




**MERSEN**  
*Expertise, our source of energy*

## NEW HCL SYNTHESIS UNIT (SINTACLOR® ECO&FLEX)

TO OPTIMIZE YOUR OPEX

MERSEN, Anti Corrosion Equipment Division (France).  
Jérémie BENOIT



Executive Summary	Sintaclor®	Sintaclor® limits	Sintaclor® III	Highlights	End
<h2 style="color: #E67E22;">EXECUTIVE SUMMARY</h2>				<ul style="list-style-type: none"> <li style="margin-bottom: 10px;"> <span style="color: #E67E22;">■</span> <b>WHAT DOES IT CONSIST OF ?</b>  <span style="color: #E67E22;">AN ADVANCED TECHNOLOGY TO IMPROVE ENERGY EFFICIENCY AND FINE-TUNED TO EACH CUSTOMER NEED/SATISFACTION.</span> </li> <li> <span style="color: #E67E22;">■</span> <b>CUSTOMER BENEFITS ?</b>  <span style="color: #E67E22;">REDUCE OPEX, CAPEX AND CARBON FOOTPRINT</span> </li> </ul>	
					

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## SINTACLOR® - THE MERSEN HCl SYNTHESIS UNIT

### 3 MAIN REASONS TO CHOOSE MERSEN TOP BURNER TECHNOLOGY

**1**

**HYDROGEN AND CHLORINE GAS ARE ALWAYS ABOVE THE PIPE BACK.**

- Therefore Allow area is far above the ground to maximize the safety.

**2**

**MERSEN TOP BURNER TECHNOLOGY MINIMIZES THE DISCHARGE OF HAZARDOUS & CORROSIVE GASES (HCl, H<sub>2</sub> & O<sub>2</sub>) TO THE ATMOSPHERE WHEN A RUPTURE OCCURS, WHEREAS BOTTOM BURNER TECHNOLOGY RELEASES ALL TO THE ATMOSPHERE.**

- If and when a rupture disc breaks, Mersen's top burner technology by nature of design, ensures that potential HCl gas is released to the atmosphere. HCl liquid is safely collected in a catch tank.

**3**

**TOP BURNER (MERSEN TECHNOLOGY) IS SAFER THAN BOTTOM BURNER TECHNOLOGY.**

- The volume of explosive and extreme gas within a bottom burner technology assembly is three to ten times that of a Mersen top burner assembly making the Mersen design inherently much safer.

MERSEN HCl SYNTHESIS UNIT DESIGN WITH TOP BURNER  
"Best available design for safety and environment"

Extract 1 from MERSEN leaflet  
[https://www.mersen.com/uploads/tx\\_mersen25/mercen-process-technologies-provider\\_04.pdf](https://www.mersen.com/uploads/tx_mersen25/mercen-process-technologies-provider_04.pdf)

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Executive Summary	Sintaclor®	Sintaclor® limits	Sintaclor® III	Highlights	End
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## SINTACLOR® II

### STEAM GENERATION DEVELOPED IN 1990

**SINTACLOR® I**  
**HCl Synthesis Unit**

1960

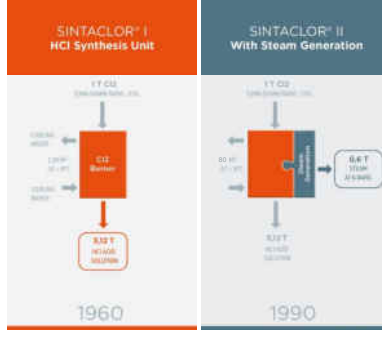
**SINTACLOR® II**  
**With Steam Generation**

1990

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Executive Summary	Sintactor®	Sintactor® limits	Sintactor® III	Highlights	End
<p><b>SINTACLOR®</b>  <b>MERSEN = THE WORLDWIDE LEADER WITH 60 YEARS EXPERIENCE</b></p>					
<ul style="list-style-type: none"> <li>■ 1<sup>ST</sup> UNIT (SINTACLOR® I) MADE IN 1960</li> <li>■ 1<sup>ST</sup> TURN-KEY PACKAGE MADE IN 1986</li> <li>■ 1<sup>ST</sup> STEAM GENERATION (SINTACLOR® II) MADE IN 1995</li> </ul>					
<ul style="list-style-type: none"> <li>■ &gt;600 UNITS INSTALLED WORLDWIDE</li> <li>■ 9 MILLION T HCL (100%) / YEAR</li> </ul> <p>ACCUMULATED CONTRACT AWARDS OF Cl<sub>2</sub> BURNER.</p>					
<ul style="list-style-type: none"> <li>■ &gt;450 UNITS UNDER OPERATION WORLDWIDE</li> <li>■ 20 UNITS WITH STEAM GENERATION UNDER OPERATION</li> <li>■ 49 UNITS UNDER OPERATION IN EUROPE</li> <li>■ 21 UNITS SKIDDED DELIVERED IN EUROPE</li> </ul>					
 <p>63 TPD HCl100% LEUNA HARZE – Germany Standardized - Pre-Assembled – Automated</p>  <p>CFD modeling</p>					
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Executive Summary	Sintactor®	Sintactor® limits	Sintactor® III	Highlights	End
<p><b>LIMITS OF SINTACLOR® I AND II</b></p>					
<ul style="list-style-type: none"> <li>■ 1<sup>st</sup> LIMIT : <b>MINIMUM CAPACITY = 25%</b> <ul style="list-style-type: none"> <li>■ Customers want to avoid a stop&amp;start of the unit when required capacity is &lt; 25%.</li> </ul> </li> </ul>					
<ul style="list-style-type: none"> <li>■ 2<sup>nd</sup> LIMIT : <b>ONE END-PRODUCT = HCL ACID</b> <ul style="list-style-type: none"> <li>■ Customers want 3 possibilities           <ul style="list-style-type: none"> <li>■ HCl acid solution, HCl gas, Both at the same time</li> </ul> </li> </ul> </li> </ul>					
<ul style="list-style-type: none"> <li>■ 3<sup>rd</sup> LIMIT : <b>STEAM GENERATION AT 6 BARG</b> <ul style="list-style-type: none"> <li>■ Customers want higher steam pressure</li> </ul> </li> </ul>					
<ul style="list-style-type: none"> <li>■ 4<sup>th</sup> LIMIT : <b>COOLING WATER CONSUMPTION</b> <ul style="list-style-type: none"> <li>■ Customers want to reduce cooling water consumption and boost heat recovery</li> </ul> </li> </ul>					
					
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Executive Summary	Sintaclor®	Sintaclor® limits	Sintaclor® III	Highlights	End
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## SINTACLOR® ECO & FLEX BREAK THE LIMITS

ABSORPTION

BURNER

HEAT RECOVERY

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Executive Summary	Sintaclor®	Sintaclor® limits	Sintaclor® III	Highlights	End
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## SINTACLOR® ECO & FLEX = INJECTION OF AIR TO ENLARGE THE TURN-DOWN

ABSORPTION

BURNER

HEAT RECOVERY

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**SINTACLOR® Eco & FLEX**  
**= 3 POSSIBILITIES (HCL GAS, HCL LIQUID, BOTH AT THE SAME TIME)**

3 possibilities **2**

ABSORPTION      BURNER      HEAT RECOVERY

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Executive Summary	Sintaclor®	Sintaclor® limits	Sintaclor® III	Highlights	End
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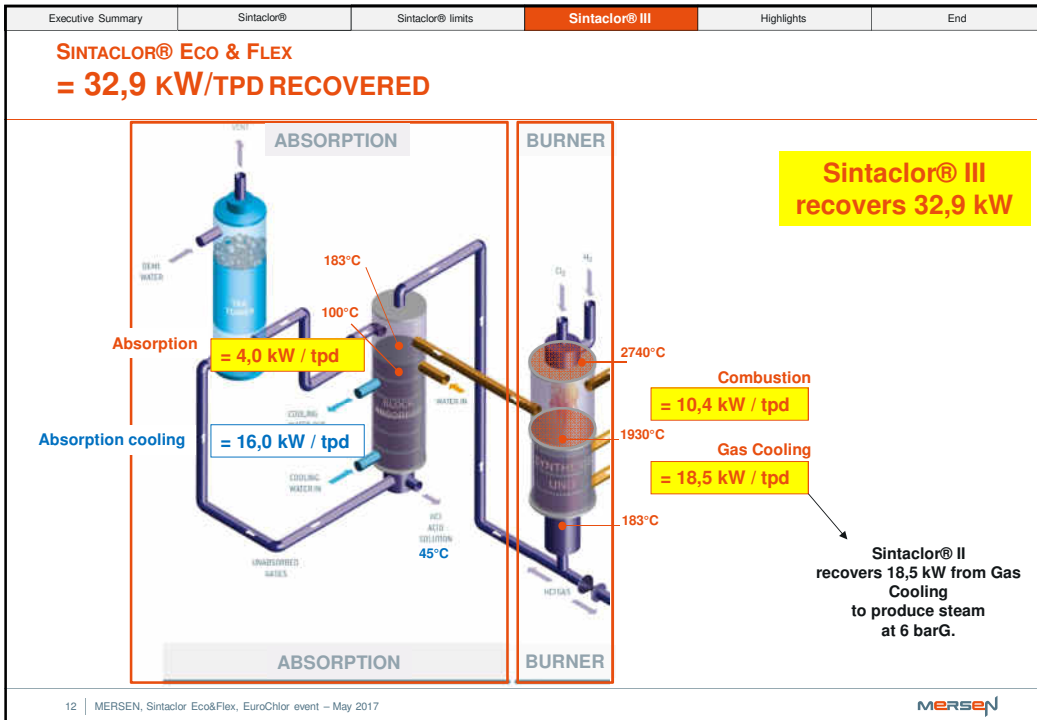
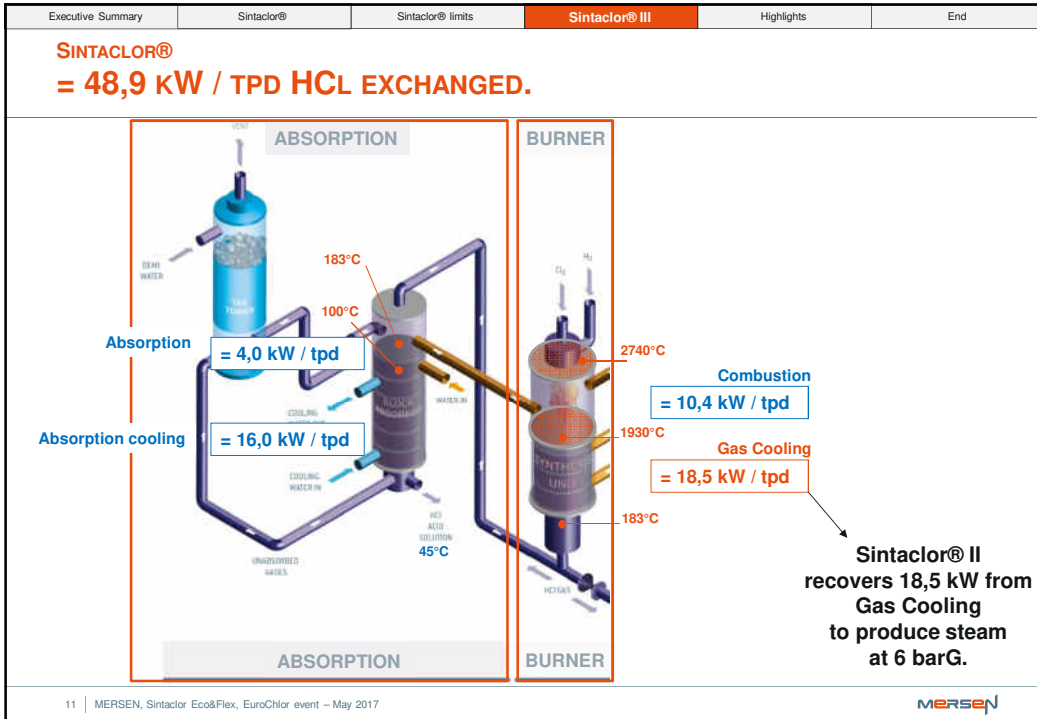
**SINTACLOR®**  
**= TEMPERATURE LEVEL**

ABSORPTION      BURNER

183°C  
100°C  
45°C  
2740°C  
1930°C  
183°C

ABSORPTION      BURNER

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Executive Summary	Sintaclor®	Sintaclor® limits	Sintaclor® III	Highlights	End
<b>SINTACLOR® Eco&amp;FLEX</b> <b>= PRINCIPLE OF OPERATION</b>			Absorption = 4,0 kW / tpd Absorption cooling = 16,0 kW / tpd	Combustion = 10,4 kW / tpd Gas Cooling = 18,5 kW / tpd	
<p>184°C 695 kg/t max at 10 barG ③ Steam pressure boosted at 10 barG</p> <p>187°C 183°C</p> <p>ABSORPTION      BURNER      HEAT RECOVERY</p>					
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<b>SINTACLOR® Eco&amp;FLEX</b> <b>= PRINCIPLE OF OPERATION</b>			Absorption = 4,0 kW / tpd Absorption cooling = 16,0 kW / tpd	Combustion = 10,4 kW / tpd Gas Cooling = 18,5 kW / tpd	
<p>184°C 695 kg/t max at 10 barG ③ Steam pressure boosted at 10 barG</p> <p>187°C 183°C</p> <p>Graphite mechanical resistance up to 36 MPa. Carbon impregnation to resist up to 430°C.</p> <p>ABSORPTION      BURNER      HEAT RECOVERY</p>					
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Executive Summary	Sintaclor®	Sintaclor® limits	Sintaclor® III	Highlights	End
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**SINTACLOR® Eco&FLEX**  
= **PRINCIPLE OF OPERATION**

Absorption = 4,0 kW / tpd	Combustion = 10,4 kW / tpd
Absorption cooling = 16,0 kW / tpd	Gas Cooling = 18,5 kW / tpd

ABSORPTION

BURNER

HEAT RECOVERY

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**SINTACLOR® Eco & FLEX**  
= **BREAK THE LIMITS**

ABSORPTION

BURNER

HEAT RECOVERY

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Executive Summary	Sintaclor®	Sintaclor® limits	Sintaclor® III	Highlights	End
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## HIGHLIGHTS

■ **SINTACLOR ECO&FLEX ANSWERS TO YOUR CONCERNS :**

- Flexibility
- Energy saving
- OPEX reduction



**FULL RANGE PRODUCTION CAPACITY**

THE MOST INTERESTING IN YOUR PLANT UNIT & RESTORE OPEX USING



**SUPPORT YOUR ENVIRONMENTAL PROJECTS**

• IMPROVE YOURS AND YOURS LOGICALLY • INCREASE YOURS AND YOURS LOGICALLY • FROM THE START TO THE END



**LOWEST HEAT RECOVERY**

TO REDUCE YOURS AND YOURS PER YOURS AND YOURS



**LESS WASTE**

REDUCE THE OPEX AND YOURS AND YOURS

■ **SINTACLOR ECO&FLEX CAN BE PLUGGED ON EXISTING UNITS.**

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## THANK YOU FOR YOUR ATTENTION

### You are welcome at our booth #56



*Des expertises, une énergie*



10th Euro Chlor Technology Conference & Exhibition

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