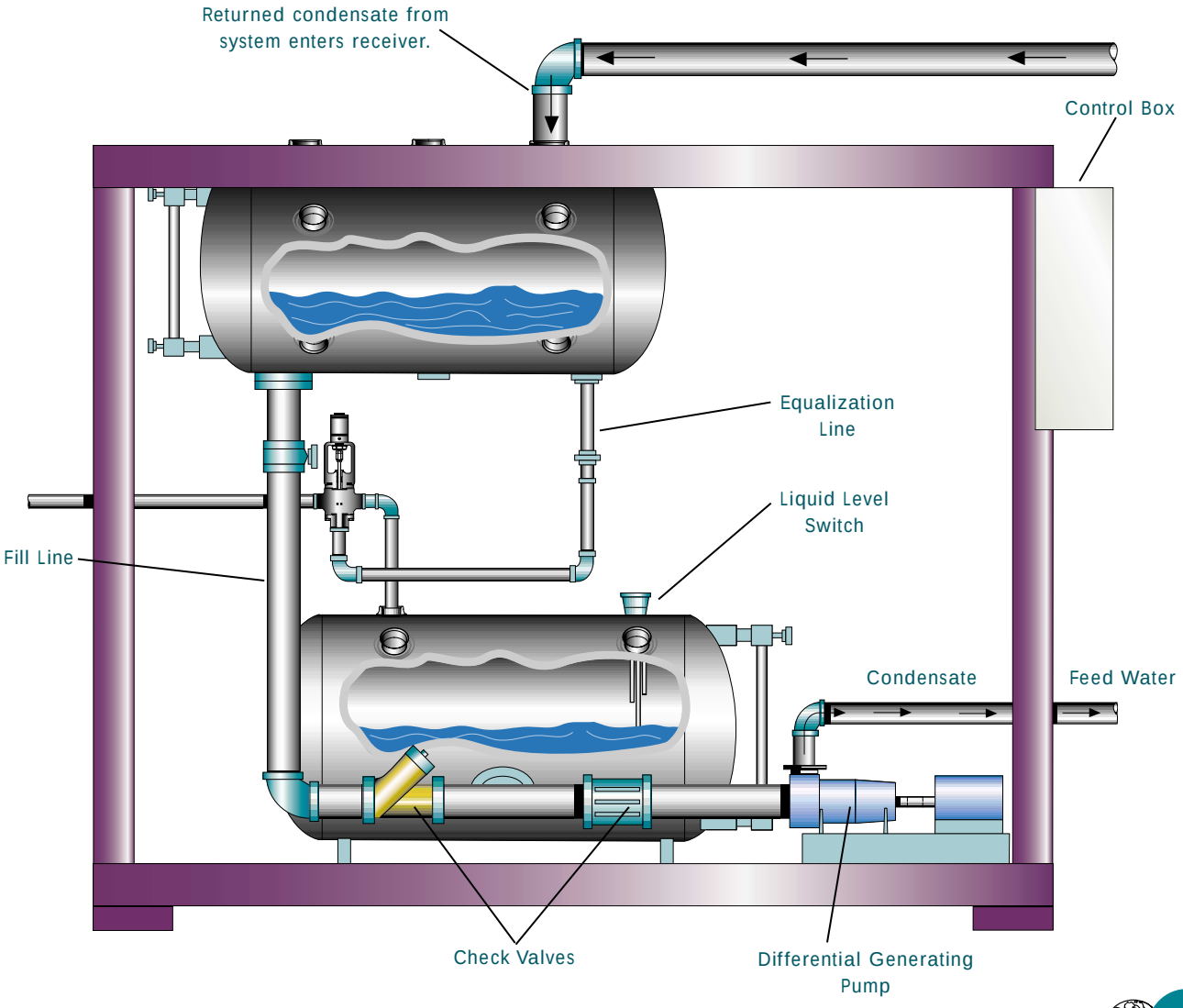
boost thermal efficiency

and reduce operating costs

LIQUI-MOVER® BOILER FEED PUMP

First introduced in the 1930s, the Johnson boiler feed pump has provided a revolutionary way to boost thermal efficiency and reduce operating costs of boiler feedwater pumps. The pressure-equalizing chamber of the Liqui-Mover Boiler Feed Pump permits high temperature condensate to return to the boiler. This improves operating efficiency and reduces fuel consumption by 5% to more than 25%. Capable of feeding boilers up to 500 HP with one unit, the proven Liqui-Mover Boiler Feed Pump provides long-term reliability and cost savings.



JOHNSON
Making the Best Solutions Possible

TYPICAL APPLICATION AND SAVINGS

BEFORE

OPERATING DATA

Incoming pressure (psig)	100
Flash pressure (psig)	0
Flow rate (pph)	17,250
Steam cost ($/1000 lb)	6.02
Hours/day operation	24
Operating days/year	250
Water and chemical cost ($/1000 gal.)	3.25

FLASH LOSS CALCULATIONS

Heat of liquid at incoming psi (BTU/lb)	309
Heat of liquid at flash pressure (BTU/lb)	180
Flash loss percent	13.3%
Flash loss (pounds/hour)	2,294
Flash loss (pounds/day)	55,000
Flash loss (pounds/year)	13,750,000

Estimated annual cost

Steam (6.02 x 13,750)	$82,700
Water (3.25 x 13,750/8.43)	$ 5,300
Chemical and heating costs	$88,000
Conventional Boiler Feed Pump electrical cost	$2,030 /year
Annual Boiler Feed operational cost	$90,030 /year

AFTER

OPERATING DATA

Incoming pressure (psig)	100
Flash pressure (psig)	60
Flow rate (pph)	17,250
Steam cost ($/1000 lb)	6.02
Hours/day operation	24
Operating days/year	250
Water and chemical cost ($/1000 gal.)	3.25

FLASH LOSS CALCULATIONS

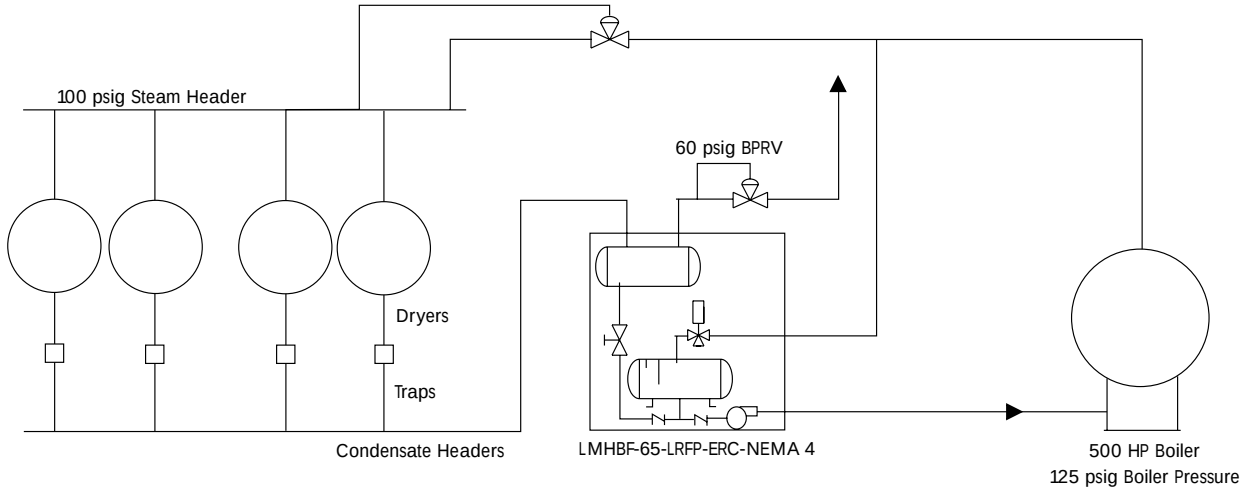
Heat of liquid at incoming psi (BTU/lb)	309
Heat of liquid at flash pressure (BTU/lb)	277
Flash loss percent	3.5%
Flash loss (pounds/hour)	606
Flash loss (pounds/day)	14,500
Flash loss (pounds/year)	3,625,000

Estimated annual cost

Steam (6.02 x 3,625)	$21,800
Water (3.25 x 13,750/8.43)	$ 1,400
Chemical and heating costs	$23,200
Johnson Boiler Feed Pump electrical cost	$162 /year
Annual Boiler Feed operational cost	$23,362 /year

Note: Boiler Feed water temperature increased 77° F

TOTAL BOILER FEED SAVINGS $66,462/YEAR



BOILER FEED UNITS AVAILABLE

Boiler HP-max.	100	175	225	375	500
LMHBF Model	10	20	40	50	65

BENEFITS OF THE JOHNSON BOILER FEED PUMP SYSTEM

- Flash steam loss is minimized
- Make-up water is minimized
- Pump and motor size is significantly reduced
- Maintenance costs are reduced
- Electrical costs are reduced
- Capable of feeding multiple boilers
- High condensate temperature return
- Reduced carbonic acid by eliminating sub-cooling and flashing condensate
- Pressurized condensate return eliminates air entry into system

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