FEEDWATER HEATER

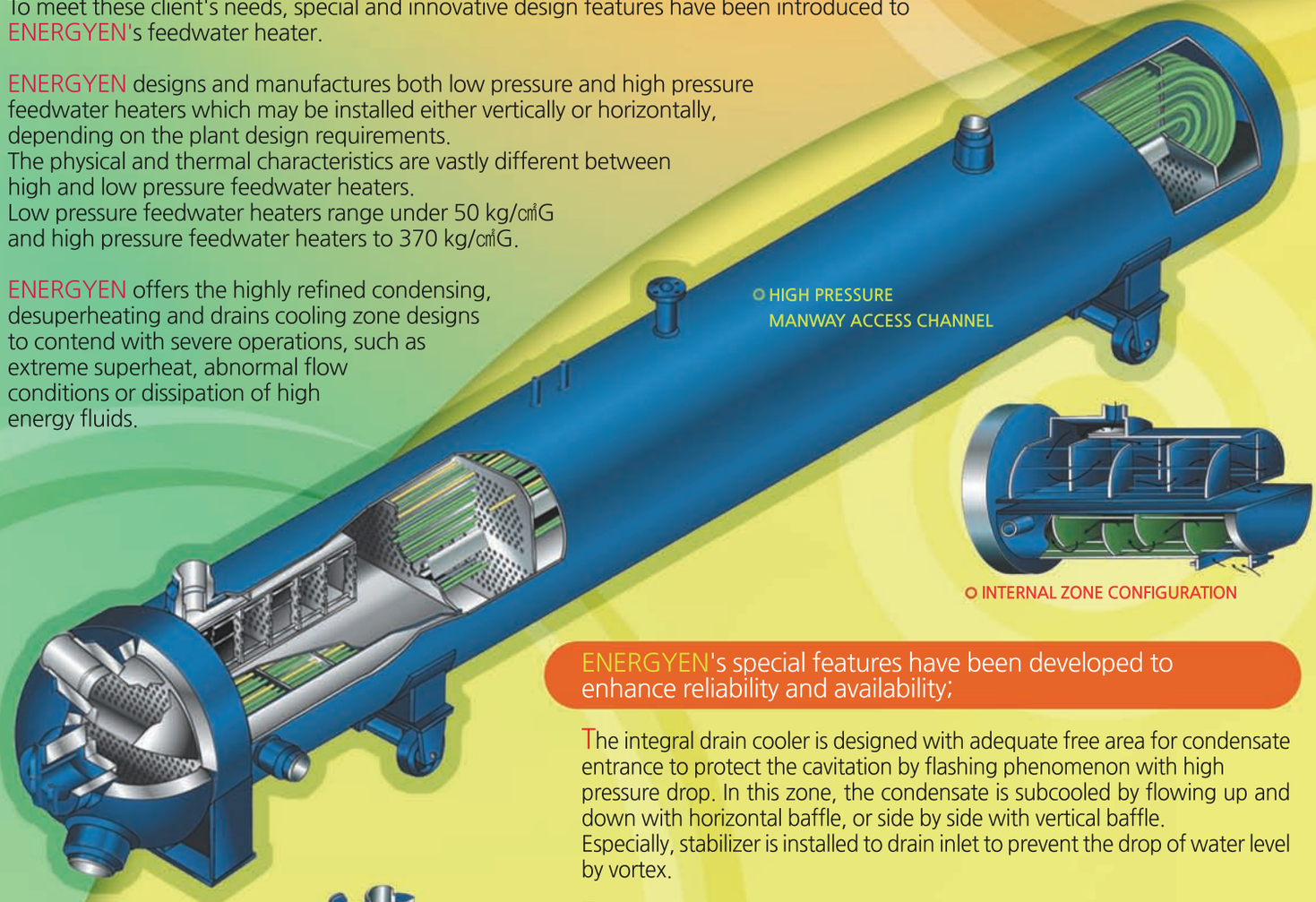
Feedwater Heaters are inevitably required to promote the energy efficiency of electric power generation cycle.

Owners and operators are anxious to look for the most efficient and cost saving feedwater heater to assure a long life operation without trouble and a good performance.

To meet these client's needs, special and innovative design features have been introduced to ENERGYEN's feedwater heater.

ENERGYEN designs and manufactures both low pressure and high pressure feedwater heaters which may be installed either vertically or horizontally, depending on the plant design requirements.
The physical and thermal characteristics are vastly different between high and low pressure feedwater heaters.
Low pressure feedwater heaters range under 50 kg/㎠G and high pressure feedwater heaters to 370 kg/㎠G.

ENERGYEN offers the highly refined condensing, desuperheating and drains cooling zone designs to contend with severe operations, such as extreme superheat, abnormal flow conditions or dissipation of high energy fluids.



O HIGH PRESSURE
MANWAY ACCESS CHANNEL

O INTERNAL ZONE CONFIGURATION

ENERGYEN's special features have been developed to enhance reliability and availability;

The integral drain cooler is designed with adequate free area for condensate entrance to protect the cavitation by flashing phenomenon with high pressure drop. In this zone, the condensate is subcooled by flowing up and down with horizontal baffle, or side by side with vertical baffle.
Especially, stabilizer is installed to drain inlet to prevent the drop of water level by vortex.

The integral desuperheating zone is located at the hottest feedwater pass and is thermally designed to maintain the dry wall condition to prevent tube errosion. In case of large steam flow, split-pass design is adapted to remove the tube damage by vibration.

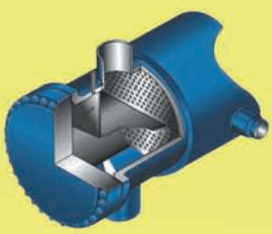
When the extraction steam is greater than 400℃, double shrouded configuration is employed to reduce thermal stress by temperature gradient at tubesheet to skirt and shell to skirt joint.

Inactive zone is made by heat shield in front of tubesheet and heat shield reduce thermal stress by temperature gradient through tubesheet, specially, corner part between tubesheet and skirt.

During normal operation, heater shall be vented continuously to prevent the deterioration of thermal performance and the corrosion by built-up of non-condensable gases.
To gather and remove gases efficiently, the full length venting duct is installed at center of bundle.

The high cycling temperature cause the tube weld joint failures by metal expansion and contraction.
However, ENERGYEN is sure that there are no leakage since workers have much experience for tube end welding skill for various material.

O HIGH PRESSURE
FULL ACCESS CHANNEL



O LOW PRESSURE
FULL ACCESS CHANNEL