



Low Emissions Distilleries

Sustainable Innovation for
the *Future of Distillation*



**Omnia
Technologies**

Enabling Evolution

Sustainable Innovation by Frilli

Frilli's Low Emissions Distilleries technology is designed to drastically reduce CO₂ emissions and energy consumption, offering sustainable, high-efficiency solutions for both new distillation plants and the revamping of existing facilities.

The Low Emissions Distilleries technology optimizes every stage of the distillation process through the implementation of an advanced heat recovery systems (MVR). It moves the energy use towards electricity, perfectly coupled with renewable sources, without compromising the quality of the final spirit.

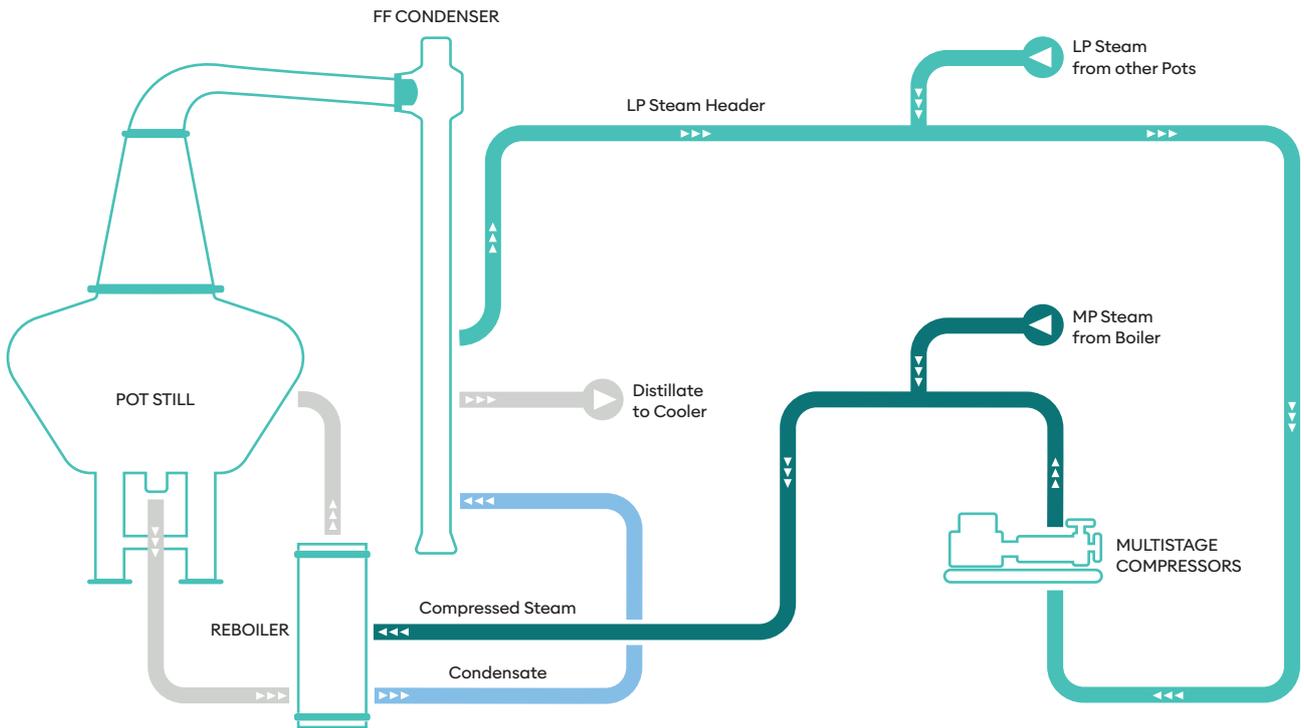
The condensation heat is recovered to generate low-pressure steam, which is then sent to a mechanical compressor. Using electricity, the compressor increases the steam's energy level that, in this way, can be used as heating source, significantly reducing energy consumption and improving overall efficiency.

Mechanical Vapor Recompression technology

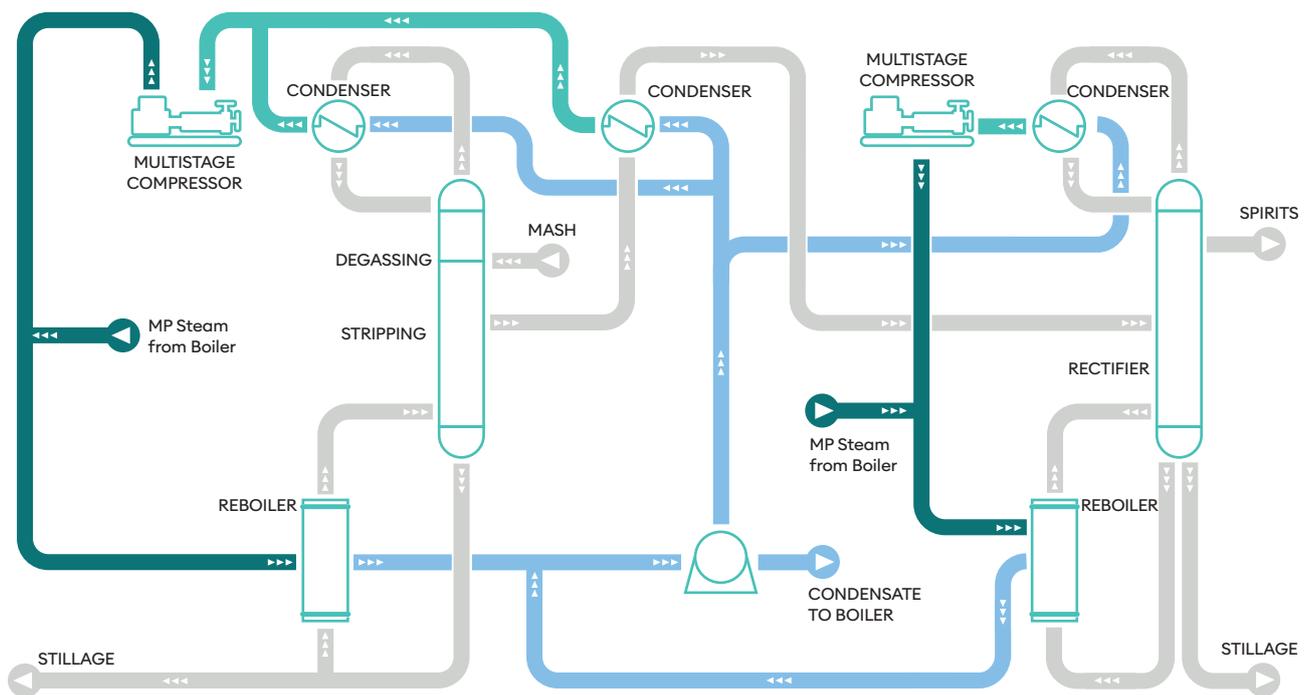
1. Alcoholic vapors heat is recovered at Falling Film condenser, generating low-pressure steam (LP).
2. Low-pressure steam (LP) is sent to the mechanical compressor, where its energy level is increased using electricity as power source.
3. Compressed steam is conveyed at the reboiler and used as hot medium for distillation process.
4. Condensate is recycled towards condensers to generate low-pressure steam (LP) again.

As a matter of fact, condensation energy is retrieved, valorized and used to heat-up the distillation process itself, generating an energy recovery up to 80%.

Discontinuous plant



Continuous plant





Key Benefits

Drastic Reduction in Energy Consumption

Thanks to an advanced heat recovery system, the distillery reuses process heat to drastically cut down net energy needs.

Up to 80% Lower CO₂ Emissions

By minimizing steam consumption and reducing dependence on fossil fuels, CO₂ emissions are reduced by as much as 80%.

Heat Recovery for Maximum Efficiency

The system captures alcohol vapor heat to generate and compress low-pressure steam, reintegrating it into the process with minimal additional energy input.

Flexible Integration

Designed for both new installations and retrofit upgrades, making it ideal for sustainable revamping of existing plants.

Significant Environmental Gains

Lower carbon footprint, reduced fossil fuel use, decreased freshwater demand, and an overall more sustainable production cycle.

No Impact on Product Quality

The integrity of the organoleptic profile of the spirit is fully preserved, ensuring consistent quality.

Sustainable case histories

Midleton Distillery

Irish Distillers Limited (IDL)

Client Profile

Midleton Distillery produces Pot and Grain Irish Whiskey. Its Spirits are marketed as Jameson, Redbreast and Midleton label.

Irish Distillers were searching for a partner to convert the current Pot Still process to a low-emissions approach.

Project Description

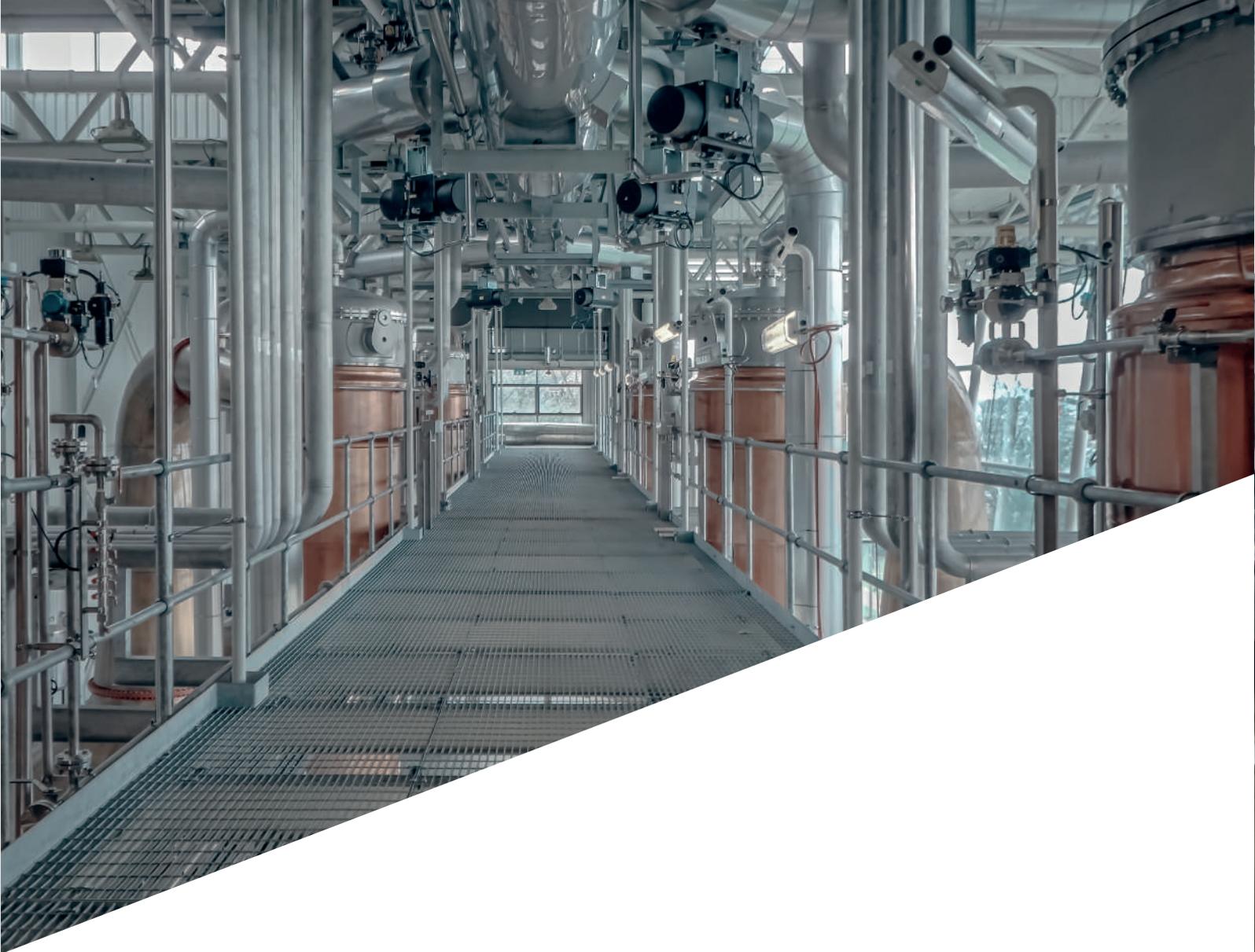
- **Construction and procurement** of new **steam generators** exchangers able to recover energy from Alcoholic vapors.
- **Engineering** of the **complete distillation unit** to convert the current technology to a **sustainable cutting-edge** set-up.
- **Supply** of all new required **automation** to ensure **energy demand minimization** in all the process steps.

Main Project Highlights

- Customer decided to work with Frilli, since the company **demonstrated** to know the possible impact of the plant modification on the **final product's flavor**.
- Whiskey **organoleptic profile** has been **certified** with a **dedicated test set-up**.
- A follow-up project aimed at **double** the **plant capacity** with **low-emissions** approach has been already started (engineering phase).



< To watch the video



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Via Feltrina, 72 - 31040
Signoressa di Trevignano (TV) Italy

help@omniatechnologiesgroup.com
www.omniatechnologiesgroup.com

FRILLI

Strada dei Laghi, 15 - 53035
Monteriggioni (SI) Italy



To learn more >

www.omniatechnologiesgroup.com