«CURRENT SITUATION AND DEVELOPMENT PROSPECTS OF GAS AND PETROCHEMICAL COMPLEX OF THE REPUBLIC OF TATARSTAN»

JSC «Tatneftekhiminvest-Holding»
Gas & Petrochemical Complex (GPCC)-priority of industrial policy of Tatarstan

Oil production  +  Oil refining  +  Chemistry & petrochemistry

GPCC ratio in the economy of RT

- 6.8% By employment volume
- 33.5% By sale proceeds
- 92% By export
The main results in GPCC of the Republic of Tatarstan

- Number of companies (to 01.01.2011): 1,485 units
- Shipping volume: 22 billion USD
- Balanced financial result*: 2.6 billion USD
- Number of people employed: 87.5 thousand

* for January-November 2010
Investment in fixed capital of GPCC of Tatarstan in 2010

- **Oil refinery (66.3%)**
- **Oil production (24.5%)**
- **Rubber and polymer products production (3.2%)**
- **Chemical production (6.0%)**

3.1 billion USD

*Tatarstanstat data*
Oil in Tatarstan

Production in 2010

- 32,4 mln. tons
- 830 mln. m³

Explored reserves

- 6,57 billion bbl
- 18,25 billion bbl

Explored reserves
of oil

Explored reserves
of natural bitumen
Development of Oil Refining in Tatarstan

- Complex of mid distillate hydrotreating
- Gasolines Plant
- Gas Condensate Processing Plant
- Bitumen Unit
- Aviation kerosene Unit
- PPF, BBF and LSR Desulphurization Unit
- MTBE and TAME Unit
- First stage is finished
- Decision-making
- Beginning of the construction
- 2002
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
Deep oil refinery is a direction of development of Tatarstan

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<tbody>
<tr>
<td>Oil refinery, mln. tons</td>
<td>7.9</td>
<td>15.3</td>
<td>190%</td>
<td>24.1</td>
</tr>
<tr>
<td>The depth of refinery</td>
<td>25%</td>
<td>47%</td>
<td></td>
<td>74%</td>
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**Investments:**
- Construction of oil deep refinery complex: > 7.1 billion USD
- Construction of oil deep refinery complex: 2 billion USD
October 2010 – start of «TANECO» complex

New Complex consisting of Oil Refining and Petrochemical plants with the capacity of 7 mln. tons/year with further development of petrochemical cluster on its base

Total cost – 4.6 billion USD

International Financial Consultant of the Project - BNP Paribas
Tatarstan in production of polymers and rubbers in Russia

- **polystyrene**: 60%
- **polyethylene**: 50%
- **polypropylene**: 32%
- **rubbers**: 37%

*Share of Tatarstan in total country production*
Polymers production dynamics in Tatarstan

- **Polyethylene**: 762 th.t.
- **Polypropylene**: 200 th.t.
- **Polystyrene**: 184 th.t.
- **Polycarbonate**: 57 th.t.
JSC "Nizhnekamskneftekhim": New ABS plastics Plant

- Production capacity: 60 th. tons/year.
- Employees: 126 persons.
- Commissioning: in 2012.
- License agreement with "Polimeri Europa" (Italy) was concluded.
- Front end engineering design was developed by "Technimont" (Italy).
- Procurement Contracts on main long-term manufacturing equipments were signed.
Construction of propylene oxide and isobutylene production JSC “Nizhnekamskneftekhim”

<table>
<thead>
<tr>
<th>Propylene oxide (construction of plant)</th>
<th>Isobutylene (increasing of capacity)</th>
</tr>
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<tbody>
<tr>
<td><strong>Investments:</strong></td>
<td><strong>Investments:</strong></td>
</tr>
<tr>
<td>500 mln.USD (VAT included)</td>
<td>15.2 mln.USD (VAT included)</td>
</tr>
<tr>
<td><strong>Capacity:</strong></td>
<td><strong>Capacity:</strong></td>
</tr>
<tr>
<td>Propylene oxide</td>
<td>561 thousand tons (+201 thousand tons)</td>
</tr>
<tr>
<td>125 thousand tons</td>
<td></td>
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<tr>
<td>Trimethylcarbinol</td>
<td></td>
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<td>340 thousand tons</td>
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Alpha Olefins production modernization
JSC “Nizhnekamskneftekhim”

**Investments:** 92 mln. USD (VAT included)

**Capacity:** 75 thousand tons

**Current technology**
- Licensor – Ethyl Corp
- C₄-C₆ fraction output **23%**

**Future Technology**
- Licensor – Linde («Alpha-Sablin»)
- C₄-C₆ fraction output **68%**
Construction of EP-1000
JSC «Nizhnekamskneftekhim»

**Capacity:**
1 mln.tons per year

**Investments (tax included):**
- 2.4 billion USD – pyrolysis process
- 0.9 billion USD – polymers production

**Products of new complex:**

- EP-1000
  - $C_4$ Fraction
  - $C_5$ Fraction
  - $C_9+$ Fraction
  - Pyrolysis resin
    - Ethylene
    - Propylene
    - Butadiene
    - Benzene
      - Ethylene oxide
      - Poly-ethylene
      - Poly-propylene
        - MEG
        - Neonols
Gas to Olefins complex process

Capacity: 1 million tons olefins per year

Investments: 2.8 billion USD (without VAT)

Products:
- Ethylene (450 th.t)
- Propylene (550 th.t)
- Polyethylene
- Polypropylene

Technologies:
- UOP
- Johnson Matthey
- TOTAL
- ИНХС РАН
- Институт органической химии им. Н.Д. Зелинского РАН
Maleic Anhydride Plant

**Capacity:**
40 th.tons/year

**Investments (VAT incl.):**
64 million USD

**Market situation of Maleic Anhydride in Russian Federation**

Consumption in RF & CIS countries in 2010 – 3 th.tons/year.
Potential demand - up to 10 th.tons/year.
Import ratio - 100 % (Korea, Japan)
Dynamics of demand for MA in RF +5 % per annum.

**Maleic Anhydride Finished Products**
Construction of Isocyanate Plant for Polyurethane Production

**Capacity:**
50 th.tons/year
Methylenediisocyanate, Toluoldiisocyanate

**Investments (VAT incl.):**
212 million USD.

**Import of Isocyanates:**
2009 : 65 th.tons
2010 : 205 th.tons
(growth rate - 316%)

Aniline, toluene → Isocyanates (MDI, TDI) → Polyurethanes

Polyurethane finished products
Construction of polyethyleneterephthalate (PET) production

Capacity: 300 thousand tons per year

Investments (VAT included): 174 mln. USD

Import of PET:
- 2009 year: 221 thousand tons
- 2010 year: 275 thousand tons

PET Finished Products
Production of acrylonitrile

Capacity:
- Acrylonitrile: 250 thousand tons
- Hydrogen cyanide: 26 thousand tons

Investments: 200-250 mln.USD

Production of sodium cyanide from hydrogen cyanide

Capacity: 46 thousand tons

Investments: 40-60 mln.USD
New Complex of Grain Processing

<table>
<thead>
<tr>
<th>Product</th>
<th>1 variant</th>
<th>2 variant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity, th. tons of feedstock</td>
<td>400</td>
<td>1 000</td>
</tr>
<tr>
<td>Investments, mln. USD</td>
<td>198</td>
<td>301</td>
</tr>
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- **Industrial Enzymes**
  - α-amylase
  - glucoamylase
  - protease
  - lepase
  - cellulase
  - pectinase & others

- **Vitamins**
  - ascorbic acid (C)
  - nicotinamide (PP)

- **Biomass of living cells**
  - Biocatalysis in chemistry
  - soil, water & air treatment

- **Chemicals**
  - lactic acid
  - citric acid
  - 1,3 - propandiol

- **Carotinoïds**

- **Amino Acids**

- **Antibiotics**

- **Polysaccharides**

- **Biodegrade Polymers**

- **Bioproducts**
  - Biodegrade Polymers
  - Biofertilizers, Bio pesticides

- **Fructose Syrope**
  - Sugar substitute
Himgrad industrial park, Kazan city

- Volume of investments: 12.5 billion roubles.
- Project Implementation period: 10 years.
- Payback period: 6-7 years.
- Volume of production: 16 billion roubles/year.
- Tax proceeds: 3 billion roubles/year.
- Number of employees: 10,000.
- Number of residents: 200 companies.

- Polymers conversion
- Low-tonnage chemistry
- Infrastructure
- Business area
- Photo and cinema films production
- Logistics
- Hi-tech park
- Prospect development zone
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