

Energy & Fuel Saving
by reducing steam consumption for
Tire manufacturing facilities.

Optimization of steam consumption using

O-TRAP

Orifice Type Steam-Trap



**Energy &
Fuel cost saving design**

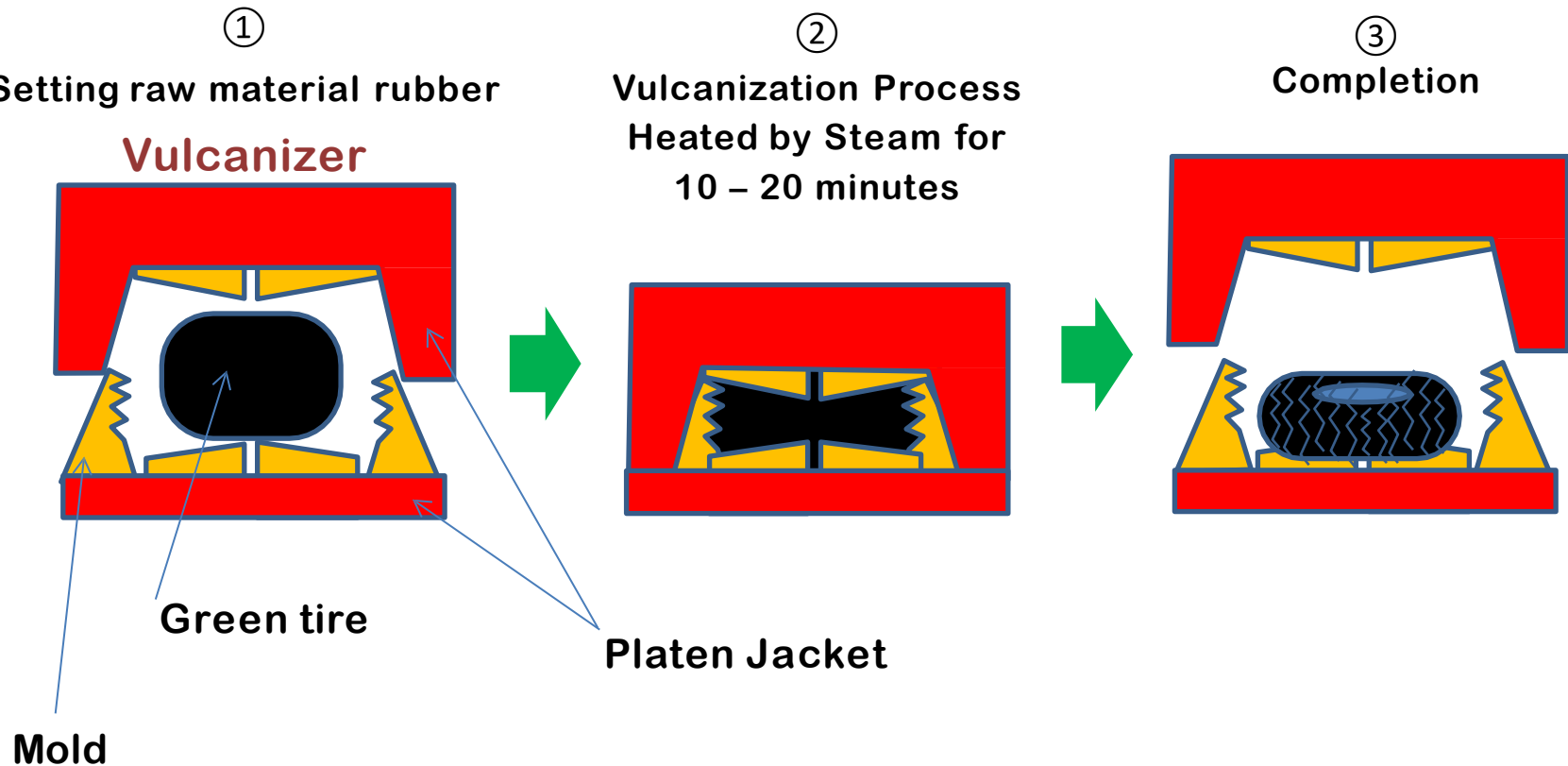


Scope of testing :

- ① Reduce steam consumption of the vulcanizer.
- ② Converting steam reduction amount into CO₂ reduction and global warming protection
- ③ Improve maintenance management method of steam facility and reduce maintenance work.
- ④ Stabilize the quality of product.

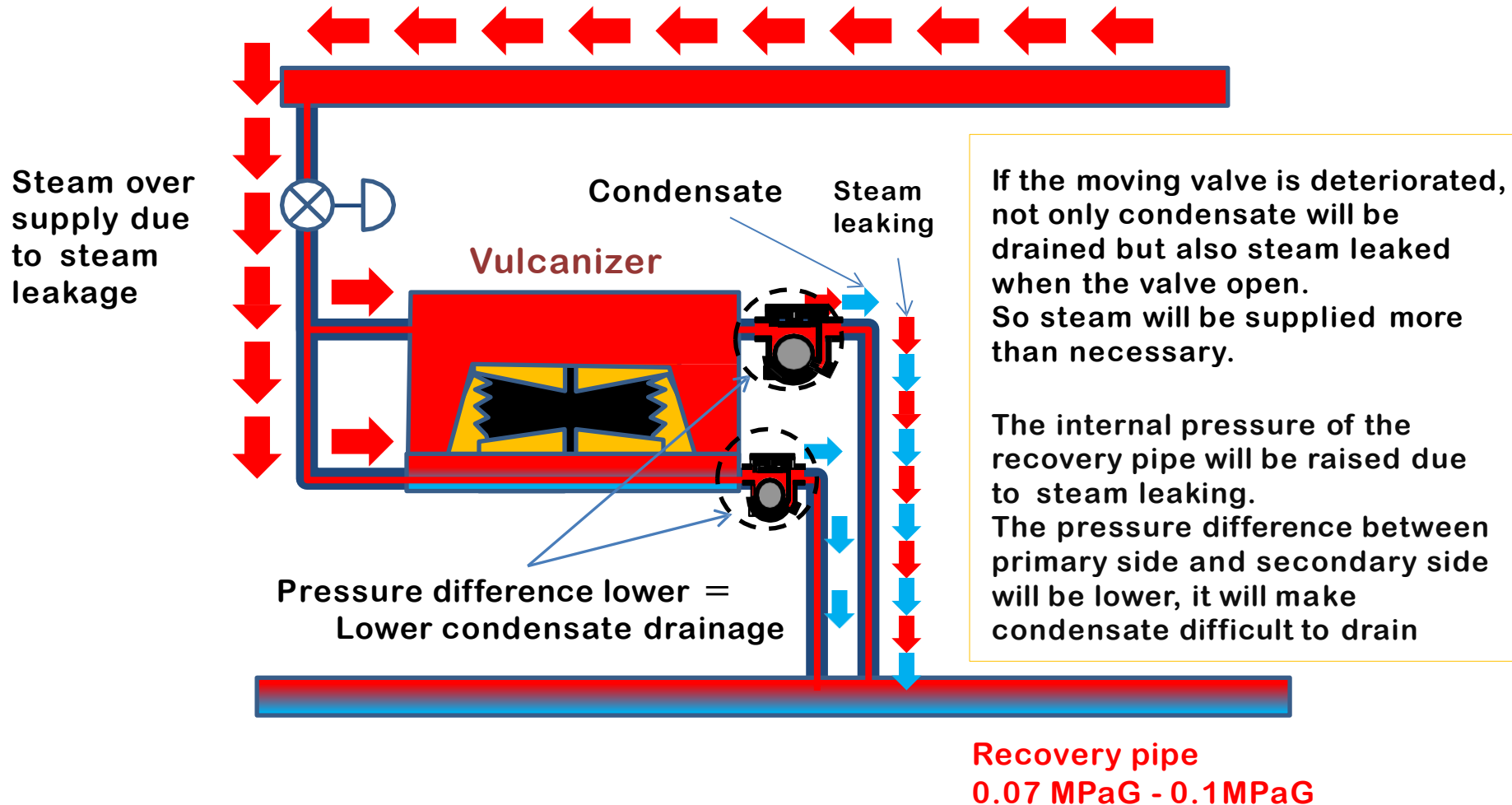
❖ Steam consumption reduction of Vulcanizer

Vulcanization process : the indirectly heating of raw material rubber in the metal mold by steam. (platen jacket).



❏ Steam loss by moving valve type of steam trap

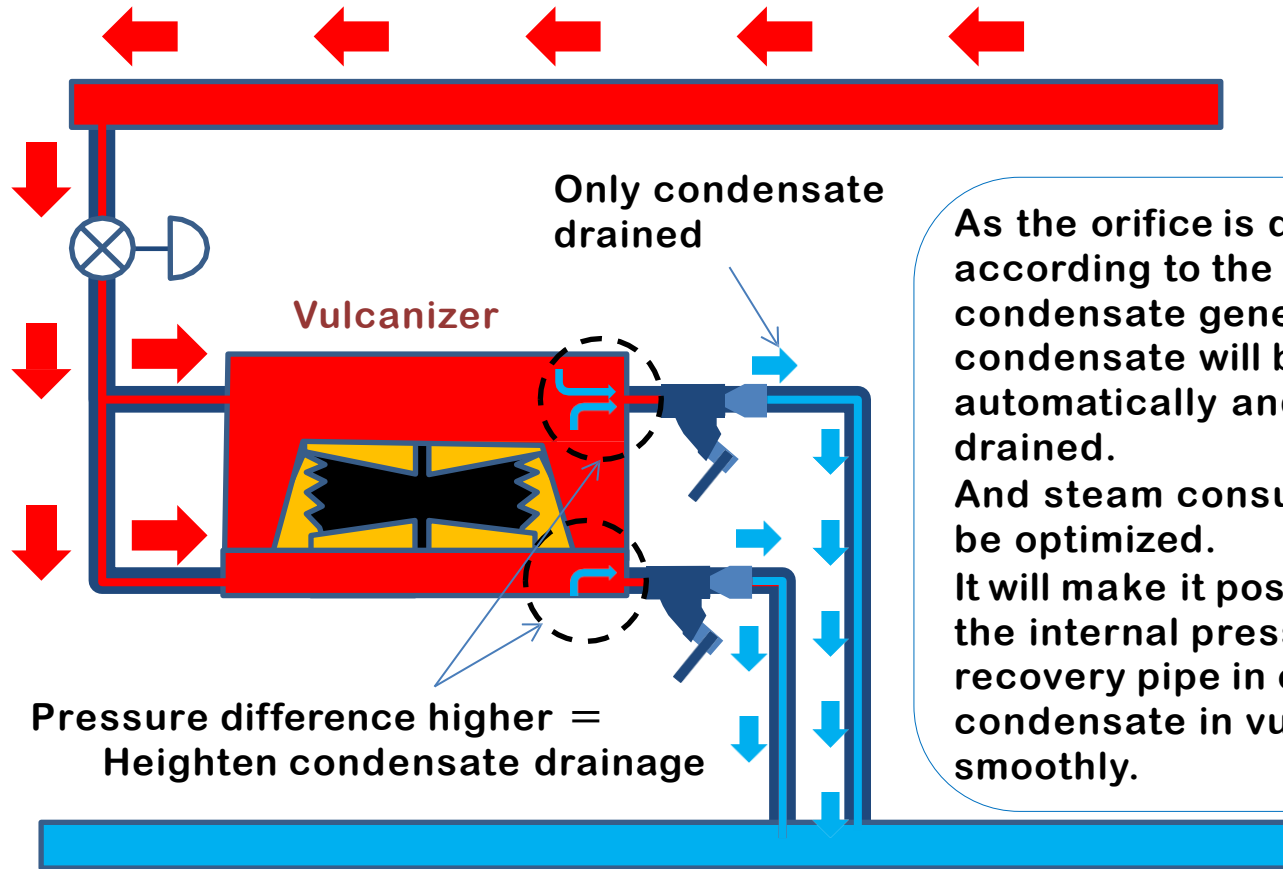
The pressure of main steam pipe 1.0 MPaG - 1.6 MPaG



∟ Advantage of O-TRAP

The pressure of main steam pipe 1.0 MPaG - 1.6 MPaG

Steam supply only for consumption



As the orifice is designed according to the amount of condensate generated, only condensate will be automatically and fairly drained. And steam consumption can be optimized. It will make it possible to lower the internal pressure in the recovery pipe in order to drain condensate in vulcanizer smoothly.

Recovery Pipe
0.05 MPaG - 0.08 MPaG

② Confirmation of global warming effect gas reduction

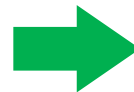
From Potentiality of steam reduction 1,400 kg/h

.... 11,200 tons / year (operation of 8,000 hours)

Potentiality of CO₂ reduction = 1,881.6 ton/year of CO₂

Steam reduction (11,200 ton/year x 2.8 GJ/ton x 0.0601 ton/GJ –CO₂

Steam for industry 1,000 kg = 168 kg-CO₂



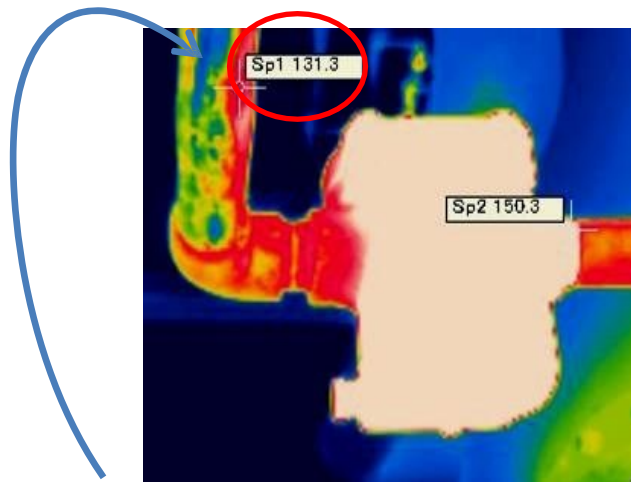
* Formula from Ministry of the Environment announced emission factor (Industrial steam conversion)

3 Reduction of Maintenance Work

There is no steam leakage due to design of the orifice type **O-TRAP**

However, in the case of miss selection or operation conditions changing, there will may occur steam leakage because of the changing of load factor of condensate.

You can check the temperature of the surface of pipe by thermography so that you can understand the current status of operation.

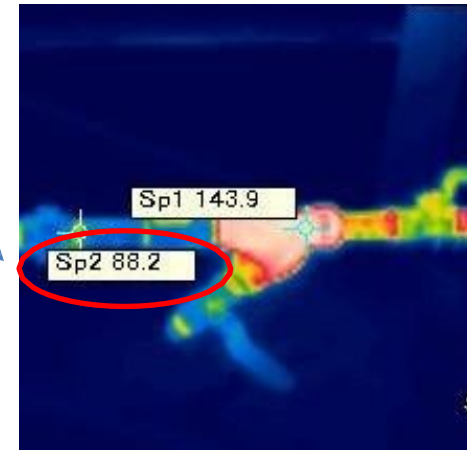


Abnormal (Outlet temperature : 131.3 °C)



Traditional Steam Trap

Flow direction of Steam



Normal (Outlet temperature : 88.2 °C)



O-TRAP

4 Stabilizing the quality of products

The moving valve type of steam trap or solenoid valve sometimes temporally stagnate the drainage of condensate according to the timing of opening or closing of moving valve and lower the temperature of the mold.

O-TRAP always drain condensate because of no moving valve and keep the temperature of inlet stable so stabilize the quality of products.

