Chemical Parks in Germany
Invest in Economically Attractive Locations – at the Hub of Europe´s Markets

May 2015
There are many good reasons to invest in a Chemical Park in Germany:

- Chemical Parks provide the platform for the success of Germany’s chemical industry.
- The Chemical Park concept is innovative and unmatched anywhere else in the world.
- Investors find optimum economic conditions in Chemical Parks.
- Chemical Park operators offer investors a comprehensive range of services.
- The Chemical Park concept offers investors individual solutions for their business models.
1. Germany – the Investment Location
2. The Chemical Industry in Germany
3. Chemical Parks
4. References of Investment
5. Contact
1. Germany – the Investment Location
Germany is the Geographical and Economic Center of Europe

GDP\(^1\) in Germany and the World

<table>
<thead>
<tr>
<th></th>
<th>GDP(^2) (billion €)</th>
<th>Share in global GDP (%)</th>
<th>Population (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>58,230</td>
<td>100</td>
<td>7,104</td>
</tr>
<tr>
<td>EU 28</td>
<td>13,921</td>
<td>24</td>
<td>507</td>
</tr>
<tr>
<td>Germany</td>
<td>2,904</td>
<td>5</td>
<td>81</td>
</tr>
</tbody>
</table>

\(^1\) Gross Domestic Product

\(^2\) converted in € at the annual exchange rate 2014 of Deutsche Bundesbank

Sources: World Bank 2015, Eurostat 2015
1. Germany – the Investment Location
All Trans-European Transportation Routes Intersect in Germany

Germany is connected to other European markets by a dense and well-developed transportation links.

- Via the North and Baltic Sea routes to the UK, Scandinavia and the Baltic states
- Road and rail links to Denmark
- Many different links to the Benelux countries, France and Eastern Europe by road, rail and water
- Road and rail links across the Alps to the Mediterranean and the Balkan region
1. Germany – the Investment Location
Outstanding Infrastructure for Transport and Logistics

- The road density is significantly higher as the EU average
- Transportation routes such as highways (13,000 km), federal roads (Bundesstraßen) (39,400 km) rail- (39,400 km) and waterways (7,350 km)
- 24 offshore sea ports* and 250 inland ports ** as well as 27 major airports *** are connecting the markets to the world
- National pipeline network

* Out of this, 17 with over 1 million tonnes of freight handling
** Out of this, 50 with over 1 million tonnes of freight handling
*** > 150,000 passengers /Year

Sources: Quellen: Destatis; ZDS – Zentralverband der deutschen Seehafenbetriebe e.V.; BÖB - Bundesverband Öffentlicher Binnenhäfen e. V.; Germany Trade & Invest
1. Germany – the Investment Location
Germany is the Most Attractive Domestic Market in Europe

Privat Consumption (2013, in billion Euro)

- Germany has Europe’s largest gross domestic product (GDP)
- Germany is the largest sales market in Europe
- Germany has the highest population in Europe

Sources: Feri
1. Germany – the Investment Location
Germany is the Top Location for Investments in Europe

Chemical Managers‘ Satisfaction with the Location Germany (in percent)

- About 450 foreign chemical companies with sales of more than € 82 billion and about 140,000 employees are present in Germany.
- 95 percent of the chemical managers in Germany assess the German location conditions positively.

Sources: CHEMonitor Oktober 2012, CHEManager/Camelot Management Consultants, Deutsche Bundesbank 2013
1. Germany – the Investment Location
Germany is Attractive for Foreign Investors

Foreign Direct Investment (FDI) in Germany’s Chemical Industry
Cumulated in € billion

Sources: Deutsche Bundesbank, VCI
1. Germany – the Investment Location
Germany is Attractive for Foreign Investors

Foreign Direct Investment (FDI) in Germany’s Chemical Industry

- Foreign companies have continuously expanded their capacities in Germany.
- In 2012 foreign direct investment in the German chemical industry has grown by almost half a billion euros.

Foreign direct investment in the German chemical industry has increased by over four times to more than € 42 billion over the last 20 years.
1. Germany – the Investment Location
2. The Chemical Industry in Germany
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2. The Chemical Industry in Germany

Germany: a very important sales market for chemicals in Europe

European Consumption of Chemicals: € 849 billion

- Germany: 144.7
- France: 106.3
- Italy: 92.0
- Spain: 58.1
- Great Britain: 36.9
- Rest of EU: 236.5
- Rest of Europe: 174.0

Source: Chemdata International, VCI

Consumption of Chemicals in Europe (2013, in € billion)
## 2. The Chemical Industry in Germany

The German Chemical Industry has Maintained a Leading Role in Europe

<table>
<thead>
<tr>
<th></th>
<th>1995</th>
<th>2000</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Share of EU 28 (2013, %)¹</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sales</strong> (in € billion)</td>
<td>112,3</td>
<td>135,0</td>
<td>184,2</td>
<td>186,8</td>
<td>190,6</td>
<td>25,8</td>
</tr>
<tr>
<td><strong>Investment</strong> (in € billion)</td>
<td>5,8</td>
<td>6,8</td>
<td>6,2</td>
<td>6,3</td>
<td>6,9</td>
<td>24,0</td>
</tr>
<tr>
<td><strong>Exports</strong> (in € billion)</td>
<td>51,8</td>
<td>76,6</td>
<td>153,2</td>
<td>162,1</td>
<td>163,6</td>
<td>23,4</td>
</tr>
<tr>
<td><strong>R&amp;D Expenditures</strong> (in € billion)</td>
<td>5,3</td>
<td>7,1</td>
<td>9,0</td>
<td>9,7</td>
<td>10,0²</td>
<td>29,3</td>
</tr>
</tbody>
</table>

¹ Data from Eurostat and OECD has been used for a better international comparability

² Target figures for 2013

Source: Destatis, Stifterverband, VCI
2. The Chemical Industry in Germany
The German Chemical Industry is World Champion in Exports

Chemical Exports by Country (2013, in € billion)

Source: Chemdata International, VCI
2. The Chemical Industry in Germany

Europe is the Most Important Market for the German Chemical Industry

German Chemical Exports (2013, incl. Pharma in billion EUR)

- EU-28: 95 billion
- Rest of Europe: 19 billion
- Asia: 23 billion
- NAFTA: 17 billion
- Other: 9 billion

German Chemical Exports: €164 billion

Source: Destatis, VCI
2. The Chemical Industry in Germany
Germany is the Biggest Producer of Chemicals in Europe

Shares of all Chemicals Produced in EU 28 (2013, incl. Pharma in percent)

- Germany: 26%
- France: 15%
- Italy: 11%
- Netherlands: 8%
- Great Britain: 7%
- Spain: 7%
- Belgium: 7%
- Ireland: 5%
- Other: 16%

Source: Chemdata International, VCI
German production according to chemical product groups (2013, in percent)

- Pharmaceuticals: 20%
- Petrochemicals: 20%
- Inorganic basic chemicals: 9%
- Detergents and body care products: 8%
- Polymers: 20%
- Fine and specialty chemicals: 24%

Source: Destatis, VCI
2. The Chemical Industry in Germany
Germany has the Best Workforce in Europe

Employee Qualification (2011, percent of total number in the EU 27)

<table>
<thead>
<tr>
<th>Country</th>
<th>Scientists</th>
<th>Qualified Workforce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>18.1%</td>
<td>24.2%</td>
</tr>
<tr>
<td>Great Britain</td>
<td>17.7%</td>
<td>10%</td>
</tr>
<tr>
<td>France</td>
<td>11.2%</td>
<td>15.9%</td>
</tr>
<tr>
<td>Spain</td>
<td>7.5%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Poland</td>
<td>7.2%</td>
<td>5.4%</td>
</tr>
<tr>
<td>Italy</td>
<td>7.8%</td>
<td>12%</td>
</tr>
</tbody>
</table>

1 Respective share of the total number of scientists (superior education, university degree) in the EU
2 Respective share of the qualified workforce (secondary education, post-secondary level, technicians and comparable non-technical professions) in the EU
Source: Eurostat, 2013
2. The Chemical Industry in Germany
Germany has the Best Workforce in Europe

Advantage of Site: Employee Qualification

- Germany has the highest level of employee qualification in Europe.
- Good education, advanced training and employee qualification are important success factors for the companies operating in Germany.
- Stable social partnership:
  - Employees identify with their companies to a high extent
  - Agreement-oriented partnership between companies and trade unions
- High level of productivity with committed employees
2. The Chemical Industry in Germany

Lowest Number of Strikes creates competitive advantages

Days Lost to Strikes
(annual average 2004-2008, per 1,000 employees)

<table>
<thead>
<tr>
<th>Country</th>
<th>Days Lost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>5</td>
</tr>
<tr>
<td>Netherlands</td>
<td>7</td>
</tr>
<tr>
<td>Great Britain</td>
<td>27</td>
</tr>
<tr>
<td>EU 27</td>
<td>34</td>
</tr>
<tr>
<td>Spain</td>
<td>96</td>
</tr>
<tr>
<td>France</td>
<td>110</td>
</tr>
</tbody>
</table>

Source: Eurostat, 2009
2. The Chemical Industry in Germany

Germany has Stable Labor Costs

Changes in Labor Costs in the Chemical Industry (2012 to 2008, in percent)

Source: BAVC
Development of Unit Labor Costs in Europe
(totaleconomy 2013 to 2005, in percent)

Spain 8.9%
Germany 12.5%
European Union 12.5%
Netherlands 14.2%
France 14.4%
Great Britain 19.2%
Italy 20.3%
Bulgaria 73.9%

Source: Feri
2. The Chemical Industry in Germany
Chemical Research and Development Close to Sites

The intense exchange between universities and companies ensures that the know-how advantage of German companies is maintained.

- 58 universities to train young scientists for the chemical industry
- including 18 universities offering biochemistry and 15 universities offering food chemistry
- 24 universities of applied sciences offering chemistry

Sources: German Chemical Society GDCh, 2007; Federal Ministry of Education and Research BMBF, 2008
2. The Chemical Industry in Germany
Non-University Research and Development Close to Sites

76 non-university R&D facilities for the chemical industry:

- 17 Institutes of Max Planck Society (MPG)
- 23 Institutes of Fraunhofer (FhG)
- 6 Institutes of Helmholtz Association (HGF)
- 15 Institutes of Leibniz Association (WGL)
- 15 Federal and national R&D institutes

Germany has a range of universities, R&D facilities and companies that is among the leaders in the world.

Sources: Federal Ministry of Education and Research
BMBF, 2008; Germany Trade & Invest, 2009
2. The Chemical Industry in Germany
Germany is a Top Location in Terms of R&D Qualities

European Granted Patent Registrations, Chemistry and Polymers
(2012, absolute figures)

<table>
<thead>
<tr>
<th>Country</th>
<th>Patents</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>4,336</td>
</tr>
<tr>
<td>Japan</td>
<td>2,861</td>
</tr>
<tr>
<td>Germany</td>
<td>2,833</td>
</tr>
<tr>
<td>France</td>
<td>900</td>
</tr>
<tr>
<td>Switzerland</td>
<td>712</td>
</tr>
<tr>
<td>Great Britain</td>
<td>599</td>
</tr>
<tr>
<td>Netherlands</td>
<td>448</td>
</tr>
<tr>
<td>Italy</td>
<td>383</td>
</tr>
<tr>
<td>Belgium</td>
<td>283</td>
</tr>
<tr>
<td>Sweden</td>
<td>166</td>
</tr>
</tbody>
</table>

- The number of patents underlines the success in research and development.
- Within Europe Germany is at the top of the list for patent registrations – proof that Germany is the top location for innovations.

Source: EPO, 2013
1. Germany – the Investment Location
2. The Chemical Industry in Germany
3. Chemical Parks
4. References of Investment
5. Contact
3. Chemical Parks

German Chemical Parks: Connected to the European Pipeline Grid

- The diversified oil supply structure ensures a stable supply basis for the German chemical industry.
- Germany gets its oil from the Mediterranean, the North Sea and from Russia via pipelines.
- Pipelines for ethylene and propylene complement the supply structure for chemical parks.
- Chemical parks are connected to a network of pipelines for natural gas, naphtha, hydrogen, carbon monoxide and technical gases.

Source: Germany Trade & Invest, 2012
3. Chemical Parks
German Chemical Parks: Open for Siting of Companies

Unique benefits for investors:

- 35 Chemical Parks with an excellent infrastructure and more than 2,000 ha of settlement area for companies to invest

- Numerous integration possibilities and, consequently, cost-reducing synergies

- New industry segment: “Site operators” offer professional management, chemical industry-based infrastructure, qualified settlement support as well as services and expertise from one source

Source: VCI and chemical companies, Copyright: VCI/Typoly
### 3. Chemical Parks

**Concept for Investors along the Entire Value Chain**

<table>
<thead>
<tr>
<th>Raw material producers</th>
<th>Chemicals-related processing industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic products (organic, inorganic)</td>
<td>Paper industry</td>
</tr>
<tr>
<td>Fine/specialty chemicals</td>
<td>Automotive components supply industry</td>
</tr>
<tr>
<td>Polymers</td>
<td>Oil refining</td>
</tr>
<tr>
<td></td>
<td>Aluminium industry</td>
</tr>
<tr>
<td></td>
<td>Metal working</td>
</tr>
<tr>
<td></td>
<td>Glass industry</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Processors/refiners</th>
<th>Producers of goods based on renewable raw materials/ biotechnology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastics</td>
<td>Biofuels</td>
</tr>
<tr>
<td>Pharmaceutical precursor</td>
<td>Bio intermediates</td>
</tr>
<tr>
<td>Mixed products (e.g. paints, surfactants)</td>
<td>Biopolymers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Producers of end products</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastics</td>
<td></td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td></td>
</tr>
<tr>
<td>Paints/coatings</td>
<td></td>
</tr>
<tr>
<td>Fibers</td>
<td></td>
</tr>
<tr>
<td>Detergents, cleaning gents, cosmetics</td>
<td></td>
</tr>
</tbody>
</table>

Source: VCI Sector Group of Chemical Parks, 2013
3. Chemical Parks
Individual Solutions for Investors

In Chemical Parks investors can focus on their core business and outsource all other business processes:

Management processes
- Capital, Financial Management
- Controlling, HR, Resources

Core processes
- Research/development
- Raw materials
- Production
- Marketing
- Sales
- Customers

Support processes
- Analytics
- Energies
- Technical Services
- Logistics
- PR
- Planing
- Real Estate
- Infrastructure
- Sicherheit
- Environmental Protection

Source: VCI Sector Group of Chemical Parks, 2013
Investors choose the best corresponding offer for their business model from the site operators’ wide range of services:

- **Production**
  - Vacant land
  - Site security
  - Emergency management/fire service
  - Supply and disposal networks
  - Roads and railway tracks

- **Environment/safety/health**
  - Warehousing
  - Energies/utilities
  - HR services
  - Logistics
  - Hazardous goods handling
  - Disposal

- **Analytics**
- **Authority management**
- **Maintenance/workshops**
- **Purchasing**
- **Site restaurants**
- **Engineering**
- **Basic and advanced training**

Source: VCI Sector Group of Chemical Parks, 2013
3. Chemical Parks
Advantages for companies at a glance

Investing in German Chemical Parks brings many benefits:

- Optimal economic conditions
- Professional settlement support
- Investment benefits through existing infrastructure
- Flexibilization and optimization of business model
- Focusing on core business
- Time and cost benefits through offered individual services
- Synergy potentials resulting from optimum structures (e.g. links to supply chain, connections to research institutes)
- Benefits from integrated know-how structures

Source: VCI Sector Group of Chemical Parks, 2013
The concept of Chemical Parks in Germany has proven its value. We invite investors from all over the world to take part!
1. Germany – the Investment Location
2. The Chemical Industry in Germany
3. Chemical Parks
4. References of Investment
5. Contact
"Given the ever-increasing demand for Apec® expanding capacity was required. I am very proud to continue the successful development of our company at this site. "Tadashi Tomitaka, Managing Director Hi-Bis GmbH

Decision Drivers

- Skilled local workforce
- Excellent infrastructure
- High quality of chemicals site
- Proximity to product development partners
- Financial investment incentives
### 4. References of Investment

**Honshu Chemical Industry Co., Ltd. in Bitterfeld/Greppin**

<table>
<thead>
<tr>
<th>Timeline</th>
<th>Milestones</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>1. Implementing of first plant at site</td>
</tr>
<tr>
<td>Sept. 2012</td>
<td>2. Laying of foundation stone / start of construction second plant</td>
</tr>
<tr>
<td>July 2013</td>
<td>3. Topping out second plant</td>
</tr>
<tr>
<td>May 2014</td>
<td>4. Start of production second plant</td>
</tr>
</tbody>
</table>

#### Project Data
- **Investment:** € 48 million
- **Product:** Specialty Bisphenol
- **Employees:** 50
- **Production volume 2004-2013:** 41,000 t BP-TMC
- **Annual capacity of the new plant:** 5,000 t BP-TMC
- **Cummulated annual production at site (planned):** 10,000 t BP-TMC
4. References of Investment
FP-Pigments GmbH in Leuna

"Looking for a suitable location for the construction of our plant with the aim of establishing ourselves as a reliable partner in the field of special pigments worldwide, the chemical site of Leuna offered and still offers ideal conditions. More than 500 customers from around the world are supplied from Leuna."

Markus Blomquist, Managing Director FP-Pigments GmbH

Decision Drivers
- Skilled personnel at site
- Excellent infrastructure
- Services and media supply from a single source
- Direct proximity to suppliers of raw materials
- Investment-friendly environment
- Incentives of investments
### 4. References of Investment

**FP-Pigments GmbH in Leuna**

#### Timeline

- **2007**
  - Initial contact
  - Location decision
  - Financial incentives advising

- **Oct. 2008**
  - Start of construction

- **Oct. 2009**
  - Start of production

- **March 2013**
  - Start of construction second line

- **Jan. 2014**
  - Start of production second line

#### Milestones

1. Initial contact
2. Start of construction
3. Start of production
4. Start of construction second line
5. Start of production second line

#### Project Data

- **Investment:** About € 25 million
- **Product:** High-performance pigments
- **Employees:** 30
4. References of Investment

W. u. H. Fernholz GmbH & Co. KG in Schkopau

“ValuePark® has the ideal framework conditions for highly innovative film production. By using local Dow raw materials, we are able to better respond to market requirements and growing customer demands, improve our security of supply, and enjoy cost advantages thanks to the removal of transportation routes.”

Uwe and Frank Fernholz, Partner and Managing Director, W. u. H. Fernholz GmbH & Co. KG Plastics Processing

Decision Drivers

- Ideal conditions regarding location
- Skilled personnel
- Commodities at site
- Customer proximity
- Investment incentives
4. References of Investment
W. u. H. Fernholz GmbH & Co. KG in Schkopau

Timeline | Milestones
---------|------------
Oct. 2008 | 1. Initial contact
Dec. 2008 | 2. Location decision
April 2009 | 3. Financial incentives advising
           | 4. Start of construction
Dec. 2009 | 5. Start of production

Project Data
- Investment: € 6 million
- Product: FFS-Foils
- Employees: 11
- Annual capacity of the new plant: 10,000 tons
4. References of Investment
CO₂ Betriebs-GmbH & Co. KG in Höchst

"This facility makes us more independent from suppliers and improves delivery reliability for users." Gerhard Schlüter and Dr Thilo Rießner, Managing Directors of CO₂ Betriebs-GmbH & Co. KG

"Innovative projects with significant environmental benefits are best implemented at large industrial estates where efficient resource management is part of the day-to-day business.” Dr Roland Mohr, Managing Director, Infraserv Höchst

Decision Drivers
- Ideal site environment (availability, location, logistics, one-stop shop)
- Raw material on site (plant-to-plant)
- Customer proximity (metropol region Frankfurt)
- Investment protection (site development)
4. References of Investment
CO₂ Betriebs-GmbH & Co. KG in Höchst

Timeline | Milestones
--- | ---
Oct. 2008 | 1. Initial contact
Dec. 2008 | 2. Location decision
April 2009 | 3. Financial incentives advising
Dec. 2009 | 5. Start of production

Project Data
- Investment: EUR 5.2 million
- Product: Carbon dioxide (liquid CO₂)
- Benefits: Reduction of CO₂ emissions through reuse
- Annual capacity of new plant: 28,000 tons
4. References of Investment
Sirtex Medical Ltd. in Höchst

“Our new Frankfurt production site will play a key role in supplying our customers in the fast-growing European market and newly tapped markets in the Middle East and in Africa. We believe that satisfying customers' needs is about more than delivering top-quality products. It is also about delivering them on time with short transport distances. The new plant will make us faster and more efficient and allow us to respond flexibly to growing demand in the future, too." Nigel Lange, Chief Executive Europe, Sirtex

Decision Drivers
- Central location (airport, logistics, customer proximity)
- Excellent base for market development
- One-stop project development and execution
- Customized site services

Location Industriepark Höchst
4. References of Investment
Sirtex Medical Ltd. in Höchst

Timeline | Milestones
--- | ---
June 2012 | 1. Initial contact
June-Nov. 2012 | 2. Feasibility study / concept design
Dec. 2012 | 3. Location decision
April 2013 | 4. Planning
End 2014 | 5. Start of construction (conversion + finishing)

Project Data
- **Investment:** € 3 million
- **Product:** SIR-Spheres microspheres against liver cancer
- **Supplied to:** Europe, Middle East and Africa
- **Number of employees:** 10
- **Production start:** end of 2014
1. Germany – the Investment Location
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Information About the Chemical Industry/Chemical Parks:

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Picture credits: BASF SE, Dow Olefinverbund GmbH, FP-Pigments GmbH, Germany Trade & Invest (GTAI), Hi-Bis GmbH, Infraserv GmbH & Co. Höchst KG, Sirtex Medical Ltd., VCI/Typoly, W. u. H. Fernholz GmbH & Co. KG