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The innovation & license company
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Stamicarbon

STAMI UREA

# LAUNCH™ MELT

Stamicarbon's $CO_2$ stripping process, with Pool Condenser and Pool Reactor design, that simplifies the plant's overall design.

It greatly improves operability and reliability, plus guarantees maximum production output over the full lifetime of the plant.

# LAUNCH™ MELT

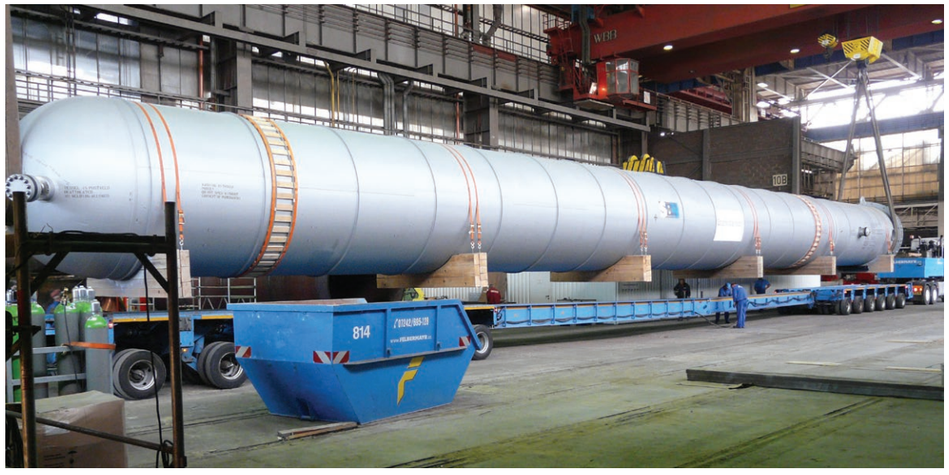
**The challenge**
To reduce investment, increase plant efficiency, reduce operating and maintenance costs and minimize plant emissions.

**Our solution**
Stamicarbon's answer is its LAUNCH MELT™ series. Depending on your capacity requirements, Stamicarbon's LAUNCH MELT™ series offers two designs:

1) **A horizontal high-pressure Pool Condenser combined with a vertical reactor**
2) **A horizontal high-pressure Pool Reactor Design (for smaller plant capacities)**

Capital investment is reduced due to its compact design which requires less equipment. This makes the process simpler and more stable and your plant much less maintenance intensive.

**This means:**
- Easy and stable plant operation due to pool condensation principle pool reactor
- Well established technology with an extensive proven track record
- Compact and low elevation plant design results in lower construction costs
- Easier maintenance and longer time between turn arounds with significant reduction on corrosion issues with Safurex®
- Suitable for any type of plant capacity (suitable for low and highest single line capacities)



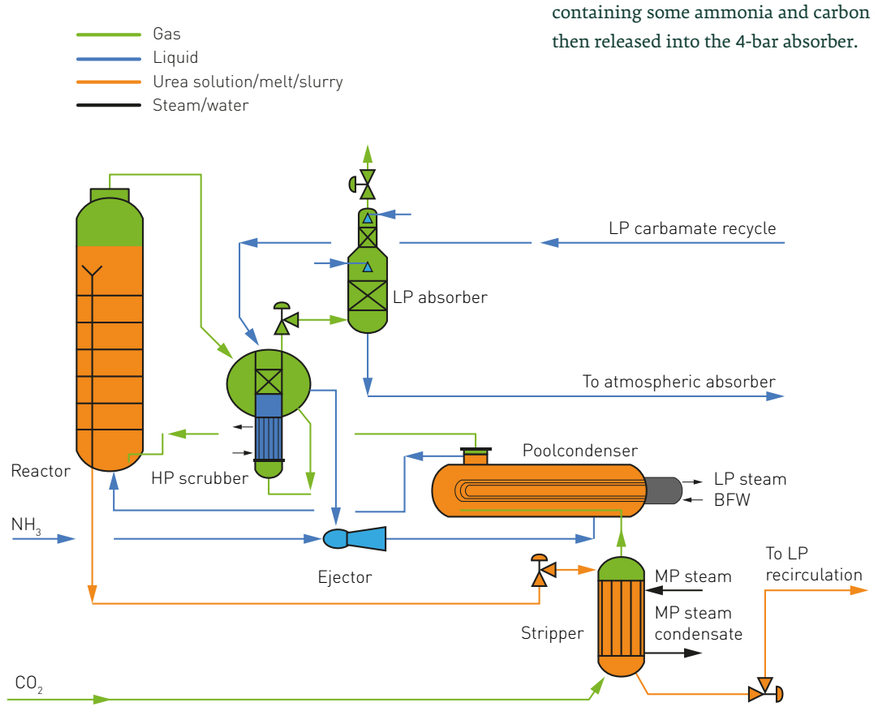
## The LAUNCH MELT™ Pool Condenser at work

Ammonia and carbon dioxide are introduced to the high-pressure synthesis using a high-pressure ammonia pump and a carbon dioxide compressor. The ammonia then drives an ejector, which conveys the carbamate solution from the high-pressure scrubber to the pool condenser. In the high-pressure stripper, the carbon dioxide, entering the synthesis as a feed, flows countercurrent to the urea solution leaving the reactor.

On the shell side, the high-pressure stripper is heated with steam. The off-gas of the high-pressure stripper, containing the carbon dioxide, together with the dissociated carbamate, is then fed into the pool condenser, where ammonia and carbon dioxide are condensed to form carbamate. The heat released by condensation and subsequent formation of carbamate is used to produce re-usable low-pressure steam.

After the pool condenser, the remaining gases and a liquid containing urea and carbamate enter the vertical reactor. Here, the final part of the urea conversion takes place. The urea solution then leaves the top of the reactor (via an overflow funnel) before flowing back into the high-pressure stripper. Ammonia and carbon dioxide conversions in the synthesis section of a Stamicarbon carbon dioxide stripping plant, are particularly high. As a result of that, the Stamicarbon $CO_2$ stripping process is the only commercial available process that does not require a medium-pressure recirculation stage downstream from the high-pressure stripper.

Gases leaving the reactor are fed into the high-pressure scrubber. Here, the gases are washed with the carbamate solution from the low-pressure recirculation stage. The enriched carbamate solution is then fed to the high-pressure ejector and, subsequently, to the pool condenser. Inert gases, containing some ammonia and carbon dioxide, are then released into the 4-bar absorber.



## The LAUNCH MELT™ Pool Reactor at work

Unlike the Pool Condenser concept, the Pool Reactor concept combines the condenser and reactor in a single pool reactor. This is achieved by enlarging the horizontal condenser so as to incorporate additional reactor volume.

As a result, it becomes possible to achieve sufficiently high residence times, eliminating the need for a separate vertical reactor, while creating the conditions that will allow the reaction to reach its optimum condition with the advantage of having a plant height of about 30 meters.

The high pressure scrubbing operation can also be simplified in the Pool Reactor concept by placing the scrubber sphere above the pool reactor and adding the ammonia to the synthesis via this scrubber. This ensures that no separate heat exchanging section in this scrubbing operation is required. In the Pool Reactor concept, carbamate from the low pressure recirculation section flows together with the absorbed gases and the ammonia into the pool reactor. As the static liquid height ensures gravity flow, no high-pressure ejector is needed.