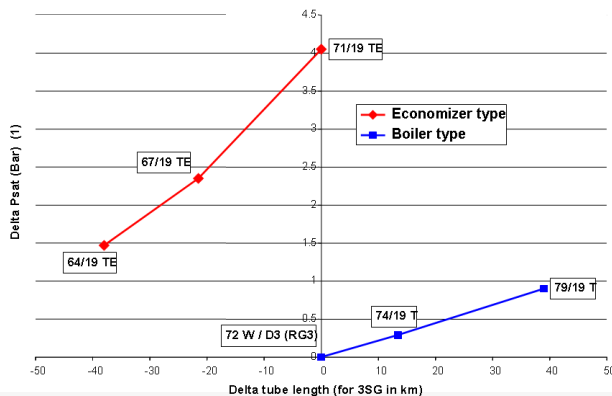


## Natural Circulation Axial Economizer Steam Generator

Framatome has developed the **Axial Economizer Steam Generators** to significantly increase the thermal efficiency of a conventional boiler (higher steam pressure with the same heat transfer area) while preserving the operation flexibility of the said boiler type heat exchanger.

The axial economizer steam generator benefits from the **operation experience feedback of the N4 French plants, RG4 Sweden plant and new EPR plants** and from the latest technical improvements in the field.

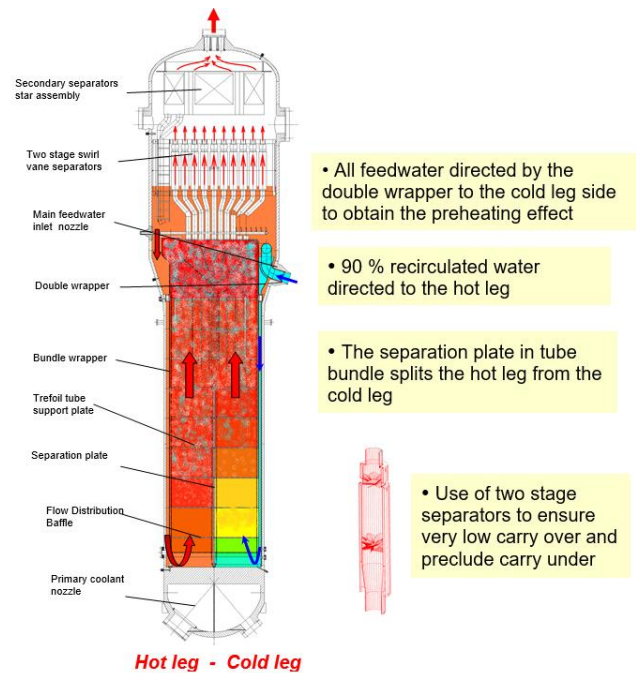
It can be implemented when replacing steam generator to improve their output performances and life span.



### Customer benefits

- **Power uprate** (Increase outlet pressure and power for a given heat surface exchange)
- **Minimize In Service Inspection cost** (less tubes, less surface)
- **Improved corrosion resistance** (Alloy 690 TT tubing, stainless steel for upper internals)
- **Increase life span** (60 years) (mitigation of thermal stratification and water hammers - dedicated auxiliary feedwater system and improved pressure shell design)
- **Increase operating flexibility** (High performance of the steam / water separation equipment, No cross flow leading to potential tube vibrations, excellent water level stability)
- **Minimize maintenance costs** (Sludge management facilitated, High permeability tube support plate to reduce clogging risk, Foreign object catcher)

**Your performance is our everyday commitment**



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### Technical informations

- Demonstrated operating power up to 1150 MWth.
- Moisture carry over < 0,01%
- Triangular pitch with OD of tube of 19,05 mm
- Pressure vessel made of class 2 material : SA-533 type B and SA-508 Gr 3
- Full depth hydraulic expansion
- Reduced tube to tubesheet gap
- Layering installation of AVBs with reduced gap
- Stainless steel primary separators
- Broached 410 stainless steel support plates
- Double pocket dryer vanes
- Improved access to peripheral tubes

### Key figures

8 plants upgraded for more than 108 years of cumulated commercial operation time.

Successful replacement of steam generator models with a power uprate greater than 15%.

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