VLBP Steam Conditioning Valve

For combined heat and power applications
The VLBP valve is primarily used in industrial and utility power plants for the conditioning of auxiliary and process steam, but it can also serve as a turbine bypass valve for back pressure, condensing, power and district heating turbines. It allows controlled startup and shutdown of different loops in the power plant with minimum heat losses. It handles abnormal conditions such as rejection, turbine, pump or fan trips, in order to return the system to normal running with minimum delay.

**Key features**

- Multi-stage pressure reduction with single-stage controllability
- Quick exchangeable seat
- Spray water atomising nozzles
- Integrated water valve
- Noise / vibration reduction

**Benefits**

- **Quick exchangeable seat**
  - The quick exchangeable “Q seat” enhances the maintainability of the valve by allowing quick and easy replacements

- **Spray water atomizing nozzles**
  - OP spray nozzles are installed in the outlet of the valve and handle the injection of spray water into the steam. The nozzle features a spring which extends as the pressure in the nozzle holder increases. Water is rotated around the nozzle plug thanks to the special arrangement of the water channels. Stem and seat are designed to create maximum water velocity at the nozzle edge point, which improves water atomization.

- **Improved atomisation**
  - An optional extender allows the diameter of the steam outlet to be smaller than the diameter of the connecting steam pipe which increases steam velocities close to the spray nozzles. This improves the evaporation of the spray water as well as rangeability.

- **Desuperheating downstream through injection of finely atomised water into the low pressure outlet**
- **Optimal steam temperature control**
- **High rangeability**

- **Integrated water valve**
  - The steam conditioning valve can be combined with the VSGIC desuperheater with integrated spray water control valve, which can replace the external water valve.

- **Noise / vibration reduction**
  - The VLBP features multi-stage pressure reduction with single-stage controllability. The first stage takes place as the plug lifts from the seat, revealing a series of holes in the bonnet cage. The second stage takes place at the valve outlet, which is fitted with 1-3 perforated cylinders. The perforations break the steam into smaller fluid jets, resulting in a reduction in noise and vibration. This also shapes the flow pattern for more efficient desuperheating downstream.

- **High rangeability**
  - The VLBP features perforations in the valve plug which allows for finer control at low steam flow rates where these holes are the only conduit passing steam through the valve. This results in the modified linear valve characteristic, and increases the valve’s rangeability.
Technical specification

Valve type
VLBP

Selection
Use IMI CCI PowerSiz sizing program

Pressure class
Up to ANSI-2500 (higher ratings may be achieved on request)

Design temperature
Up to 585°C

Leakage class
ANSI class V for valves with BT-plug.
ANSI class III or IV for other plug designs

Rangeability
At least 1-20 on the steam side

Regulatory standards
PED, ASME, ISO 9001/14001/18001

Installation example

A Boiler
B VLBP turbine bypass valve
C External spray water control valve
D VLBP turbine bypass valve + VSGIC
E Steam turbine
F DAM turbine extraction desuperheater
G DAM turbine exhaust desuperheater
H Process steam 1
I Process steam 2
J Feedwater/condensate

Full valve selection available on our website
www.imi-critical.com