

# Anhydro Falling Film Tubular Evaporator

## Evaporator Upgrading

SPX can help you to increase throughput and make significant energy savings by rebuilding and modernising an existing Falling Film Tubular Evaporator (FFTE) from SPX or another supplier. You can also upgrade equipment to ensure compliance with the latest product standards by modifying the product heat treatment system.

### Boost Capacity and Concentration

The most common way to upgrade an evaporator with Thermal Vapour Recompression (TVR) is to add additional effects and perform vapour recombination across more effects. (See fig. 1). This means higher capacity and lower specific steam consumption.

As an example for concentration of whey products, an existing evaporator can be equipped with a high concentrator (finisher), enabling you to raise the final solids content to between 60 and 62% TS.

### Cut Energy Consumption and Ensure Quality

Another frequently used option is to install a Mechanical Vapour Recompression (MVR) evaporator as a pre-evaporator, and to convert the existing TVR evaporator into a finisher/ high concentrator. This provides a significant capacity increase and a substantial reduction in energy consumption.

Older evaporators often fail to ensure that the final product meets specific functional, physical and bacteriological requirements. Rebuilding can thus also include a modernisation of the pasteurisation system. And by splitting up the existing effects, you can also achieve precise product retention times in a single pass.



### Optimise Benefits Through Careful Planning

SPX will work closely with you to define your objectives, evaluate your existing equipment and the available options, and help you achieve the most cost-effective, long-term capacity increase, energy savings and product enhancement by building on your existing investments.

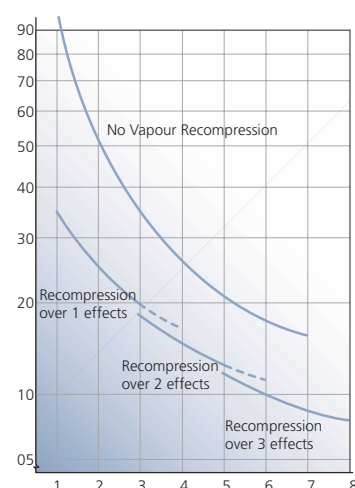


Fig. 1: Steam consumption for SPX multi-effect evaporators and vapour recombination over various effects. The curves represent standard conditions for a typical product.

## Evaporator Control System

Many customers choose to implement new automated process control systems in connection with an upgrade. Automated process control ensures minimum deviations from programmed parameters, and is the most cost-effective way of ensuring that specific physical, functional and bacteriological final product properties always comply with ever more stringent quality and hygiene standards.

## Advantages with an Automated Process Control System:

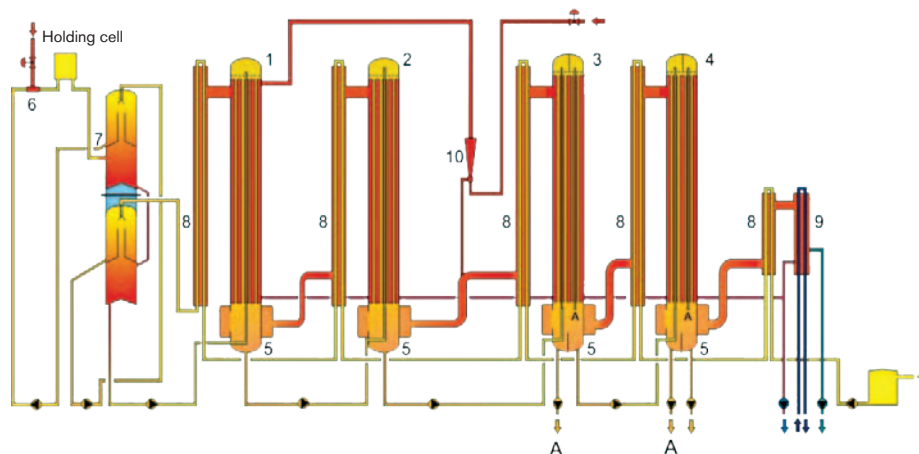
- centralised plant control
- reduced waste – less environmental impact
- plant and operator safety
- minimised production tolerances
- optimum operating economy

### Process flow 1

#### Anhydro Falling Film Evaporator With

##### TVR (FFTE-TVTR):

- |     |                   |
|-----|-------------------|
| 1-4 | Calandrias        |
| 5   | Vapour separator  |
| 6   | DSI unit          |
| 7   | Heating / Flash   |
| 8   | Pre-heater        |
| 9   | Condenser         |
| 10  | Thermo-compressor |

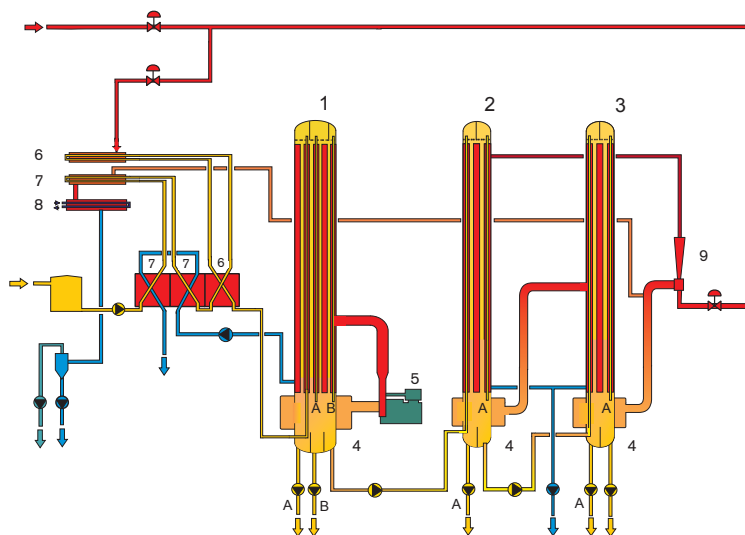


### Process flow 2

#### Anhydro Falling Film Evaporator

##### (FFTE-MVR/TVR):

- |     |                   |
|-----|-------------------|
| 1-3 | Calandrias        |
| 4   | Vapour separator  |
| 5   | High-pressure fan |
| 6   | Pasteurizing unit |
| 7   | Pre-heater        |
| 8   | Condenser         |
| 9   | Thermo-compressor |



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