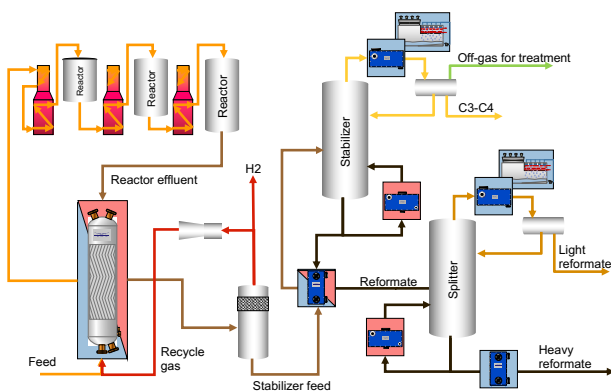


Catalytic reforming and isomerization

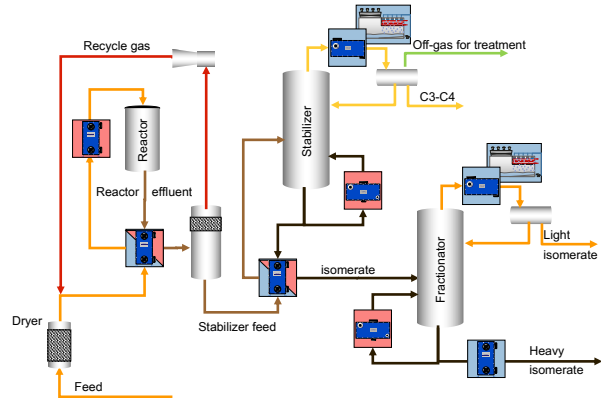
Gasoline production is still the main purpose of many refineries. Maximizing yield and quality of the gasoline requires additional processing to get the most out of light oil, condensate and naphtha process streams. Whether it is your catalytic reforming or isomerization unit that needs to be optimized, Alfa Laval has the experience and solutions that will make the difference.



Catalytic reforming



Isomerization



Headline to be change to catalytic reforming & isomerization

Today, there are more than 300 Alfa Laval Packinox heat exchangers operating as CFE interchangers in catalytic reforming units all over the world, and this technology has become the standard for new process units. Additionally, there are more than 70 Alfa Laval Compabloc heat exchangers installed in catalytic reforming and isomerization units, maximizing capacity, yield, energy efficiency and uptime of these plants!

To learn how other refineries use Alfa Laval solutions in these processes, visit www.alfalaval.com/refinery/experience.

Capacity improvements

In existing process units, capacity is often limited by reactor heater or recycle compressor capacity. However, designing the process with maximum energy recovery at a lower pressure drop in the combined feed/effluent exchanger off-loads the heater and the compressor, making it possible to increase the unit capacity. With Alfa Laval solutions like Packinox and Compabloc heat exchangers, you can do just that.

Product yield improvements

Another common bottleneck during hot summer months, or in regions with high ambient temperature, is the inability of cooling and condensing the light vapour fractions from the stripper or fractionator columns. A closer temperature approach to the cooling media always maximizes gasoline production in your process unit. With Alfa Laval Compabloc heat exchangers and wet surface coolers, you can minimize the temperature approach to the supply temperature of the cooling media.

Energy efficiency improvements

To maximize the energy efficiency of the process units, you can design the combined feed/effluent exchanger with a hot approach of as low as 20°C (36°F). This reduces the reactor heater duty by at least 15%. Plus, it offloads your effluent cooler with the same amount of duty, reducing its power consumption. With Alfa Laval Packinox and Compabloc exchangers, such an investment can result in a payback time of less than 12 months.

In a similar way, if you design a fractionation section, such as the reformate or isomerate splitters, with maximal energy recovery from the hot hydrocarbon fractions into the column feed stream, you can reduce the steam consumption of the column reboiler. Alfa Laval Compabloc heat exchangers can typically increase the energy recovery in these services by a minimum of 25%. In some cases, they can even eliminate the need for a final product cooler.

Improved sustainability

The energy efficiency solutions outlined above reduce fuel use in the reactor heater, cutting CO₂ emissions from this furnace by at least 15%. Less steam consumption in the reboiler also means reducing the capacity of the steam boiler and related CO₂ emissions.

On top of emission reductions, redesigning the process coolers and condensers to maximize the return temperature of cooling water can reduce cooling water consumption by at least 50%. With Compabloc heat exchangers, you can do this in a very cost-effective way and with a single heat exchanger on minimal plot space.

Minimizing CAPEX

When investing in a new catalytic reforming or isomerization unit, truly minimizing project CAPEX takes more than just using cost-efficient heat exchangers installed on minimum plot space. By optimizing the process design, you can achieve the lowest overall project cost.

- Lower overall pressure drop in the combined feed/effluent exchanger can reduce the size of the recycle compressor or increase capacity in an existing process unit without investment in more compressor capacity.
- Maximizing energy recovery in the combined feed/effluent exchanger can reduce the size of the reactor heater or increase capacity in an existing process unit without investing in more furnace capacity.
- Maximizing the energy recovery from hot fractions also reduces cooling capacity need, thereby further reducing investment in the effluent cooler or the final run-down coolers. Again, increasing capacity of an existing process unit can be done without investment in more cooling capacity.
- Better cooling/condensing of stripper and fractionator overhead vapour can minimize the cost of downstream compressor or gas treatment systems or increase capacity of an existing plant without investing more in these gas handling systems.

- Minimized cooling water requirements also minimize investment costs for the cooling water system. Alternatively, you can increase capacity in an existing plant without investment in this system.

These savings will be much higher than the savings in heat exchangers and their installation cost, but it requires optimizing the process around the efficiency of Alfa Laval Compabloc heat exchangers. This is why you need to involve Alfa Laval early in the project, before the process design is fixed. We will help you optimize the mass and heat balance of your process to make sure you will get the most efficient design – both for OPEX and CAPEX savings!

For a revamp of your existing process unit, payback can be less than a year with a maximum period of around two years, depending on the complexity of the project and how many of above savings we can implement. For a grassroots unit, you can realize millions of Euros in savings by optimizing the process design based on Alfa Laval solutions!



With Alfa Laval as your partner, you get access to world-leading expertise in process optimization. Together with your process engineers, we create highly efficient and reliable solutions that will take your plant to the next level.

Learn more and see all the facts from real-life customer cases at www.alfalaval.com/refinery

Our service offerings

Every Alfa Laval solution is backed by the market's only supplier with deep process knowledge and a global network of experienced experts.

Get to know more about our maintenance solutions at www.alfalaval.com/refinery/service

Products and solutions featured

Take a closer look at

- **Compabloc**
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- **Packinox**