Chemical Leasing

Sustainable Chemicals Service Solutions

www.chemicalleasing.com
Putting **Chemical Leasing** in context:

- Globally, the value of the chemicals industry has increased from **171 billion dollars in the year 1970**, to over **4 trillion dollars in 2013**.

- Chemicals industry accounts for over **7 percent of global income** and **9 percent of international trade volume**.

- Within five years’ time, **developing countries** will be home to **31 percent of global chemical production**, and **33 percent of global consumption**.
**The challenge:** Traditional business models are fuelling the unnecessary consumption of chemicals and the generation of hazardous waste.

**The response:** Shifting the focus from increasing the sales volume of chemicals to a value-added approach.

Chemical Leasing is centred around a **unit of payment**; the payment is no longer related to the chemical itself, but to the benefits of the chemical.
UNIDO initiated its Global Chemical Leasing Programme in 2004.

The Programme is directly supported by the Governments of Austria (since 2004), Germany (2008) and Switzerland (2012).

The Programme is implemented in close cooperation with National Cleaner Production Centres established by UNIDO and UNEP.

Chemical Leasing is in line with UNIDO's mandate of promoting inclusive and sustainable industrial development (ISID).
Demonstration projects in 12 countries
### Industry Sectors

**Wide Applicability in various industry sectors**
Successful Chemical Leasing examples for the following applications:

<table>
<thead>
<tr>
<th>Industry sectors/processes</th>
<th>Chemicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacture of electronic equipment</td>
<td>Coating powder</td>
</tr>
<tr>
<td>Car manufacture</td>
<td>Hydrocarbon solvents for cleaning</td>
</tr>
<tr>
<td>Various industries/steel treatment</td>
<td>Galvanizing and phosphating agents</td>
</tr>
<tr>
<td>Beverage production</td>
<td>Lubricants for packaging conveyers; cleaning agents for pipes and vessels</td>
</tr>
<tr>
<td>Waste water and drinking water treatment</td>
<td>Water treatment chemicals</td>
</tr>
<tr>
<td>Hotel and service sector</td>
<td>Cleaning &amp; disinfectants chemicals</td>
</tr>
<tr>
<td>Beverage and food-processing</td>
<td>Glue</td>
</tr>
<tr>
<td>Petrochemical industry</td>
<td>Catalysts and water treatment chemicals</td>
</tr>
<tr>
<td>Agriculture</td>
<td>Pesticides and fertilizers</td>
</tr>
<tr>
<td>Printing Industry</td>
<td>Ink, printing chemicals</td>
</tr>
</tbody>
</table>
Project 1:

Oil and petrochemical industry

Wastewater treatment

Country: Colombia
Supplier: Nalco SA
User: Ecopetrol SA
Industrial process: Water purification and oil dehydration
Chemicals: Water purification chemicals
Project 1: Benefits gained

Selection of benefits

**Economic benefits**
- Cost reduction by almost 20%
- Reduction of oil and grease in the cooling towers

**Environmental Benefits**
- Removal of 99% of the oil and suspended solids from the waste water
- Reduction in polymer consumption

**Social benefits**
- Creation of new jobs (laboratories)
- Long-term commercial relationship
- Better working conditions
Project 1: Benefits gained (cont.)

- **Reduced chemicals consumption** of approx. **120 tonnes/year**

- **Financial savings for Nalco**
  - USD 164,630 (in 2008)
  - USD 249,418 (in 2009)

- **Financial savings for Ecopetrol**
  - USD 2,500,000 (in 2008-2009)

- **15 % indirect reduction of energy demand** (direct energy consumption remains almost equal)
**Project 2:**

**Agricultural sector**

**Use of agrochemicals**

<table>
<thead>
<tr>
<th>Country:</th>
<th>Sri Lanka</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial process:</td>
<td>Application of pesticides on potato field</td>
</tr>
<tr>
<td>Chemicals:</td>
<td>Pesticides and fertilizers</td>
</tr>
</tbody>
</table>
Project 2:

Benefits gained

- 60% agrochemical cost reduction
- **Increased** workplace safety
- **Less pesticides** sprayed
Project 3:

Beverage industry

Conveyor lubrication and bottle washing

Country: Uganda
Supplier: Diversey
User: Crown Beverages Limited
Industrial process: Conveyor lubrication and bottle washing
Chemicals: Lubricants and detergents

http://www.pepsi-cola.co.ug
Project 3:

Benefits gained (selection)

✓ Received the bronze Global Chemical Leasing Award 2014 in the category ‘case studies’
✓ 44 % reduction of lubricant
✓ 50 % reduction of hazardous waste
✓ Improved occupational health and safety
Summary from a technical point of view

- Various **successful case studies** in different sectors and with different chemicals
- Support of enterprise’s efforts for **cleaner production** and improved **sustainability**
- **Reduction of hazardous chemical** volumes (substitution with less hazardous alternatives or reduced quantities up to 70%)
- Process **optimisation and innovation**
- Improved **knowledge sharing** and transfer
Diverse portfolio of tools and instruments:

- International working group
- Thematic working groups
- ChL book
- Case study brochures
- ChL toolkit
- Sustainability criteria
Going web – www.chemicalleasing.org

- ChL cartoon
- ChL short clips
- ChL@Youtube
- ChL@unido.org
ChL in Research Articles

- “Chemical Leasing in the context of sustainable chemistry”
- “Chemical Leasing - a review of implementation”
- “Chemical Leasing business models and corporate social responsibility”
- “Critical reflections on the Chemical Leasing concept”
- “Fostering green chemistry through a collaborative business model: A Chemical Leasing case study from Serbia”
Enhancing the global visibility of Chemical Leasing by acknowledging best practices (Case Studies, Consulting Services, PR, Scientific Publications)

2010: Prague, ChemCon Conference, 27 applications
2012: Frankfurt, ACHEMA Conference, 44 applications
2014: Vienna, Biocides Conference, 55 applications
Chemical Leasing is a mainstream, state-of-the-art business model in line with the circular economy approach, used routinely for contracts in industry, services and public procurement.

Foster wide awareness and inclusion of Chemical Leasing in national, regional and inter-governmental policies and programs.
Chemical Leasing contributes significantly to a **reduction in the chemical footprint along the chemical value chain and across the globe** leading to inclusive sustainable industrial development.

Join the network - [www.chemicalleasing.org](http://www.chemicalleasing.org)
A SMART business and policy model for inclusive and sustainable industrial development

Sound chemicals management
Monetary benefits
Additional safety & health
Resource efficiency
Technology innovation

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Backup slides
Example – Powder Coating

Classical business model: payment per t of powder coating

Chemical Leasing: payment per m² of coated surface
Example – Cleaning of vessels in the food industry

Classical business model: payment per t of solvents

Chemical Leasing: payment per outcome of the process, e.g. hl beer
Example – Lubrication in sugar mills

**Classical business model:** payment per t of lubricants

**Chemical Leasing:** payment per t of produced sugar
Example – Water Treatment

Classical business model: payment per t of chemicals for water treatment

Chemical Leasing: payment per m³ of purified water
Example – Application of Agrochemicals

Classical business model: payment per kg pesticides

Chemical Leasing: e.g. payment per ha agriculture area of controlled pest