Steam System

Energy Efficiency

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Spirax Sarco

have been involved in the design, troubleshooting and manufacture of product for the steam industry for over 100 years

Steam System Audit and Survey Teams have been set up all around the world, concentrating in improving Steam System Efficiency

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The Boilerhouse

Photograph courtesy of BIB Cochrane

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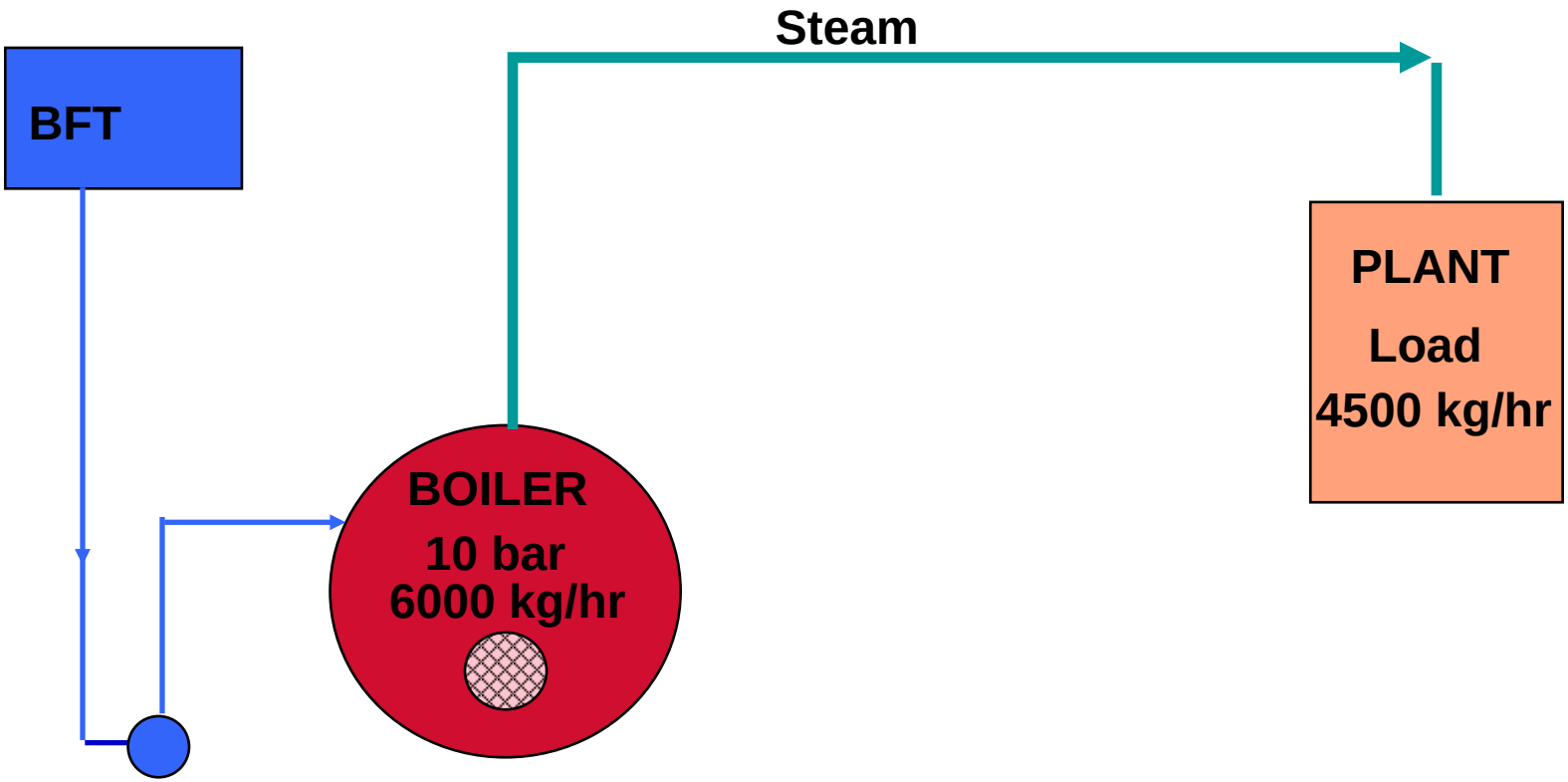
Principal areas of fuel wastage

- **Boiler Feed Water Not Hot Enough**
- **Accurate Control Of TDS Level In Boiler**
- **Boilers Priming**
- **Uninsulated Steam Pipes**
- **Wet Steam**
- **Poorly Laid-out Distribution System**
- **Steam Leaks Through Traps and Other Areas**
- **Overheating Of Temperature Controlled Plant**
- **Dumping Of Condensate**
- **Flash Steam**

Can the Boiler actually produce 6000 kg/hr of Steam...?



Boiler Ratings

Boiler Output kg/hr is based on the following :-

- **Feedwater = 100°C**
- **Atmospheric Pressure**

Photograph courtesy of BIB Cochrane

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A 6,000 kg/hr Boiler

Operating at

- **Feedwater = 82°C**
- **1,000 kPa**

5,566 kg/hr max.

Photograph courtesy of BIB Cochrane

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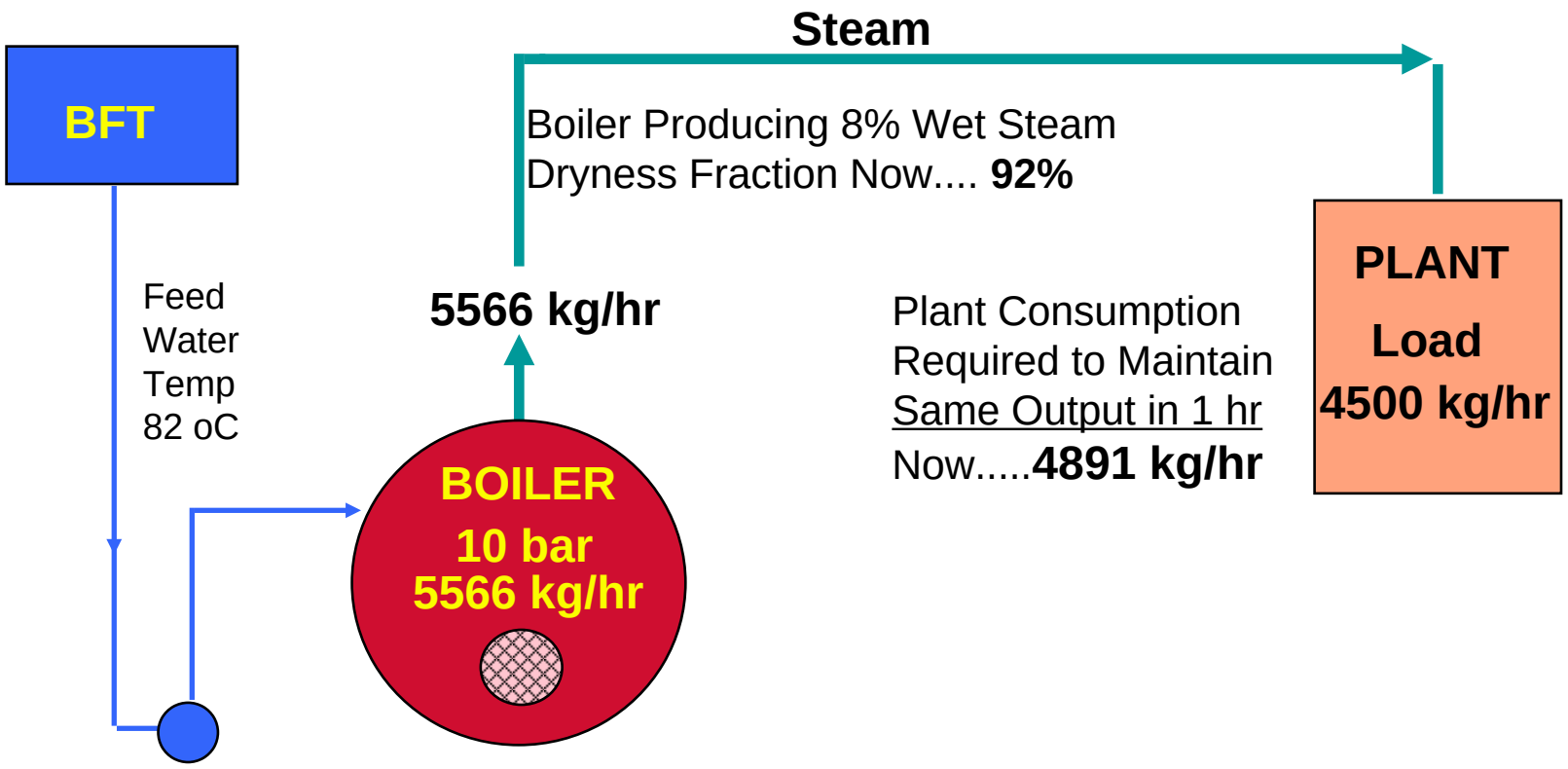
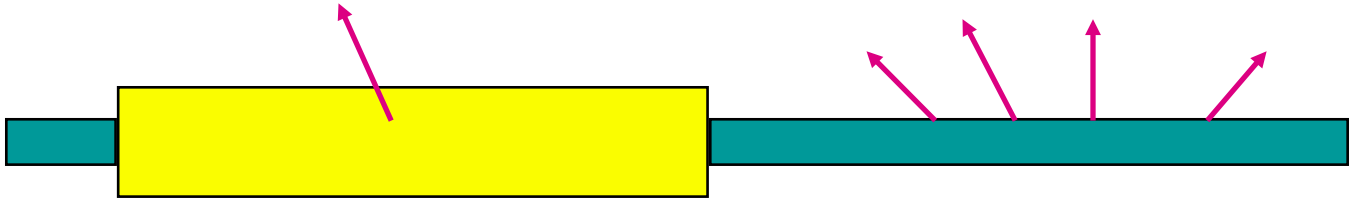
Wet steam & its effect on plant load requirements



Insulated Steam Pipework.

Radiation Heat Losses from Steam Pipes

Pipe Size - 100mm
Steam Press - 7 bar
Length - 4 metres



INSULATED	UNINSULATED
1.1 kg/hr	6kg/hr
9240 kg steam/yr	55,440 kg steam/hr

SAVINGS PER YEAR... 46,200 kg Steam

(24 hr/day, 7 days/wk, 50 weeks/yr)

Steam Pipework

Trapset Required

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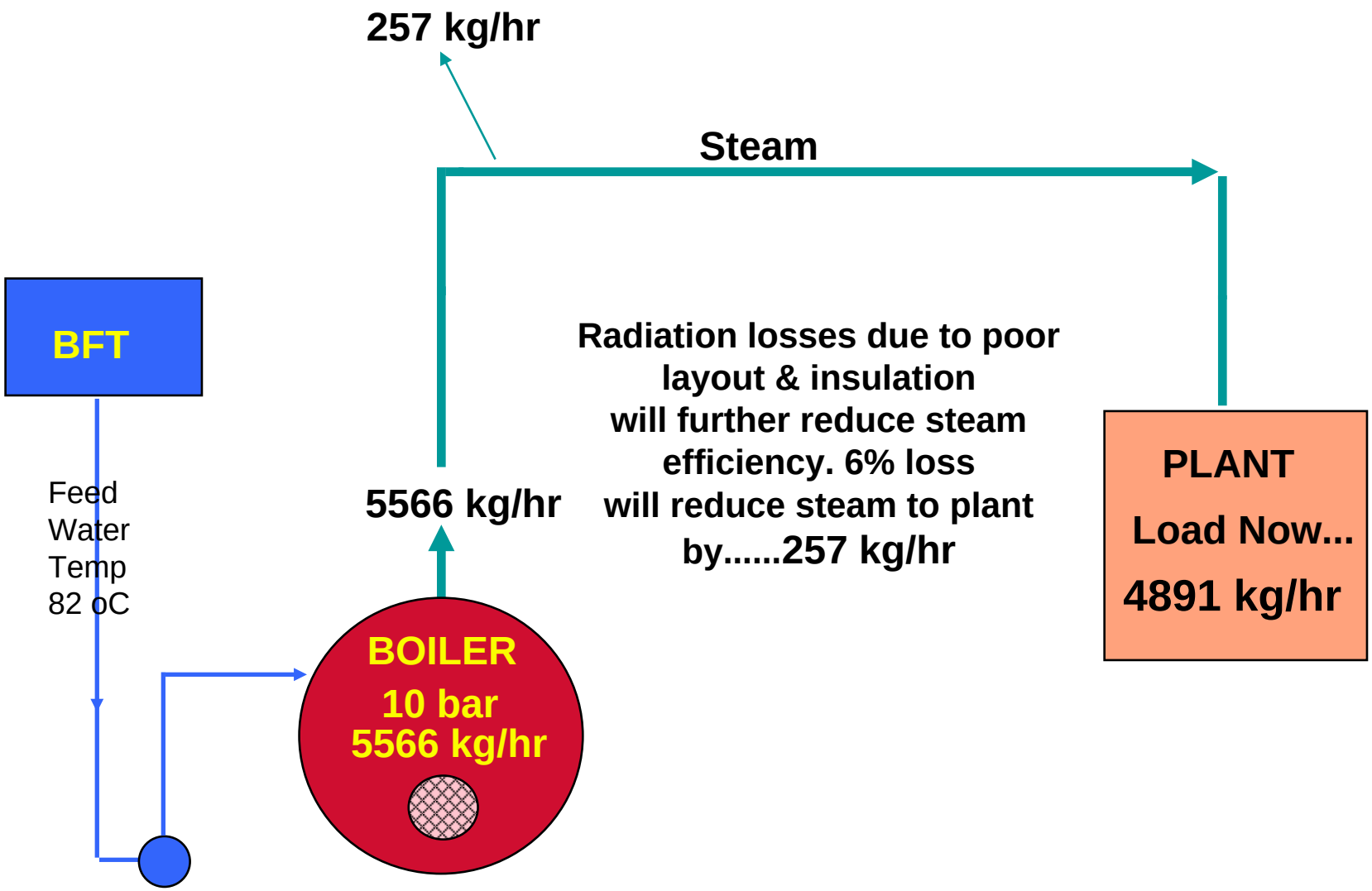
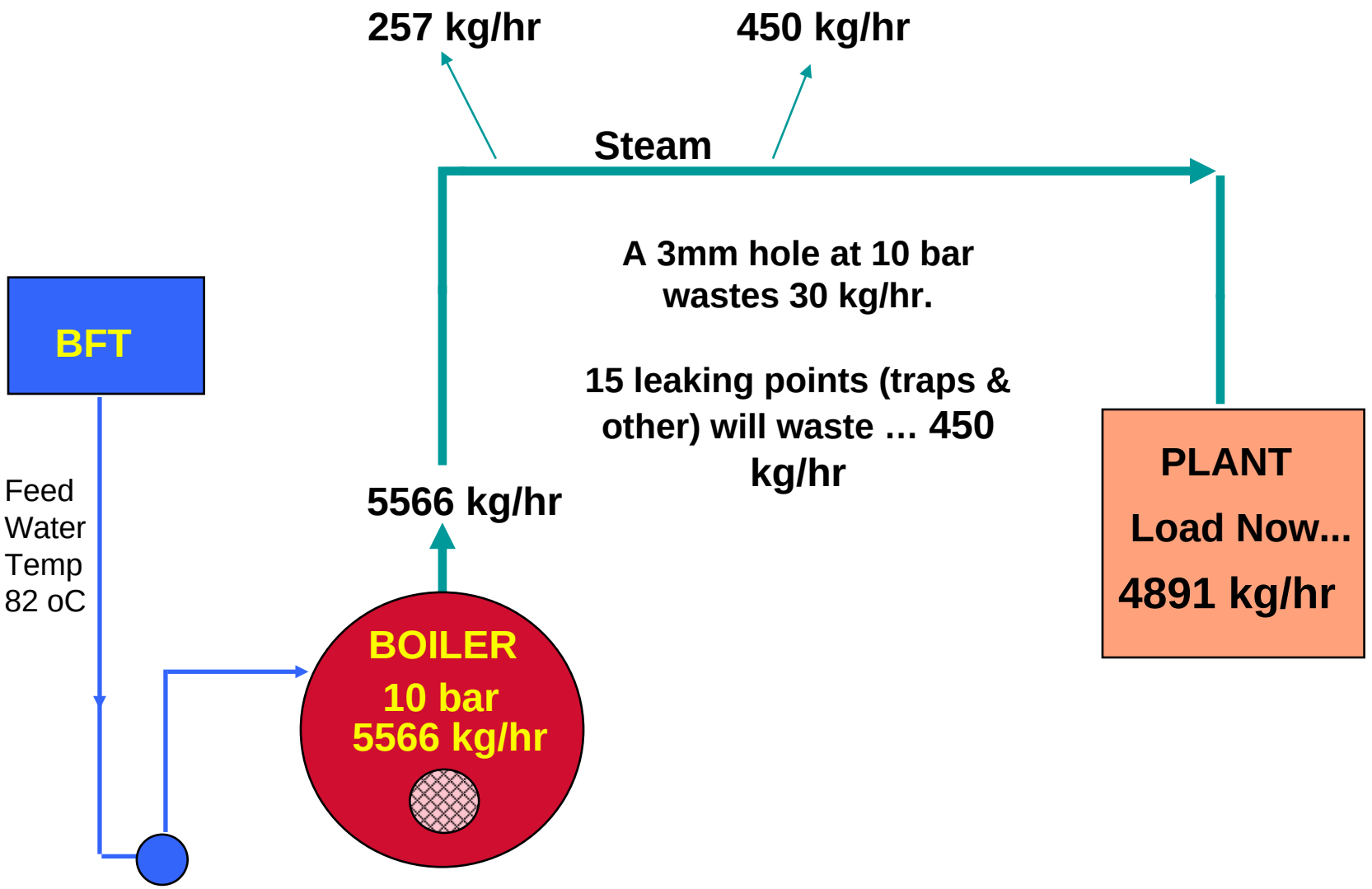
Radiation Losses in Distribution Systems

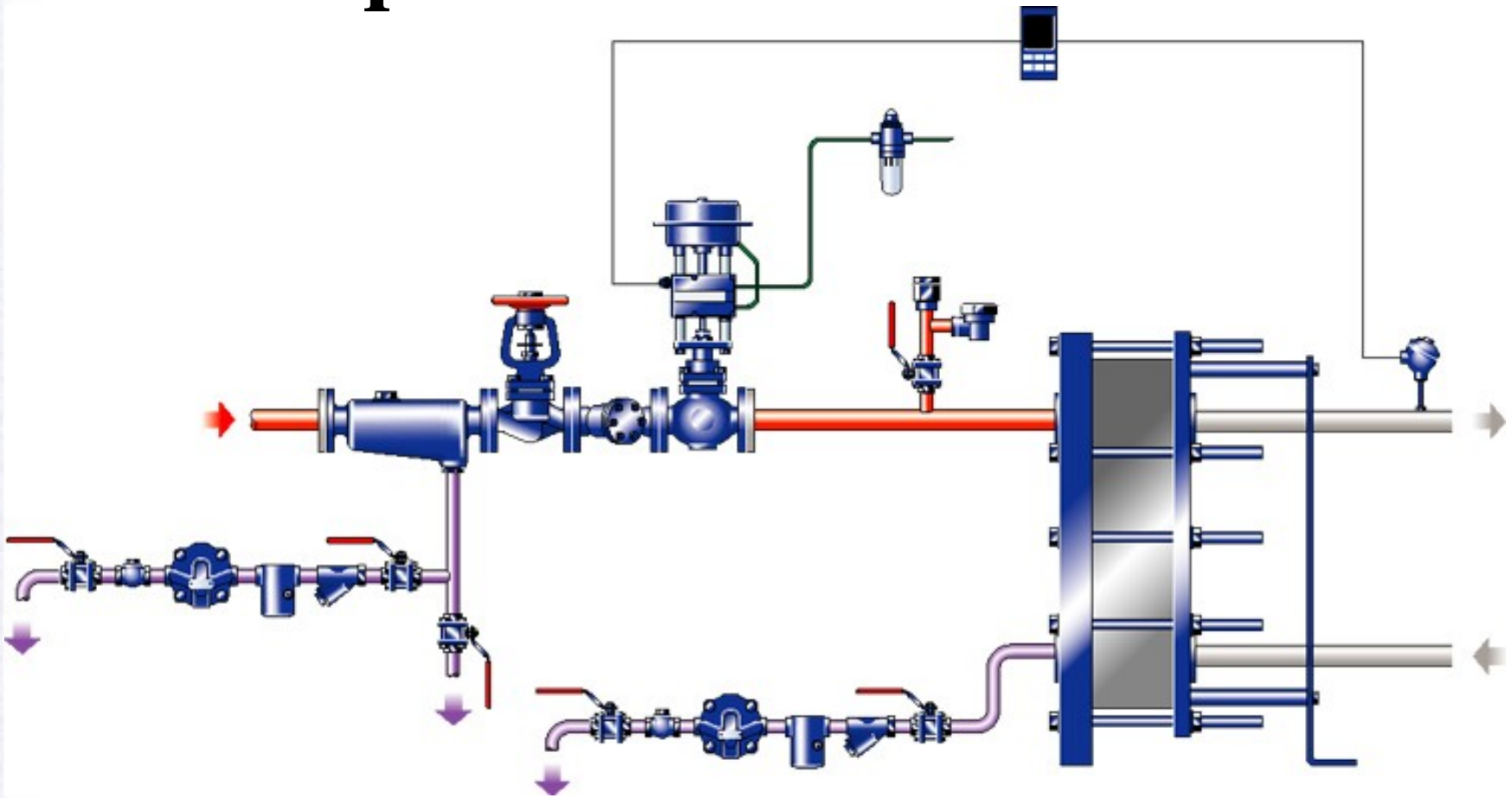


Steam Leak

Steam Leaks through Traps, Joints & Holes



Temperature Overshoot



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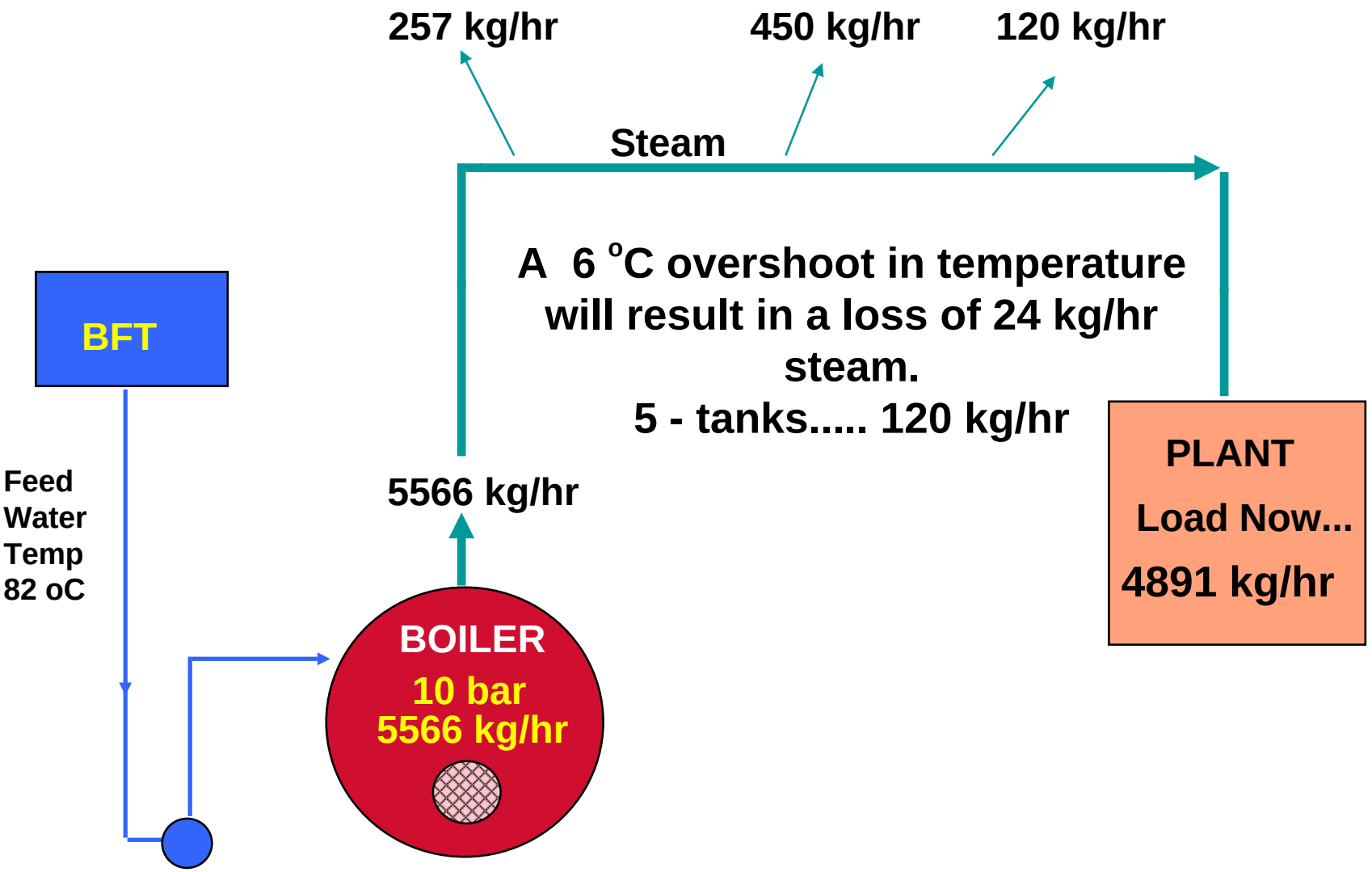
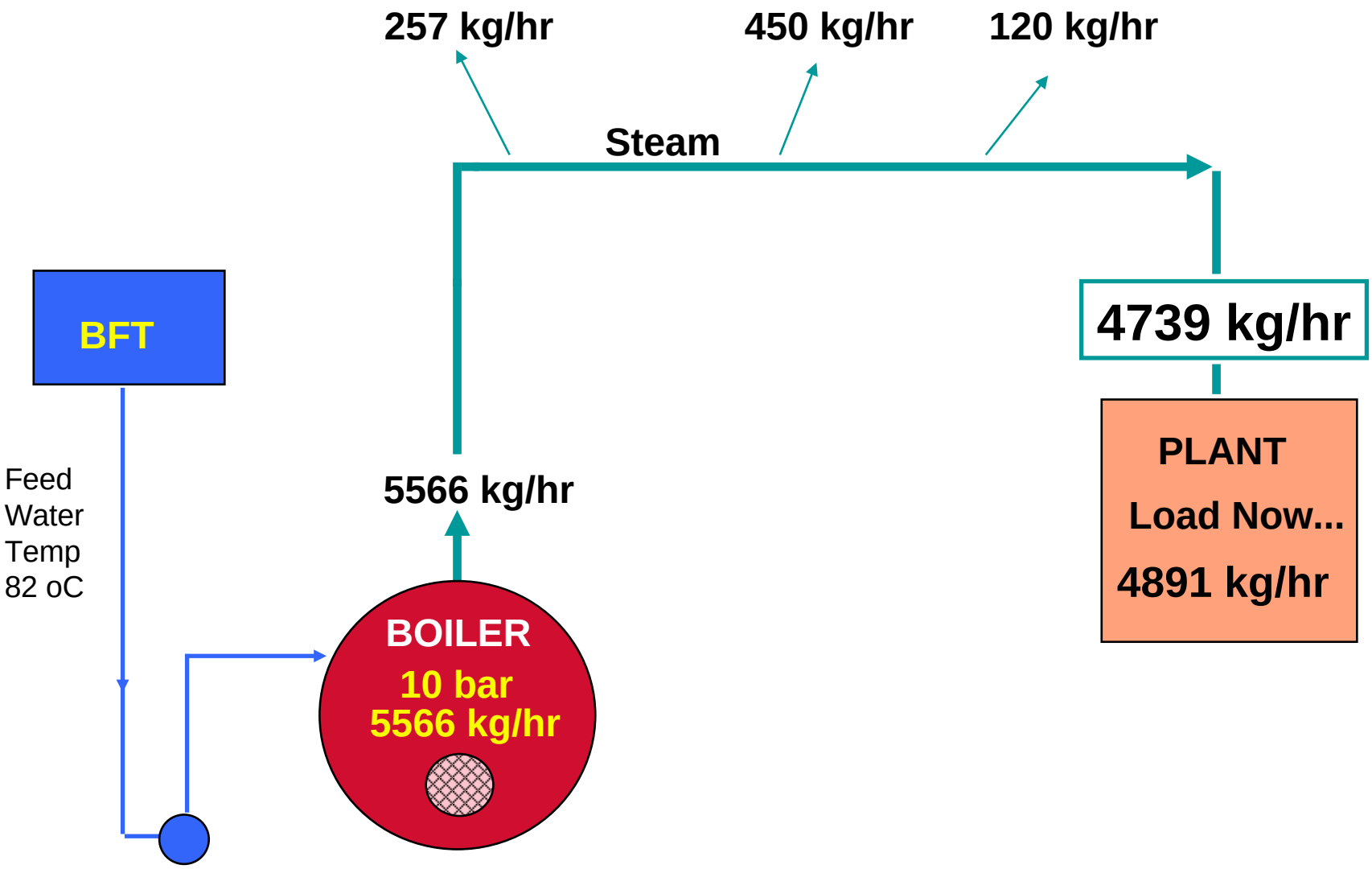
Over Heating of Temperature Controlled Plant

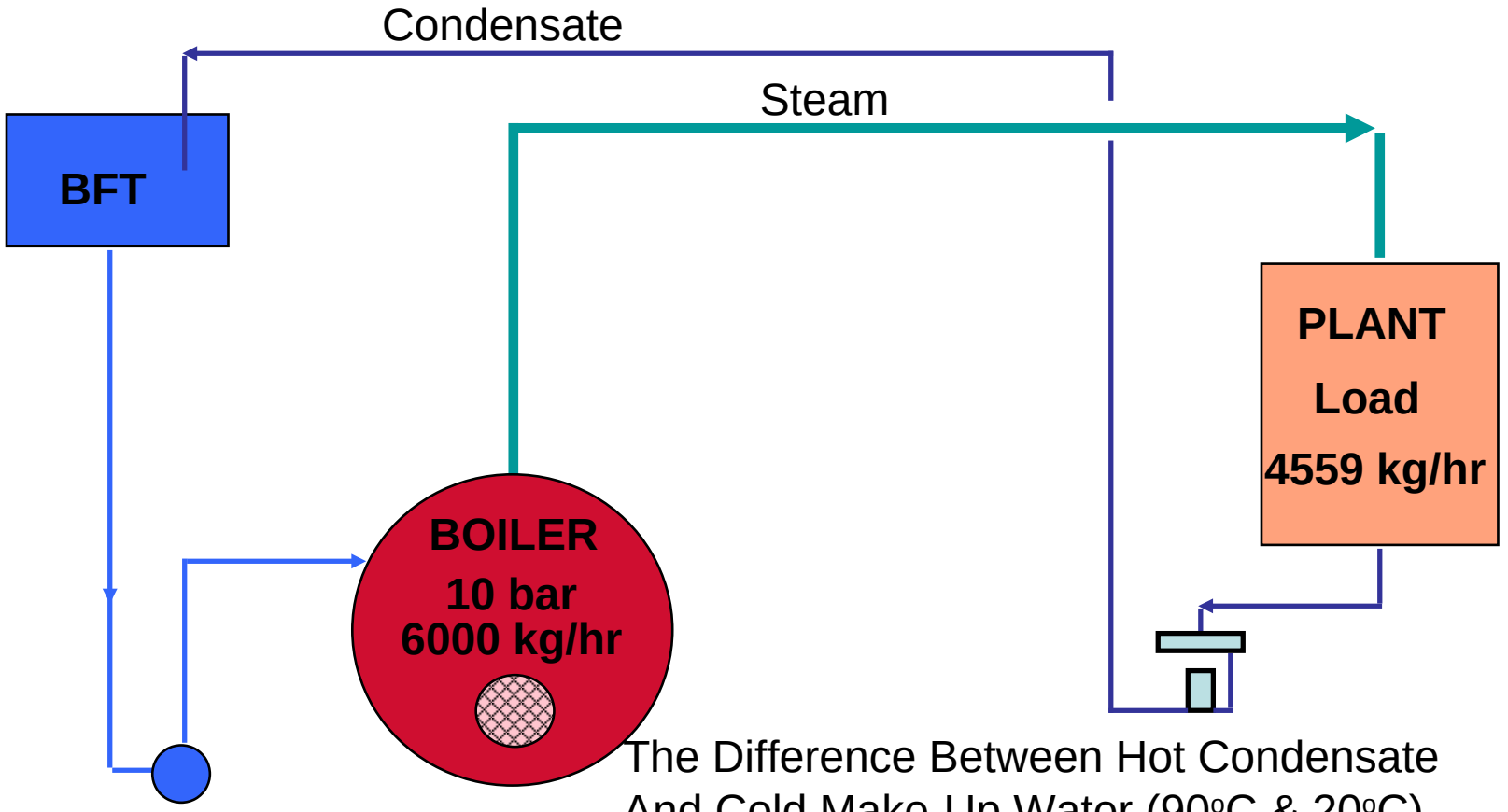


How much Steam is available for use at the Plant …?



Where the BIG Savings can be made ...

Condensate Recovery



The Difference Between Hot Condensate And Cold Make-Up Water (90°C & 20°C)

4559 kg/hr, Saving..... 574 kg/hr

Condensate Recovery Package

EVERY *6 ^{o}C RISE* IN

FEED WATER TEMPERATURE

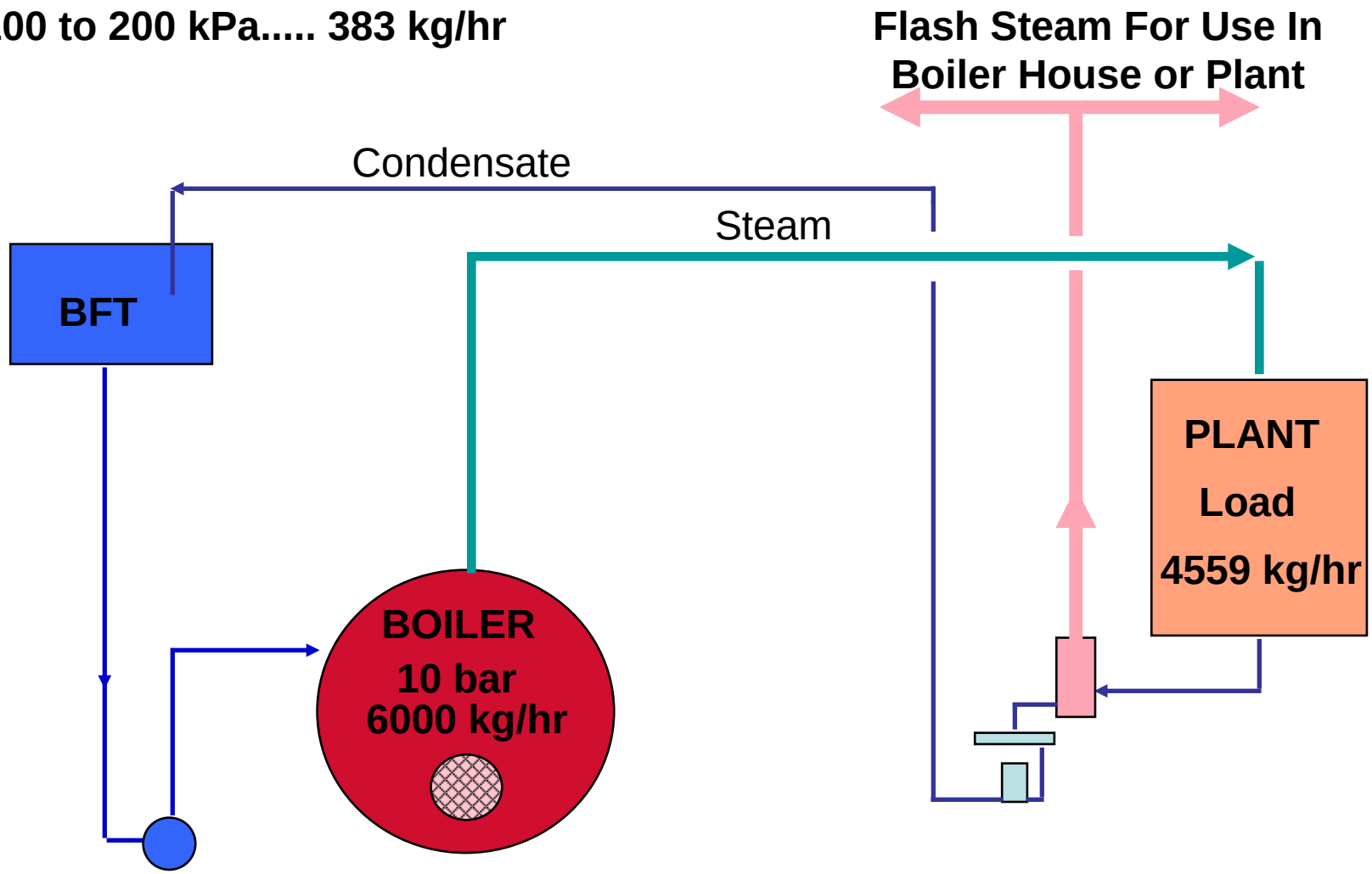
EQUALS

1% FUEL SAVING

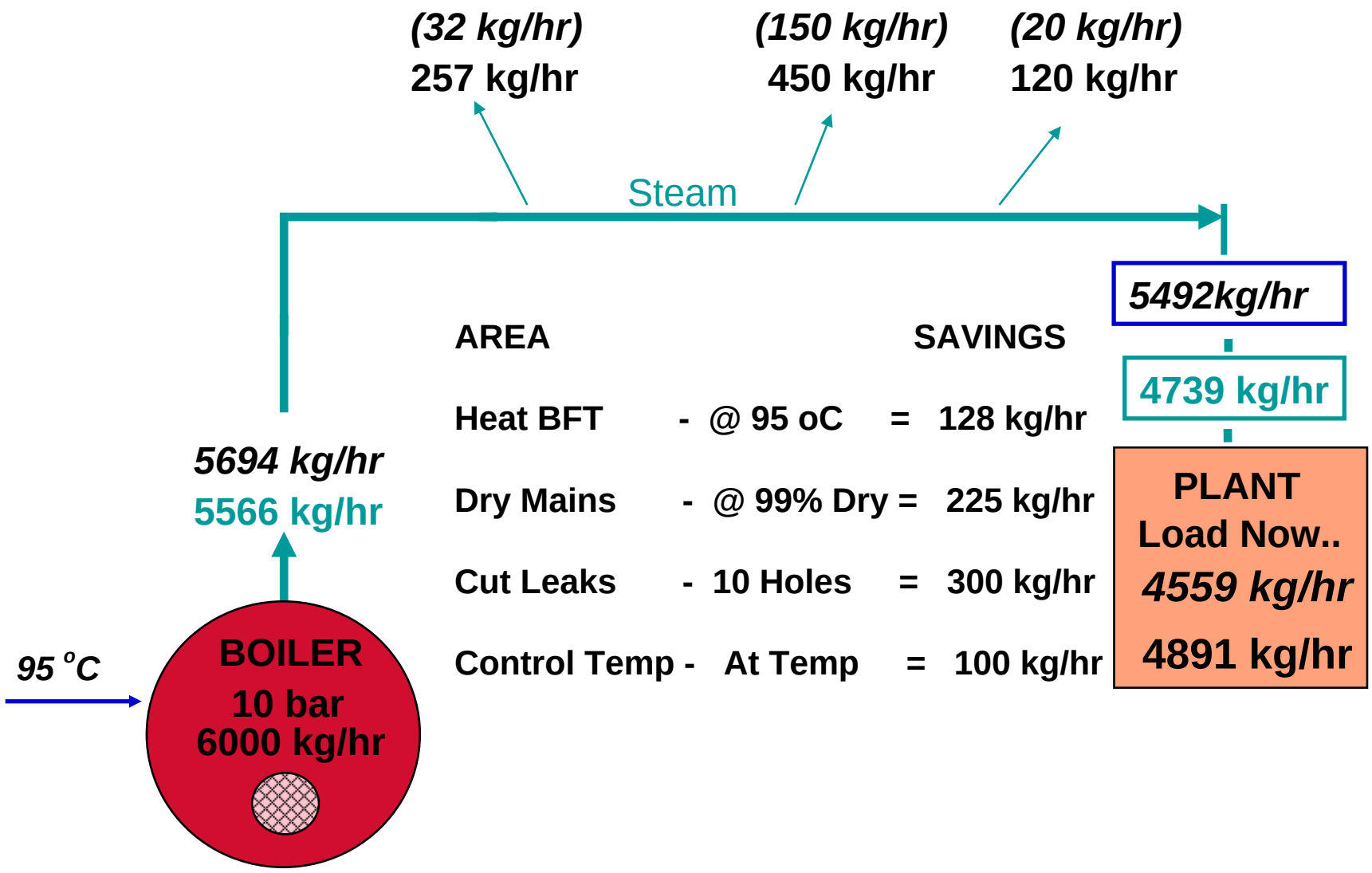
AT THE BOILER

Flash Steam Recovery

How Much Is Available If The Plant Load Is 4559 kg/hr @ 700 kPa
Up To 100 kPa..... 586 kg/hr
100 to 200 kPa..... 383 kg/hr



Where savings can be made at minimum cost



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Steam System Surveys
And Steam Plant Surveys
are conducted by
Spirax Sarco

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