cal. Thermal Expansion PV	calculates	**Thermal Expansion for Vessel and Typical Equipment**	
TC Gas Duct insu	calculates	**Wall Temperatures of Duct to determine Insulation Thickness**	
TC VSL H insu	calculates	**Wall Temperatures of Horizontal Vessel to determine Insulation Thickness**	
TC VSL V insu	calculates	**Wall Temperatures of Vertical Vessel to determine Insulation Thickness**	

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File Name	Description			Remarks
Thermal Design				
TD HE ACHE	Thermal Design	of	**Air Cooled Heat Exchanger**	
TD HE COHE	Thermal Design	of	**Coil immersed in Tank**	
TD HE FWH	Thermal Design	of	**Feedwater Heater**	
TD HE S&T	Thermal Design	of	**Shell & Tube Type H/E**	
TD HE SSC	Thermal Design	of	**Steam Surface Condenser**	
TD HE SWHB	Thermal Design	of	**S&T Type Waste Heat Boiler**	
TD HE THE	Thermal Design	of	**Tubular H/E such as Economizer, Gas Air Heater**	
HETD DPHE	Thermal Design	of	**Double Pipe H/E**	
Calculation				
cal. U-tube	calculates		**Lengths of U-tubes to be installed**	
Data Sheet				
data sheet By-pass Damper WHB	calculates		**Performance of Gas By-pass Damper**	
data sheet PGDS SWHB	produces		**Performance Guarantee Data Sheet**	
data sheet PSV HE S&T	produces		**PSV Data Sheet**	
sizing vent pipe FWH	sizes		**Vent Pipe for Fedwater Heater**	
EOM				
O&M FWH	produces		**Operation and Maintenace Manual for Feedwater Heater**	
O&M S&T	produces		**Operation and Maintenace Manual for Shell & Tube Type H/E**	
O&M THE air	produces		**Operation and Maintenace Manual for Tubular H/E for Air Service**	
Process Flow Diagram				
pfd form trans.	produces		**Typical Process Flow Diagram around H/E**	
PTC				
PTC FWH	produces		**Performance Test Procedure for Feedwater Heater**	
PTC single phase HE	produces		**Performance Test Procedure for single phase HE**	

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Area : **Recuperator**

File Name	Description	Remarks
Thermal Design		
HETD RHE Double Shell	Thermal Design of Recuperator, **Double Shell Type**	
HETD RHE Helical Coil	Thermal Design of Recuperator, **Helical Coil Type**	
HETD RHE Flue Tube	Thermal Design of Recuperator, **Shell & Tube Type**	
HETD RHE Channel Type	Thermal Design of Recuperator, **Channel Type**	
HETD RHE Cage Type	Thermal Design of Recuperator, **Cage Type**	

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File Name	Description				Remarks
LD Box	calculates	**Loading Data**	for	**Box Type Equpment**	
LD DEA	calculates	**Loading Data**	for	**Deaerator**	
LD Leg	calculates	**Loading Data**	for	**Vessel with Legs**	
LD Lug	calculates	**Loading Data**	for	**Vessel with Lugs**	
LD Pipe Support	calculates	**Loading Data**	for	**Pipe Support**	
LD Stack	calculates	**Loading Data**	for	**Stack**	
LD Table Chamber + WHB	calculates	**Loading Data**	for	**Combined Two Equipments**	
LD Table	produces	**Table**	for	**Various Equipments**	
LD VSL & HE	calculates	**Loading Data**	for	**Vessel and S&T Type Heat Exchanger**	

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File Name	Description	Remarks
Strength Calculation		
MD Boiler ASME WT	Strength Calculation of **Water Tube Type Boiler**	
MD ECO ASME Sec. I	Strength Calculation of **Economizer based on ASME Sec. I**	
MD ECO ASME Sec. VIII	Strength Calculation of **Economizer based on ASME Sec. VIII**	
MD HE TEMA ASME Sec. I	Strength Calculation of **S&T Type H/E based on ASME Sec. I**	
MD HE TEMA ASME Sec. VIII	Strength Calculation of **S&T Type H/E based on ASME Sec. VIII**	
MD PV ASME Sec. I	Strength Calculation of **Pressure Vessel based on ASME Sec. I**	
MD PV ASME Sec. VIII	Strength Calculation of **Pressure Vessel based on ASME Sec. VIII**	
MD HE TS & Gusset	Strength Calculation of **Tubesheet and Gusset for S&T Type H/E**	
MD Stack	Strength Calculation of **Steel Stack based on ASME STS-1**	
Nozzle Load allowable	calculates **Allowable Nozzle Loads based on some Guides**	
Vibration and Noise		
cal. FIV THE & HRSG	calculates **Flow Induced Vibration and Acoustic Noise for Tubular Type H/E and HRSG**	

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File Name	Description		Remarks
Thermal Design			
TD HRSG FC	Thermal Design of	**Forced Circulation Type**	
TD HRSG FC Rect. Fin	Thermal Design of	**Forced Circulation Type with Rectangular Fin**	
TD HRSG NC	Thermal Design of	**Natural Circulation Type**	
TD HRSG NC 2P	Thermal Design of	**Natural Circulation Type, Dual Pressure**	
TD HRSG NC SF	Thermal Design of	**Natural Circulation Type, Supplementary Fired**	
Data Sheet			
data sheet De-SH	calculates	**Process for De-superheater**	
data sheet Performance	produces	**Performance Data Sheet**	
data sheet PGDS	produces	**Performance Guarantee Data Sheet**	
data sheet PSV	produces	**PSV Data Sheet**	
Process Flow Diagram			
setting HRSG FC Press. & Temp.	produces	**Diagram of Design Pressure and Temperature of FC HRSG and its components**	
setting HRSG NC Press. & Temp.	produces	**Diagram of Design Pressure and Temperature of NC HRSG and its components**	

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Area : **Boiler**

File Name	Description			Remarks
Thermal Design				
TD Boiler F&ST	Thermal Design	of	**Fire and Smoke Tube Boiler**	
TD Boiler WT	Thermal Design	of	**Water Tube Boiler**	
Calculation				
cal. Boiler Performance ASME PTC 4-2008	calculates		**Boiler Performance based on ASME PTC 4-2008**	
cal. Boiler Performance B&W	calculates		**Boiler Performance based on B&W Calculation Sheet.**	
cal. FD Fan boiler	calculates		**Boiler FD Fan Capacity**	
cal. Line Sizing	sizes		**Boiler Pipe Line based on Fluid Velocity**	
cal. Stack Dispersion	calculates		**Stack Dispersion**	
cal. Venturi	sizes		**Venturi Meter for Combustion Air Flowrate**	
cal. Volume & Retention Time	calculates		**Volume & Retention Time for Steam Drum**	
Start-up & Shut-down				
PCD boiler start-up & shut-down	produces		**Procedure of Boiler Start-up & Shut-down**	
SEQ boiler start-up & shut-down	produces		**Sequence of Boiler Start-up & Shut-down**	
Data Sheet				
data sheet De-SH boiler	calculates		**Process for De-superheater**	
data sheet Design Report boiler	produces		**Design Report of Boiler**	
data sheet ECO boiler	produces		**Economizer Data Sheet**	
data sheet F&BV boiler	sizes		**Flash and Blowdown Vessels**	
data sheet Otk boiler	sizes		**Fuel Oil Tank**	
data sheet PDS boiler	produces		**Performance Data Sheet**	
data sheet PGDS boiler	produces		**Performance Guarantee Data Sheet**	
data sheet PSV boiler	produces		**PSV Data Sheet**	
data sheet SGA boiler	produces		**Outline of Boiler**	

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File Name	Description		Remarks
Process Flow Diagram			
pfd Blowdown System	calculates	**Process of Blowdown System**	
pfd Letdown System	calculates	**Process of Letdown System**	
Process			
list PD Instrument	produces	**Process Data Sheet for Instruments**	
list Set Point	produces	**List of Set Points**	
setting Boiler Press. & Temp.	produces	**Diagram of Design Pressure and Temperature of Boiler and its components**	

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File Name	Description	Remarks
Thermal Design		
TD Deaerator	Thermal Design of **Deaerator with Separate Storage Tank**	
TD Deaerator IST	Thermal Design of **Deaerator with Integral Storage Tank**	

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File Name	Description	Remarks
EST HE S&T	Estimate of **Shell & Tube Type Heat Exchanger**	
EST PV	Estimate of **Pressure Vessel**	

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File Name	Description	Remarks
Thermal Design		
TD Incinerator	Thermal Design of **Incinerator**	
TD Thermal Oxidizer	Thermal Design of **Thermal Oxidizer**	

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Area : **Fired Heater**

File Name	Description	Remarks
Thermal Design		
FH direct	Thermal Design of **Fired Heater, Direct Type**	
FH indirect	Thermal Design of **Fired Heater, Inirect Type**	
FH indirect boiler	Thermal Design of **Fired Heater, Inirect Type, Boiling in Shell Side**	
HETD Heater fired Helical Coil	Thermal Design of **Fired Heater, Direct, Helical Coil Type**	
HETD Heater fired Double Shell	Thermal Design of **Fired Heater, Direct, Double Shell Type**	

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