

Tastefull technology



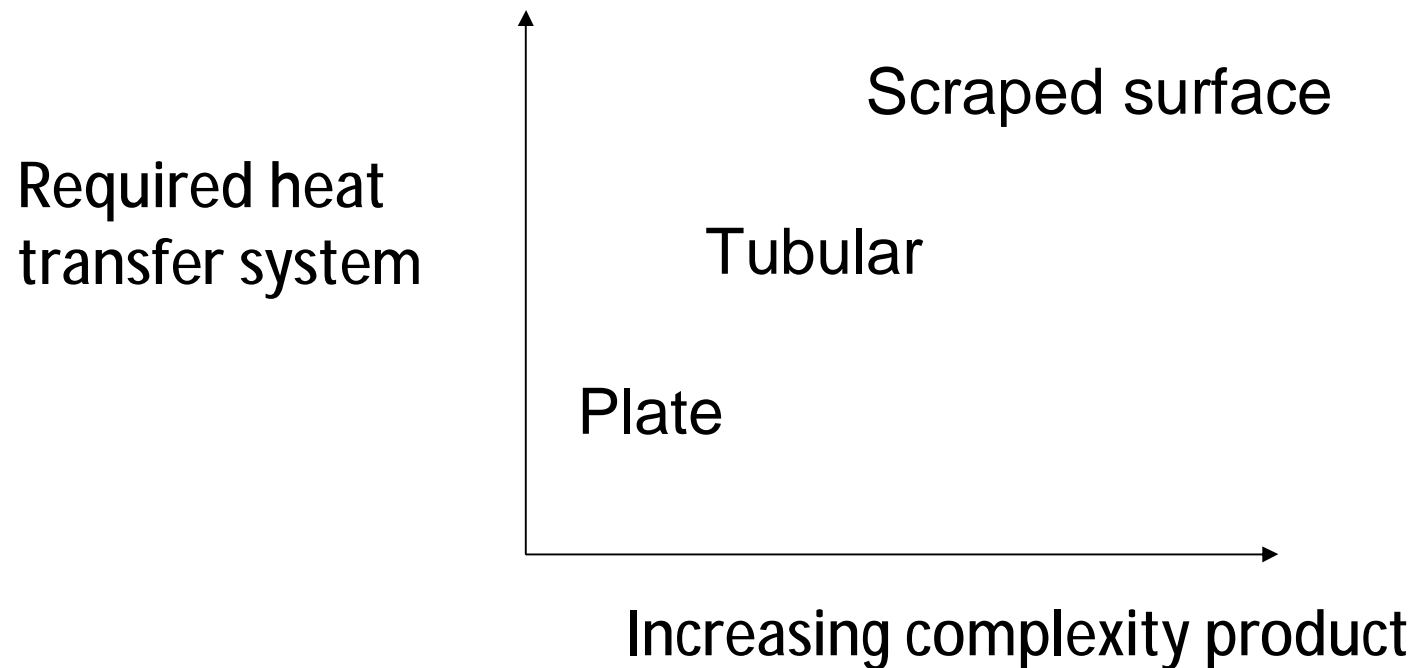
Terlotherm[®]
Scraped Surface Heat Exchanger

Why inline instead of batch?

- Constant product quality
- Lower labor costs
- Inline cleaning CIP
- Inline sterilization SIP
- Higher production capacity
- Bacteriological safety
- HTST = Less heat damage

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Scraped Surface Heat Exchanger

The right heat exchanger for the right application



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Scraped Surface Heat Exchanger

Terlotherm[®]

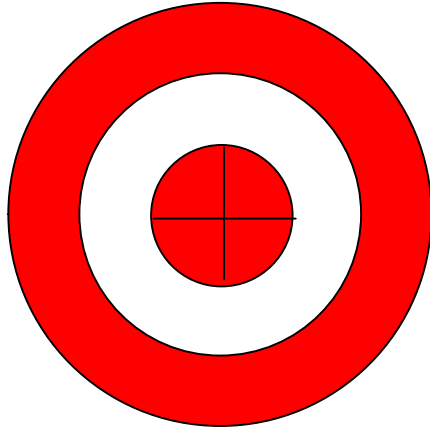
Scraped Surface Heat Exchanger

General information

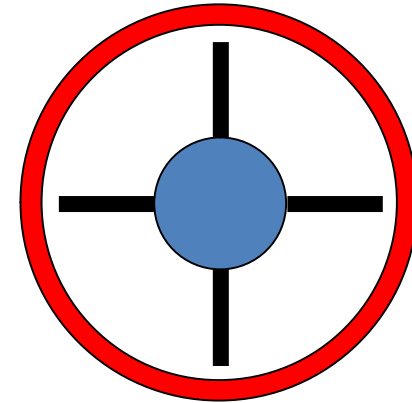
- Terlet NV founded in 1917
- Terlotherm designed in the late 1970's
- Large installed base 1500 units world wide
- Basic design "fruit pasteurization without product damage"
- Based on Terlet's unique "bottom driven design"
- Major advantages compared to kettle cooking



Terlet innovation



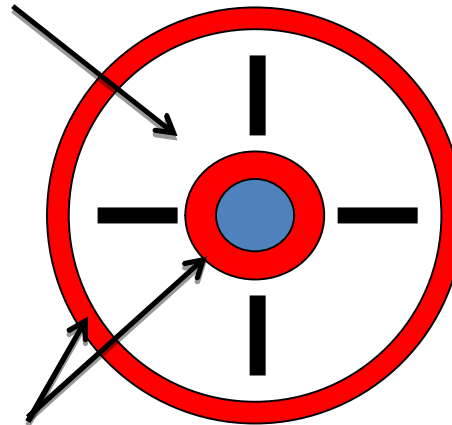
Static triple tube



Traditional SSHE



Product



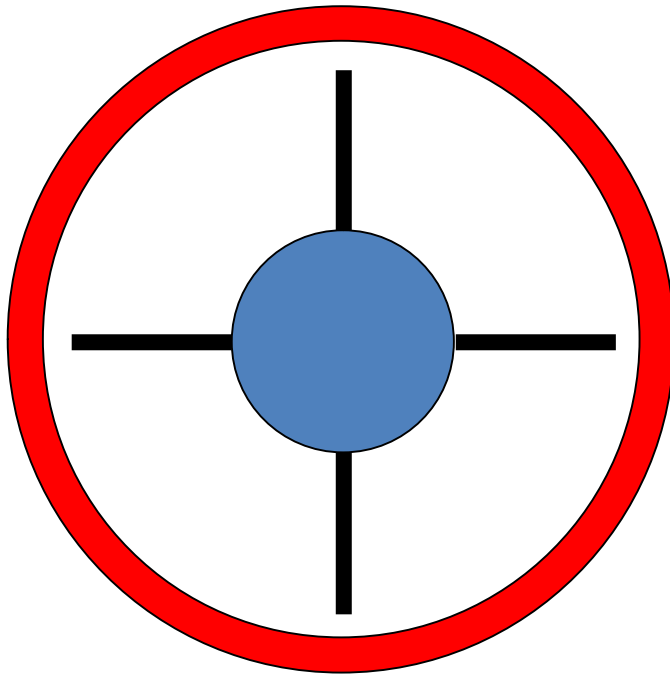
Medium



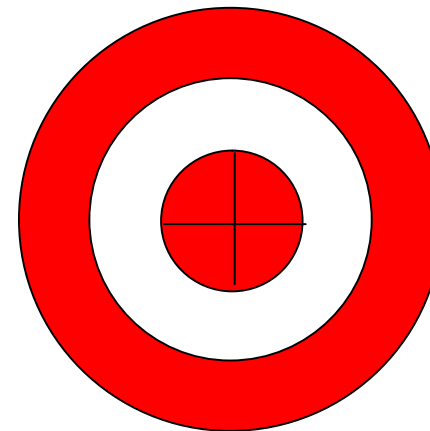
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Conventional heat transfer systems

- **Single Tube-Scraped Surface**



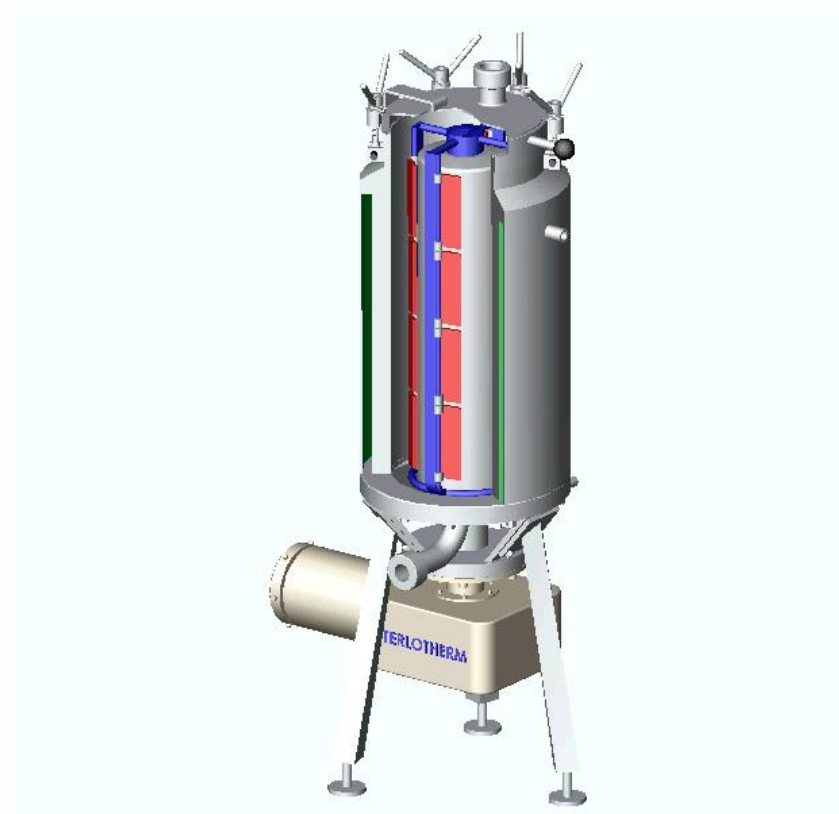
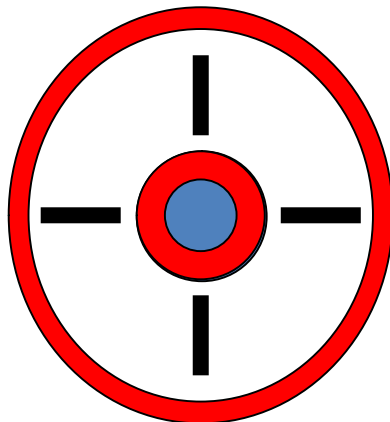
Static triple tube



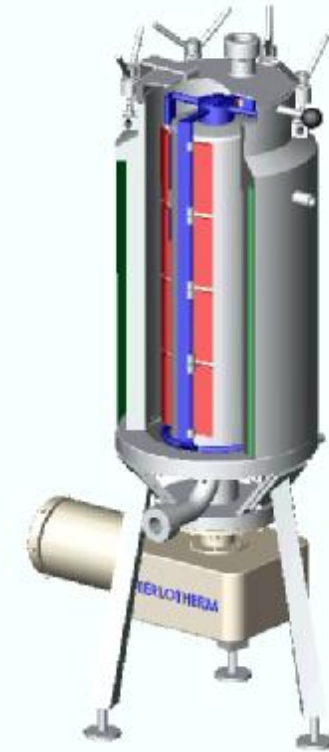
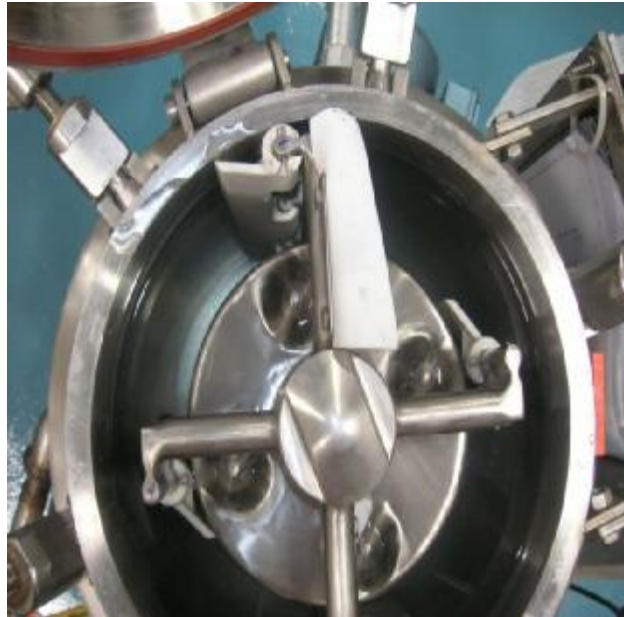
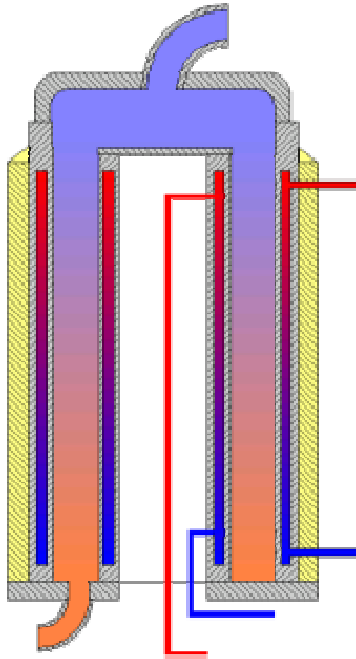
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Terlotherm Double Wall Design SSHE



Terlotherm working principle



■ Double heat exchanging walls

■ De-acceleration chamber

■ Bottom driven

■ Tangential inlet

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Scraped Surface Heat Exchanger



Heat Exchanging Surface	47 sq/ft.	27 sq/ft.	11 sq/ft.	6.5 sq/ft.
Heat Exchanging Surface	4.4 m ²	2.4 m ²	1.0 m ²	0.6 m ²

Terlotherm®

Advantages of a Terlotherm®

- Superior precision control of the process
- Reduce production costs while improving product quality
- Double wall design = higher production capacities with lower pressure drop
- Adaptable to automatic C.I.P. cleaning
- Simple and quick manual cleaning
- Process high viscosity or large particulate products
- Process sensitive or complex products without damage
- Lower manpower and energy costs to operate
- Quick change over/cleaning for multi-product flexibility

Terlotherm®

Advantages of a Terlotherm®

- Vertical floor mounted = small foot print design
- Gear box & motor bottom mounted = easy service, hygienic
- (1) single shaft seal which is not disturbed when opening top lid
- (1) single bearing & shaft in a cartridge design
- Scraper blades can be removed without special tools
- Low RPM operation = low maintenance
- Low pressure operation
- Solid construction design

Terlotherm[®]

Scraped Surface Heat Exchanger

Applications

Product could be any flowing substance which can be transported by a pump



Soups & Sauces



Dairy



Fruit



Confectionary



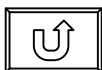
Meat processing



Mashed potato



Chemical / Pharma



Soups & sauces



- Sauces
- Dressing
- Salsa
- Humus
- Soup



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Dairy



- Milk concentrate
- Cheese spread
- Curd



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Fruit & Vegetables



- Yoghurt fruit
- Pie filling
- Vegetable puree
- Fruit puree
- Ice-cream fruit
- Jam / Marmelade



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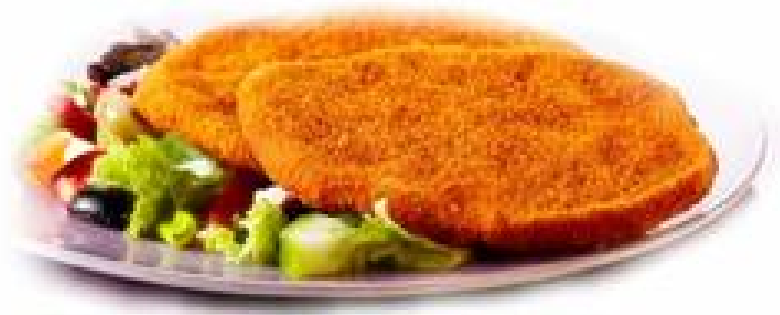
Confectionary & Pastry



- Fat crème
- Rework Chocolate
- Bon Bon Filling
- Caramel
- Fondant
- Fruit filling

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Meat Processing



- Mechanically Deboned Meat
- Sausage Pasteurization

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Potato Mash



- Waffles
- Croquettes
- Ready to eat mash

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Pharma & Chemical

- Lotion
- Cream
- Candle wax



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Terlotherm proven technology



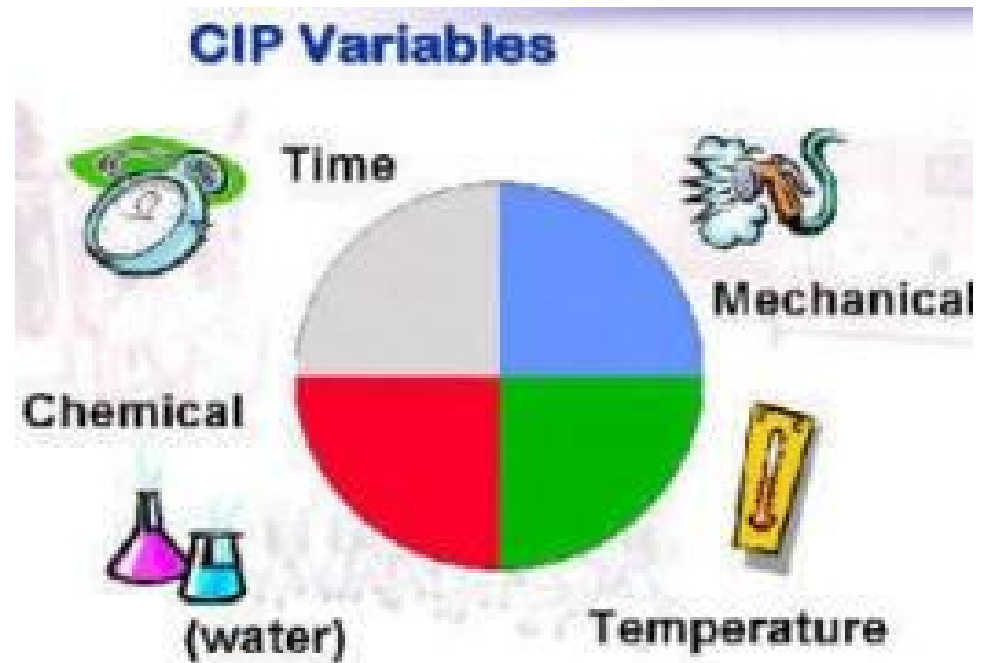
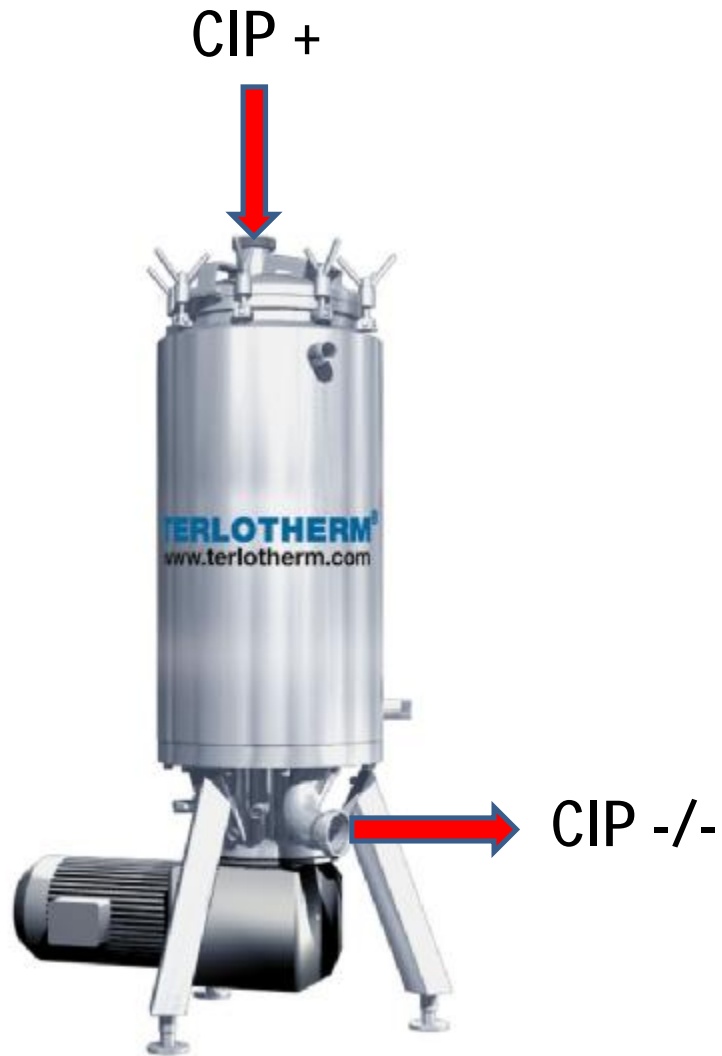
Regular SSHE

$\frac{3}{4}$ inch



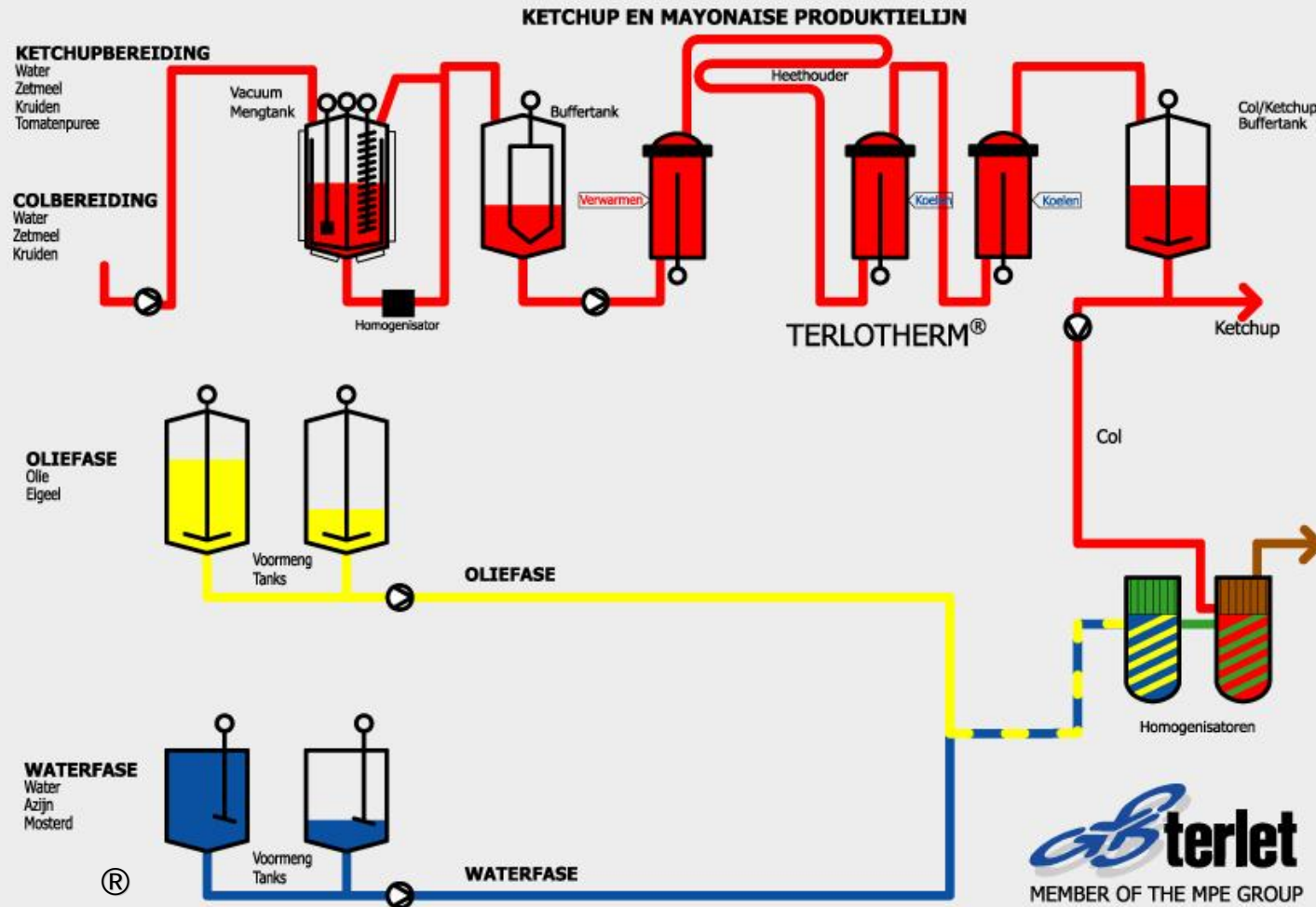
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Cleaning & Sanitation



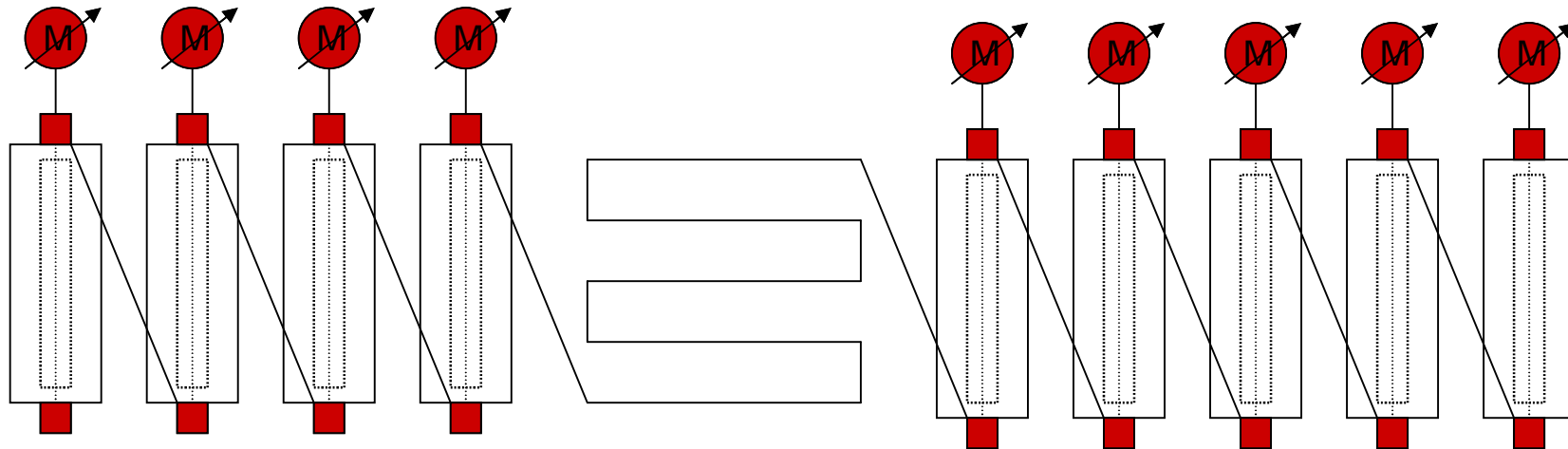
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Ketchup & Mayonnaise Line



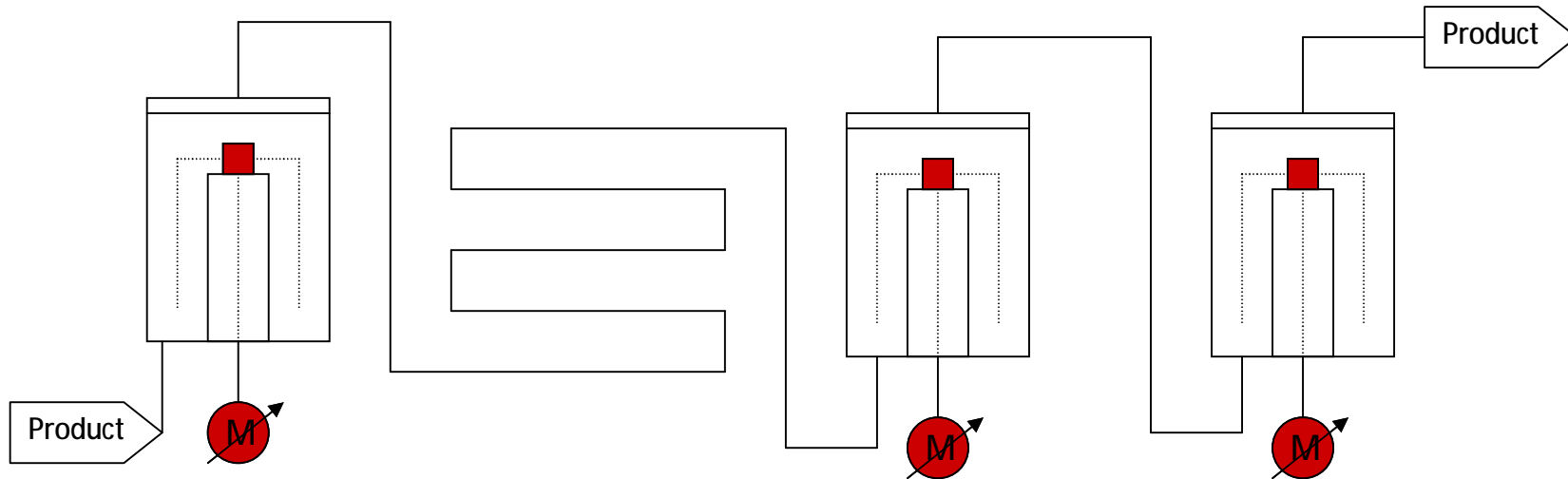
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Regular 9000 lb/hr SHHE sauce pasteurisation line



- **9 Motors & Gear boxes**
- **18 Mechanical seals**
- **Hydraulic system to open units**
- **Seal disturbance when opening units**
- **High pressure drop**

Terlotherm 9000 lb/hr sauce pasteurization line



- **3 Motors & Gear boxes**
- **3 Mechanical seals**
- **No hydraulic system to open units**
- **No seal disturbance when opening units**
- **Low pressure drop**

Comparison of Investment & Maintenance Costs On an 9,000-lb/hr process line

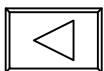
System	Conventional SSHE	Terlotherm
Square footage per unit	9	47
Number of Units	7	3
Cost Per Unit	45,000.00	115,000.00
Total Capital Cost	315,000.00	345,000.00
Number of Mechanical Seals	14	3
Cost per Mechanical Seal	1,900.00	2,000.00
Times per year seal replaced	3	1
Yearly Seal Cost Parts Only	79,800.00	6,000.00
Man-hours per seal replacement	2	1
Total Yearly Hours	84	3
Cost per hour @ \$50.00	4,200.00	150.00
1 st Year cost	399,000.00	351,000.00
Yearly cost after initial first year	84,000.00	6,150.00

***Cost estimates do not include piping, motors ,
and additional labor, etc.
which make the cost savings of the Terlotherm even higher.***

Terlotherm reference list

- ConAgra Foods
- Nestlé
- Oscar Mayer
- Kerry Foods
- Hershey
- Heinz
- Procter & Gamble
- Unilever
- M&M Mars
- Sara Lee
- Schering-Plough
- McCain Foods
- Hak
- Carl Kuhne
- Develey
- Wyeth
- Gervais Danone
- Unigate
- Effem
- Masterfoods
- Verkade
- Friskies
- Dove International
- Dr. Oetker
- Hero
- Hazlewood
- Northern Star
- Foremost Dairies
- Numico
- George Adams
- Kraft
- Langese-Iglo
- Dairygold
- Osem
- The Sauce Company
- Iffco
- Wander
- Park 100 Foods
- Intervet
- Bayer
- Beiersdorf
- Philip Morris
- Campina

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Thank You
For the opportunity of sharing this
presentation with you.



We look forward to working with you in the future.

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