

Stilmas Vapour Compression Stills

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Stilmas Equipment

Pre-treatment
Purified Water
Multi Effect Stills
Vapour Compression Stills
Pure Steam Generators
PS & WFI Combinations
Storage & Distribution Systems

Fedegari Equipment

Saturated Steam Sterilisers
Counterpressure Sterilisers
UltraWashers
Dry Heat Sterilisation
Pathogen Sterilisers
Combined Units

Fedegari Autoklaven

Laboratory Sterilisers

Fedegari-Bio Com Equipment

Low Temperature Surface Decontamination Stations
Laminar Flow Carts
Isolators and Cleanroom Contamination Controls

Bano Equipment

Stainless Steel Cleanroom Furniture
Specialist Cleanroom Equipment

SteriTech Limited

Complete Turn-Key Projects

SteriTech Limited

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www.steritech.co.uk

Stilmas offer two ranges of Vapour Compression Stills:

the BD series with medium speed turbo-compressors, capacity range from 100 - 24,000 l/hr;

the FA-HR series with low speed volumetric compressors, capacity range from 50 - 4,500 l/hr.

Both types produce distilled water for injectable use which meets the latest requirements of the international pharmacopeias including USP, EP and JP.

VC Still Main Features

Many features make the Stilmas Vapour Compression Stills one of the best available for example:

- *Distillate can be output cold at 35°C or hot at 85°C dependent on the requirement.*
- *Feedwater need only be softened and chlorine free; purified water is not required.*
- *There is no need for cooling water.*
- *Energy efficiency is superior to all but the very largest multi-effect stills. This is due to a fundamentally more efficient thermodynamic cycle, optimised compressor design and to rigorous heat recovery systems.*
- *The distilled water is produced pressurised so no additional pressurisation system is required to elevate for tank filling.*
- *Fast response: from hot standby, distillate can be produced within 10mins*



Operating Principles

Vapour Compression Stills follow a simple operation:

Pre-heated feed water is evaporated in a vertical shell and tube heat exchanger (tube side)(8)

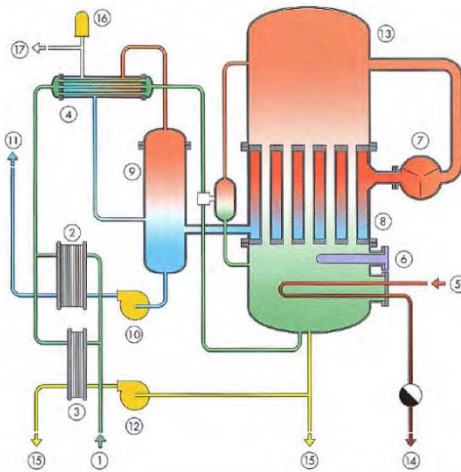
The steam flows into the separation chamber (13) where the decontamination occurs (droplet and consequently endotoxin reduction) The resultant pure, dry steam is drawn off by the compressor (7) and returned under slight pressure to the shell side of the main heat exchanger.

This pressurized steam condenses in the exchanger, transferring its latent heat to the incoming flow of feedwater being evaporate. This substantially recovers the energy provided by the compressor.

The condensed WFI is sent to a hydrostatic column (9) for degassing before finally being pressurized by a sanitary pump (10). Depending on the output temperature required, the sensible heat in this WFI can be recovered via a sanitary feedwater pre-heater (2)

Feed water is further pre-heated within heat exchangers (3) & (4) to recover as much heat as possible from the concentrate and non-condensable gasses.

Supplementary heating is needed particularly at cold start-up. This is provided by either by electrical element (6), steam coil (5) or plate heat exchange



Construction Characteristics

The vessel and pipework are made from AISI 316L stainless steel, pickled and passivated active surfaces (mirror or electro polishing to 0.6µR is available as a paid option).

Product contact surfaces of the compressor are electroless nickle plated.

The separation chamber is entirely empty. This ensures simple inspectability. The absence of welded structures dramatically reduces the risk of corrosion and gives a long expected life

The pre-heater in contact with non-condensable gases is shell and tube DTS, the tubes expanded to avoid welds



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Compressor Technologies

SteriTech Services

SteriTech, like our suppliers are solely dedicated to the regulated pharmaceutical sector. This enables us to fully understand not only the quality of performance required, but the documented evidence of all activities.

Project Management

A dedicated Project Manager follows each sale through to OQ handover. Liaising with customers, suppliers and field operations team to ensure effective project delivery.

Project Sitework

From our local highly trained team offering

- Installation Assistance
- Start-up & Commissioning
- SAT, IQ/OQ
- Calibration
- Thermal Mapping
- Cycle & Process Development

After-Sales

Full life-time local support for equipment including

- Full Training Packages
- Technical & Process support
- Spare parts supply
- Preventative Maintenance
- Calibration
- Routine Validation
- Upgrades and revampings

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There are three classes of compressor technology:

Low Speed: volumetric lobe-type compressor, belt driven with standard bearings operating at below 1000 rpm. This is the most efficient technology.

Medium Speed: centrifugal compressors with belt transmission and standard bearings, operating around 2000 rpm.

High Speed: turbo- or centrifugal compressors operating at 4000 rpm or above with special high-speed bearings, pressurised lubrication systems and lubricant cooling. Bearing set-up and rotor balancing is critical.

Stilmas offer as standard medium speed compressors, with low speed options.

Medium Speed Compressor Details:

1500 – 2500 rpm;

Aluminium construction, Electroless nickel plated contact surfaces;

Standard lubrication, site serviceable with standard bearings;

Low noise;

Energy efficiency approaching that of volumetric compressors.

Vapour Compression Misconceptions

There are some misconceptions regarding Vapour Compression Stills when compared to Multi Effect Stills. Below some of these clarified:

WFI from a Multi Effect still is more pure?

WRONG – WFI from a Thermo Compressor is of the same quality as from a Multi Effect still and complies with the same international standards

Multi Effect Stills operate at higher temperatures and are therefore more effective at microbial and endotoxin removal?

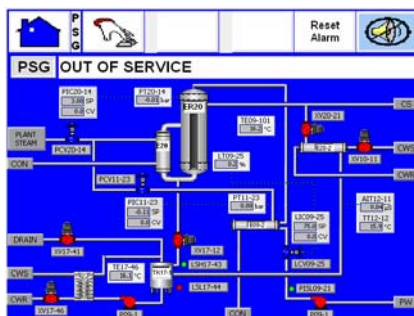
WRONG – Multi Effect Stills and Vapour Compression Stills are both equally effective. The temperature difference is due to the different thermodynamic processes. The last effect of an ME operates at the same temperature as a VC

Multi Effect Stills are more reliable than Vapour Compression?

WRONG – The reliability depends on the number and types of components. Both offer decades of use with minimal down-time.

Vapour compression stills are not FDA compliant?

WRONG – They are full FDA compliant and widely used in USA



SteriTech/Stilmas Customer Support

SteriTech and Stilmas have been partners for over 20years building a good relationship allowing SteriTech to offer customers full support:

Feasibility studies

Advice and guidance to machine specifications

Full project management

DQ/HAZOP expertise

Sitework/Preventative maintenance from full qualified, experienced, FAS trained local engineers

Support for the lifetime of the machine

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