Weir Power & Industrial

The key to the success of Weir Power & Industrial is our capability to deliver engineering solutions that add value to the customer's process. We offer a total package of products to meet end-to-end project requirements. Using our own analysis and configuration system, we will design and deliver the optimum valves and controls solution to protect the value of the production process.

A rigorous programme of information management means that the division is able to take a more anticipatory role in defining the future needs and expectations of the market by fully utilising the organisation's critical resources to provide whole process isolation and control valve solutions for the global ***Energy*** sector.

With a comprehensive range of engineered valve products Weir Power & Industrial have developed an extensive global installed base and expertise across a wide range of industry sectors:

- Power Generation
- General Industrial
- Oil & Gas Production
- Refining
- Petrochemical
- Chemical
- Pulp & Paper
- Desalination

Quality assurance

Weir Power & Industrial operates quality programmes to cover the full scope of their activities. Comprehensive quality systems have been developed to serve the power, oil and gas and industrial markets which they serve.

The company holds approvals to:

- ASME Section III 'N', 'NPT', 'NV'
- ASME Section I 'V'
- BS EN ISO 9001:1994
- API Q1 TO API LICENCES API 6D (6D-0182) AND API 6A (6A-0445)
- TUV - AD MERKBLATT WRD HP 0

6A-0445
6D-0182

The Quality systems have been approved for the supply of products to meet the requirements of the Pressure Equipment Directive (PED) and compliance modules A,D1,H,B&D have been applied in categories I through IV respectively.

The company is committed to compliance with legislation and has an established environment and health and safety policy.

An ongoing commitment to customer care is met through the process of continuous improvement and the further development of our systems and processes towards meeting ISO 9001:2000.

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Weir Power & Industrial

Fossil Fuel Power Plant System

Leaders in Critical Service and Isolation applications

Excellent
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Fossil Fuel Power Plant of 150MW incorporating a Bi-Drum Boiler System

The illustration shows a typical modern power plant with a bi-drum boiler system burning either oil or coal. The boiler consists of a large number of tubes extending the full height of the structure and the heat produced in the furnace raises the temperature of the water circulating in the tubes to create steam which passes to the steam drum at pressures up to 172 Bar.

The steam is then heated further in the primary and secondary superheaters and fed through the Main Steam Stop Valve (5) to the high pressure cylinder of the steam turbine (HP).

The steam will be hot enough (540˚C) to make the steam pipe glow to a dull red. When the steam has been through the HP cylinder of the turbine it is returned to the Reheat section of the boiler and reheated before being passed through the intermediate (IP) and Low Pressure (LP) cylinders of the turbine.

		ATWOOD & MORRILL	BATLEY VALVE	BLAKEBOROUGH	HOPKINSONS	SARASIN	TRICENTRIC
1	ASME Section I Safety Valves (Drum, Superheater, Reheater)				■		
2	ASME Section VIII Safety Relief Valve (Deaerator, Feedwater Heater)					■	
3	Economizer Isolation Valve (Parallel Slide or Wye Globe Valve)	■			■		
4	Economizer Check Valve	■			■		
5	Mainsteam Stop Valve (Parallel Slide or Wye Globe Valve)	■			■		
6	Isolation Valve (Parallel Slide or Wye Globe Valve)	■			■		
7	Reheat Isolation Device (Cold Reheat)	■			■		
7a	Reheat Isolation Device (Hot Reheat)	■			■		
8	Extraction Steam Check Valve	■			■		
9	Vent Valve (All Vessels and Headers)				■		
10	Drain Valve (All Vessels and Headers)				■		
11	Blowoff Valve (Uniflow)				■		
12	Continuous Blowdown Valve				■		
13	Spring Loaded Bypass / 3-Way Bypass Valve	■			■		
14	Main Feedwater Control Valve			■			
15	Boiler Feed Pump Recirculation Control Valve			■			
16	Deaerator Level Control Valve			■			
17	Condensate Recirculation Control Valve			■			
18	Heater Drain Control Valve			■			
19	Turbine Bypass Control Valve	■		■			
20	Pressure Reduction Control Valve			■			
21	Start Up Feedwater Control Valve			■			
22	Spraywater Control Valve (Reheat, Superheat)			■			
23	Turbine Drain Valve			■			
24	Auxiliary Steam Pressure Reduction Control Valve			■			
25	Pegging Steam Control Valve			■			
*	Condensate and cooling or make-up water isolation		■				■
*	Turbine Gland Seal-off		■				■
*	Condensate Bypass		■				■
*	Backwash Outlet		■				■
*	Hot Well make-up		■				■
*	Heater Drain Pump		■				■
*	Boiler Feedwater Pump, Stop and Non-Return Wye Globe	■					

* These items do not appear in the schematic diagram.

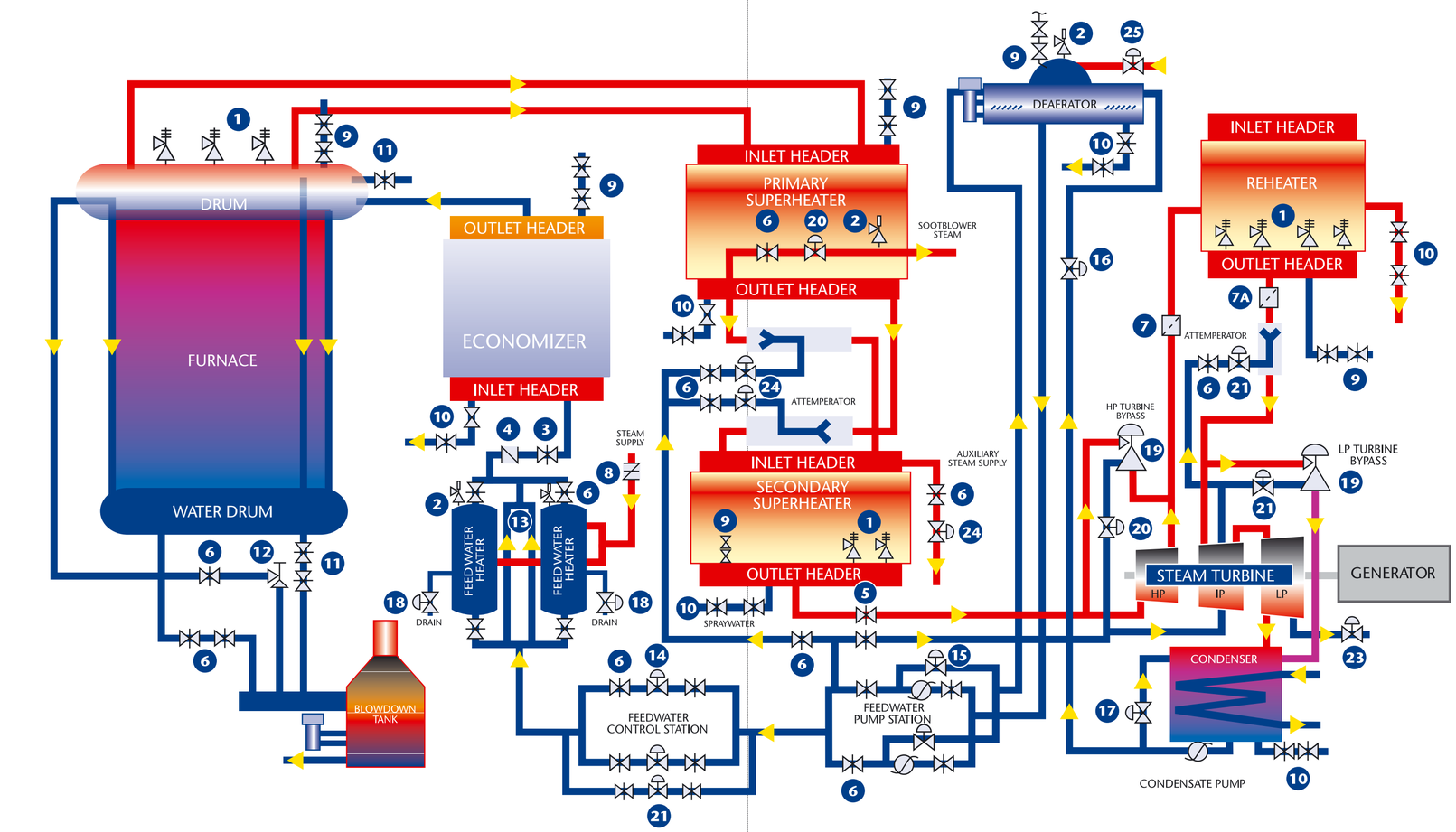
As the steam gives up its heat energy to drive the turbine, its temperature and pressure fall and it expands. Because of this expansion the turbine blades are much larger and longer towards the low pressure end of the turbine.

On UK Power Stations, the turbine shaft rotates at 3,000 revolutions per minute.

This speed is determined by the frequency of the electrical system in the UK and is the speed at which a two pole generator must be driven to generate alternating current at a frequency of 50 cycles per second.

When as much energy as possible has been extracted from the steam it is exhausted directly to the Condenser. This runs the length of the low pressure part of the turbine and may be underneath or on either side of it.

The condenser consists of a large vessel containing some 20,000 tubes, each about 25mm in diameter. Cold water from the river, estuary, sea or cooling tower is circulated through these tubes and as the steam from the turbine passes around them it is rapidly condensed into water-condensate. Because water has a much smaller comparative volume than steam, a vacuum is created in the condenser. This allows the steam to be used down to pressures below that of the normal atmosphere and more energy can be utilised. From the condenser, the condensate is pumped through low pressure Feed Water Heaters by the extraction pump, after which its pressure is raised to boiler pressure by the boiler feed pump. It is then passed through the high pressure Feed Water Heaters (where it may be heated to about 250˚C) to the Economizer where the temperature is raised sufficiently for the condensate to be returned to the lower half of the steam drum of the boiler and eventual reconversion into steam.



Atwood & Morrill® Blakeborough® Steam Form Conditioning Valve

Atwood & Morrill® Hopkinsons® Check Valve

Atwood & Morrill® Hopkinsons® Extraction Steam Check Valve

Atwood & Morrill® Hopkinsons® Isolation Valve

Atwood & Morrill® Hopkinsons® Reheat Isolation

Blakeborough® Control Valve

Hopkinsons® Continuous Blowdown

Hopkinsons® Gate & Globe Valve

Hopkinsons® Safety Valve

Sarasin® Safety Relief Valve