

Innovations in Separation

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Tetra Pak





Meeting today's challenges

The future of food

GETTING MORE PRODUCT FROM FEWER REOURCES

Today's energy and environmental concerns call for technology that produces more and consumes less

Reduced consumption





UP TO

40%

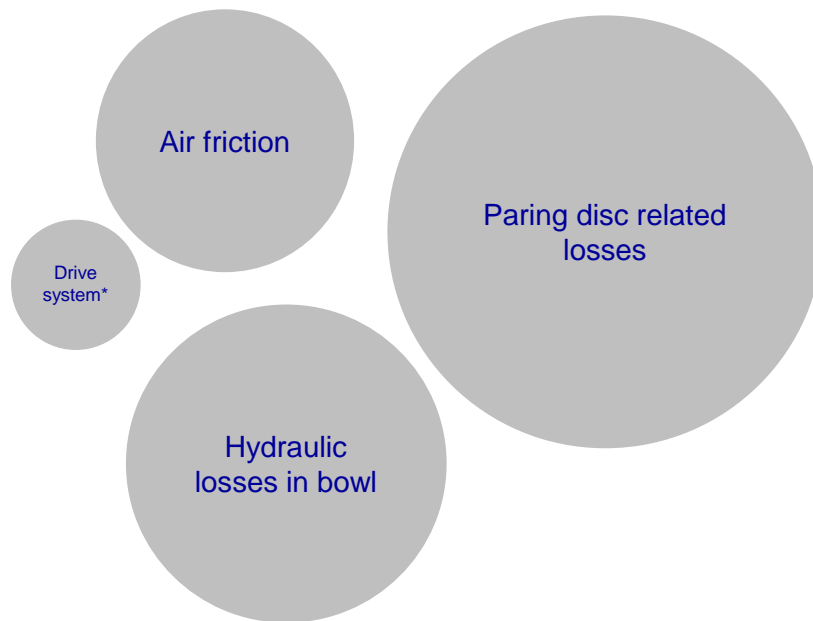
energy savings



Look for energy savings that matter

AirTight and Encapt™ is a winning combination

Energy losses in semi-open separators



- **AirTight:** design is optimised for most efficient inlet and outlet, as well as efficient outlet pumps
- **Encapt™:** low pressure around the bowl reduces air friction
- **Drive system** has a very small impact on energy savings: Less than 1 kW difference between gear and direct drive**

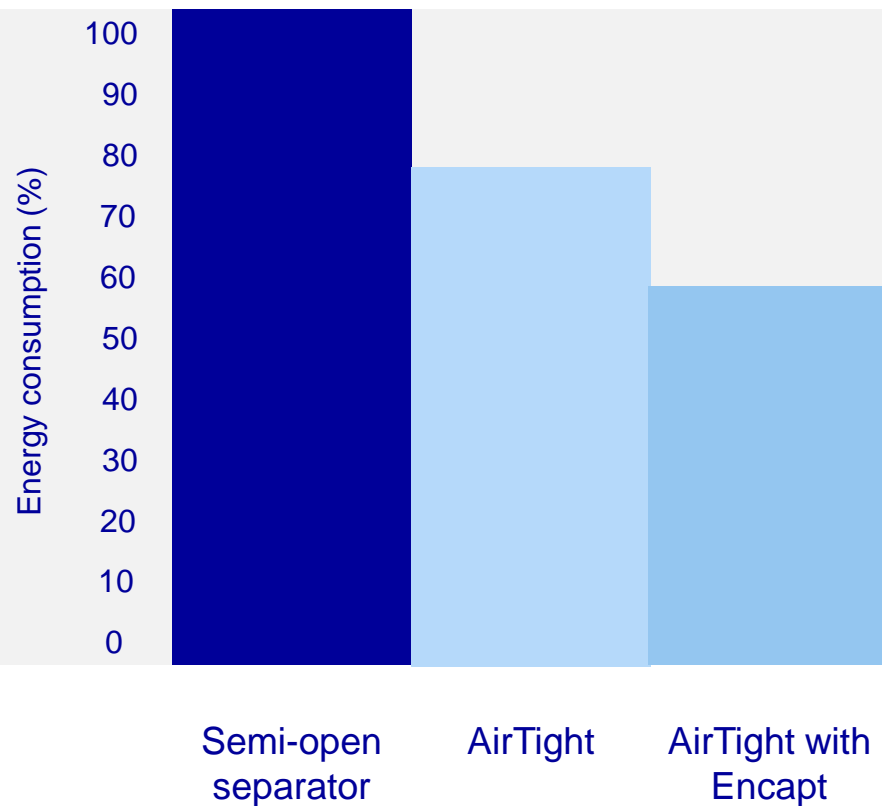
* Total losses in drive system
(motor, bearings, transmission etc)

** Comparison tests at 40 000 l/h



Up to 40% energy savings

Far ahead of the competition

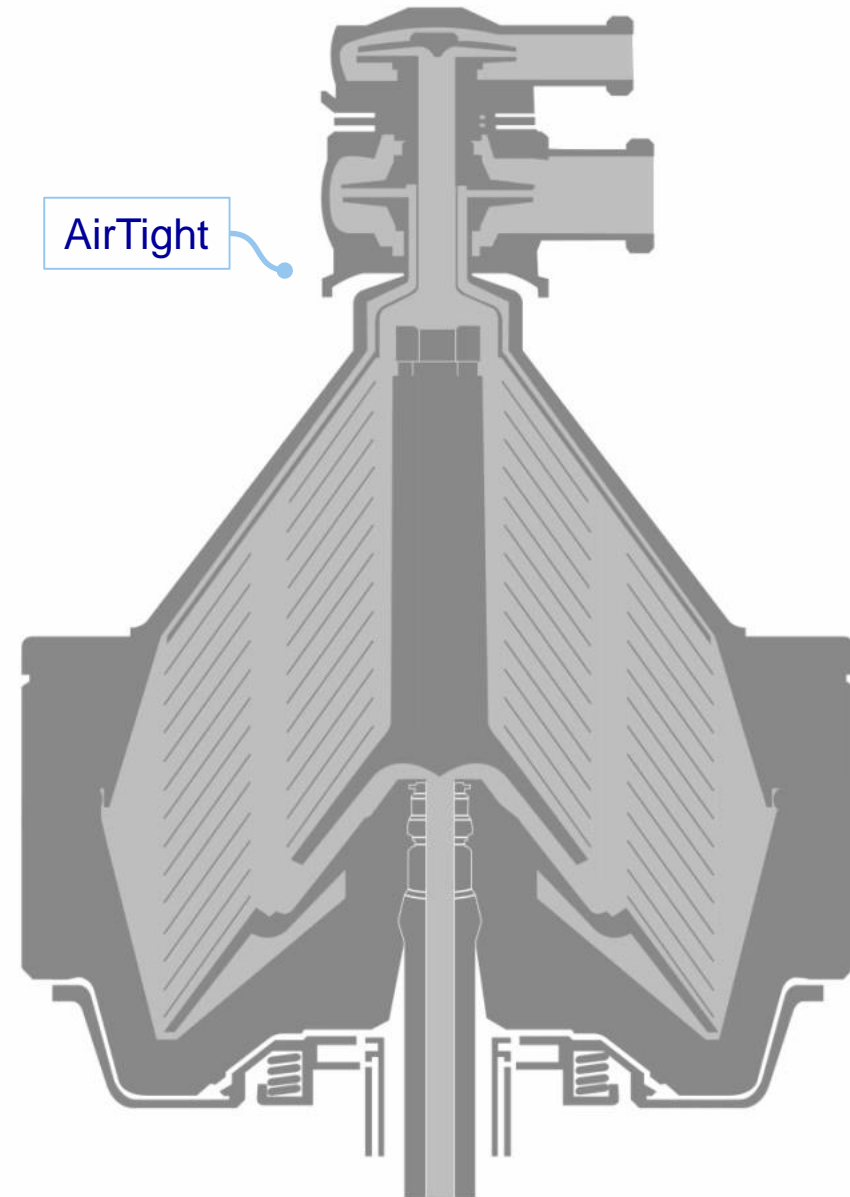
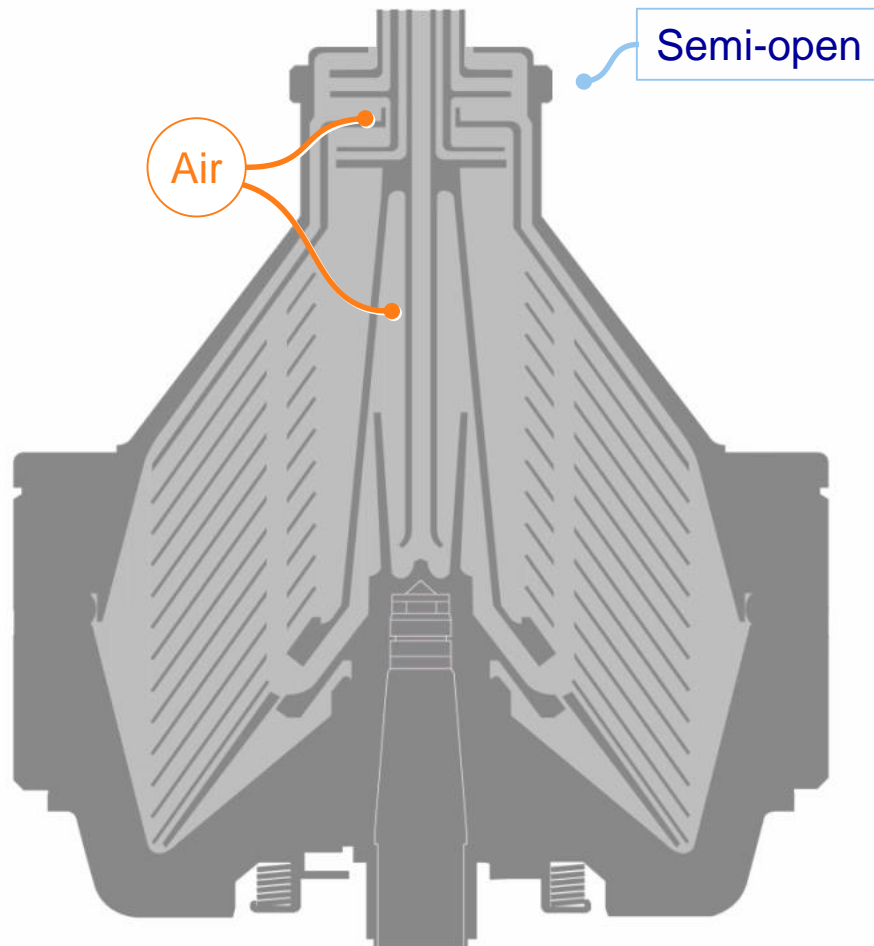


Our AirTight technology means more than 20% less energy consumption

Adding **Encapt™** cuts that by a further 20%

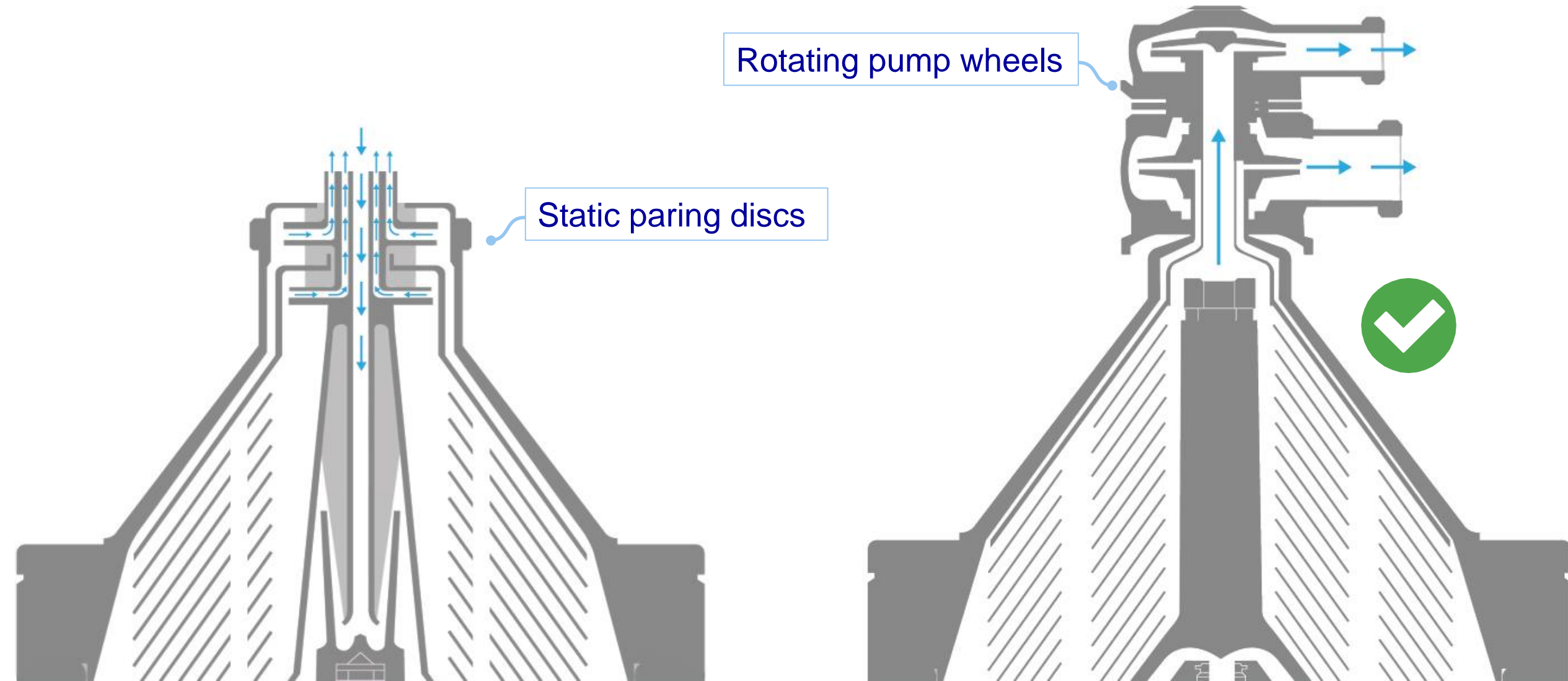
Numbers refer to a production scenario of hot milk skimming at 55 000 l/h including feed and booster pumps

How does AirTight work?





Support the outlet flow even further

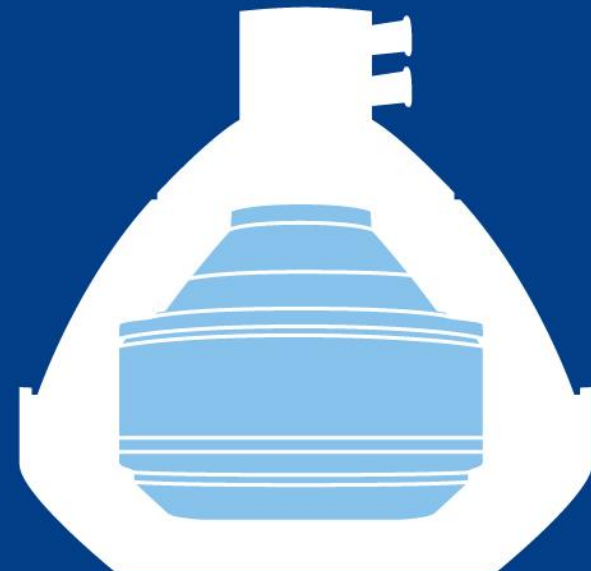




Encapt™ – inspired by low friction in space

The further away from Earth, the lower the atmospheric pressure

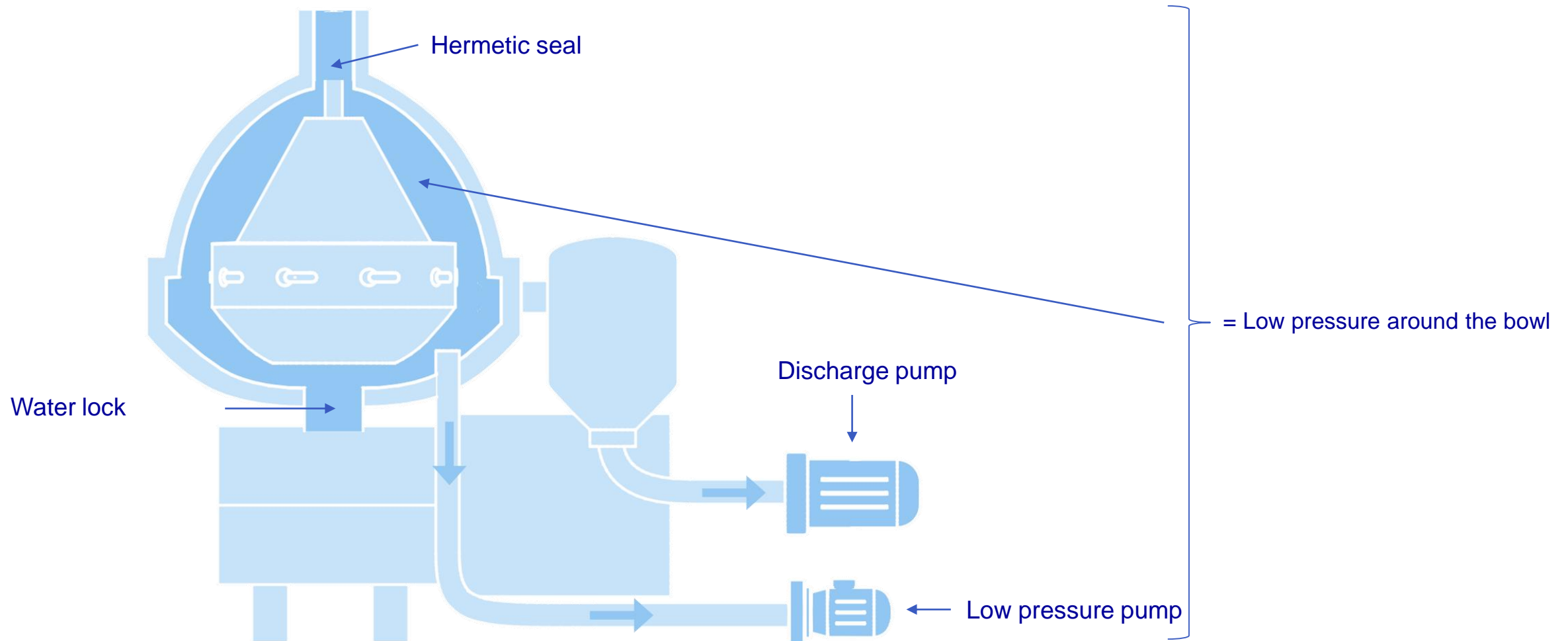
- ▶ The closer to Earth – the higher the pressure
- ▶ Lowering the atmospheric pressure reduces the friction
- ▶ Less air friction around the bowl means less energy required to spin





Reduced atmospheric pressure around the spinning bowl

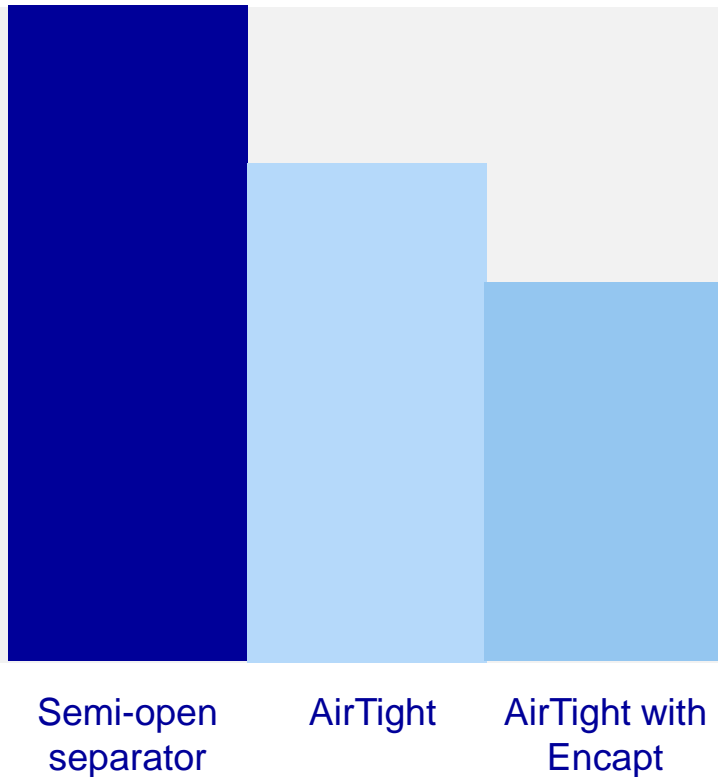
How Encapt™ technology saves energy





Savings in kW

Long life time investment



30 years of AirTight and Encapt™ =

4 080 000 kWh

What would that mean to you?

20 hours of run
time/day; 340
production days/year;
hot milk skimming at 55
000 l/h with AirTight
and Encapt™ –
including feed and
booster pumps



Boost your environmental profile



40% less power

- / Less separation force is needed
- / Less air friction
- / Maximum energy recovery
- / Efficient co-rotating pumps



20% less water

- / Minimal use of make-up water
- / Minimal use of cooling water



Less waste

- / Accurate discharges
- / No overflow

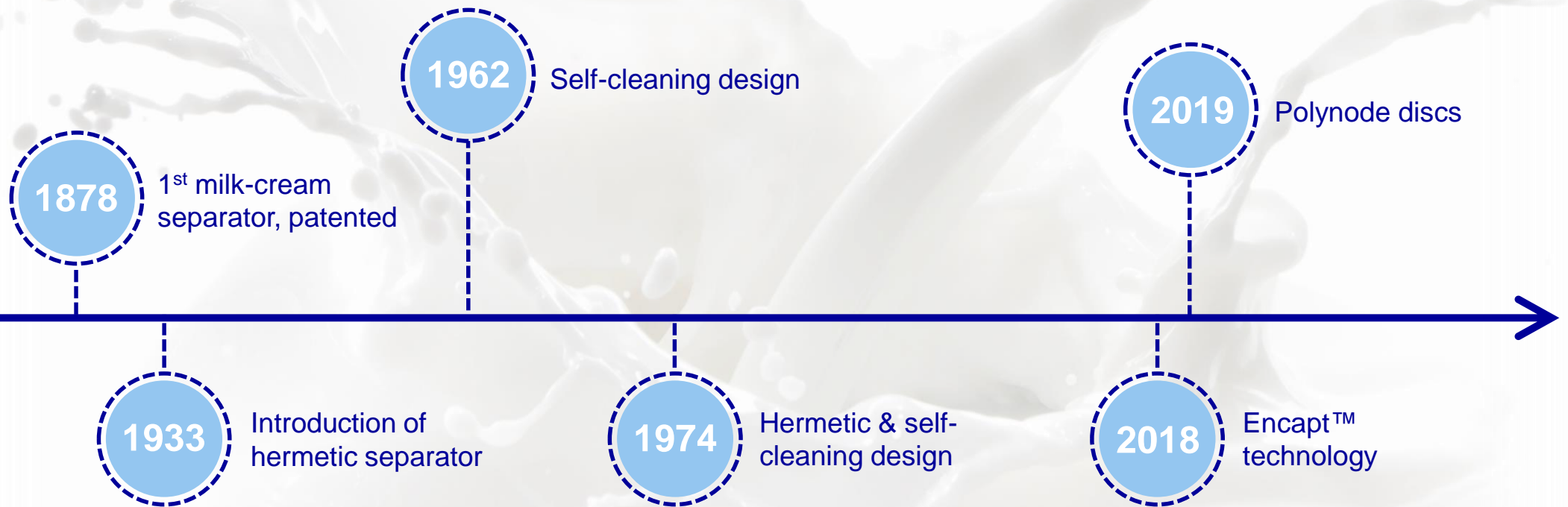
Improved performance

A new leap in separator technology





Milestones in the history of separation technology





A new technological leap delivering higher capacity separation for milk



- ▶ The first major breakthrough in separator-disc technology in over 130 years
- ▶ Enabling higher capacity for milk separation and better performance
- ▶ Rigid and Robust one piece design



Revolutionary new disc design

Featuring polynodes

- ▶ Weld-free, machine-embossing manufacturing process
- ▶ Replaced welded spacers (caulks) with micro-embossed polynodes

38x more spacers than traditional designs, increasing stability

94% less total contact area (<0,5% per contact point vs traditional design)

Increasing separation surface





Polynode discs

How it works

REDUCED HEIGHT

Polynodes are **35%** lower than traditional spacers, allowing more discs in the stack.



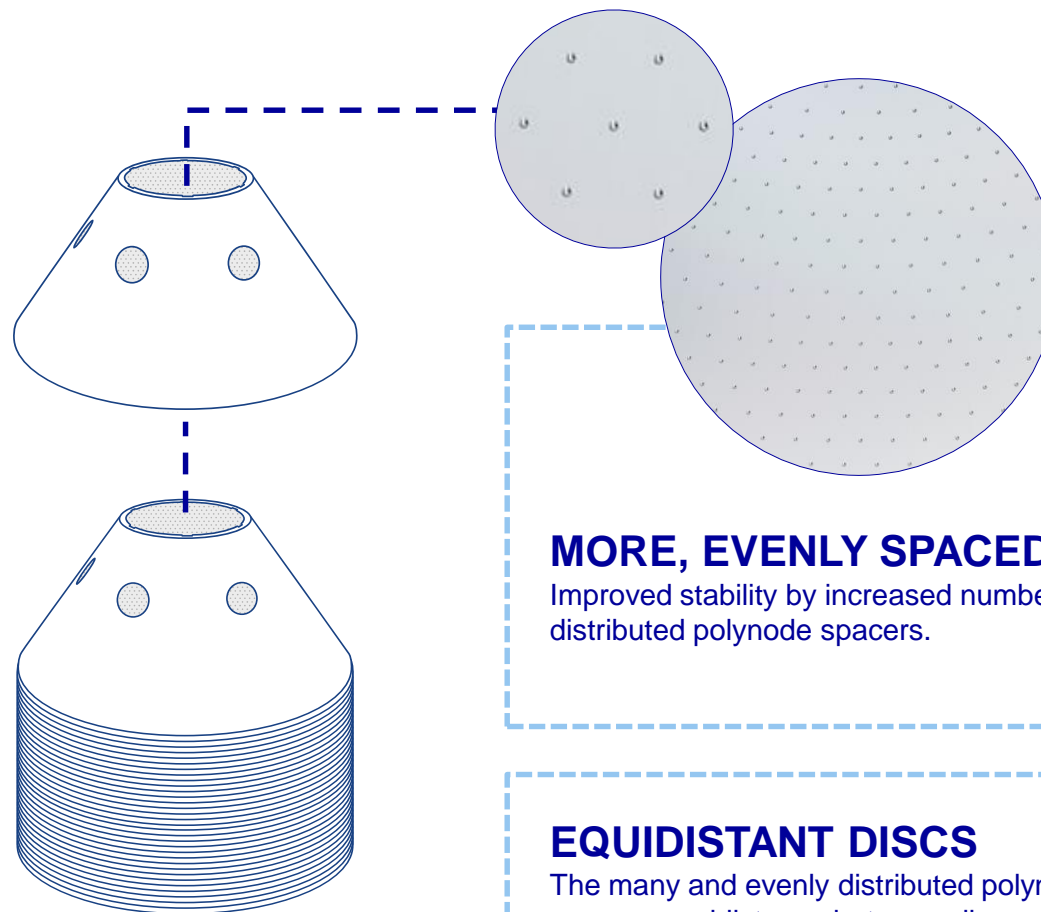
Polynodes



Traditional spacer

SMALL SHAPE

The tapered shape of polynodes means reduced point of contact per disc by **94%**.



MORE, EVENLY SPACED

Improved stability by increased number of evenly distributed polynode spacers.

EQUIDISTANT DISCS

The many and evenly distributed polynodes secures equidistance between discs.



Polynodes



Traditional spacer

HIGHER CAPACITY

Polynode technology allows for more discs in the stack = higher capacity with maintained separation efficiency





Higher capacity through more separation surface

60 000 l/h

We've achieved more separation surface by increasing the number of discs in the disc stack

- ▶ One-piece, embossed discs (no welds)
- ▶ With 38x more polynodes
 - smaller, micro-embossed, rounded
- ▶ Polynodes have a minimal point of contact with the disc
- ▶ A lower height than welded spacers used on traditional disc designs



Built to last





Robust design

UP TO

2x as long
operational lifetime





Robust design

The bowl is constructed of a superior corrosive-resistant material which is more durable than competition



