

# RUSAL

## **Expansion of Production Capacities and Technical Modernisation: RUSAL's Expertise**

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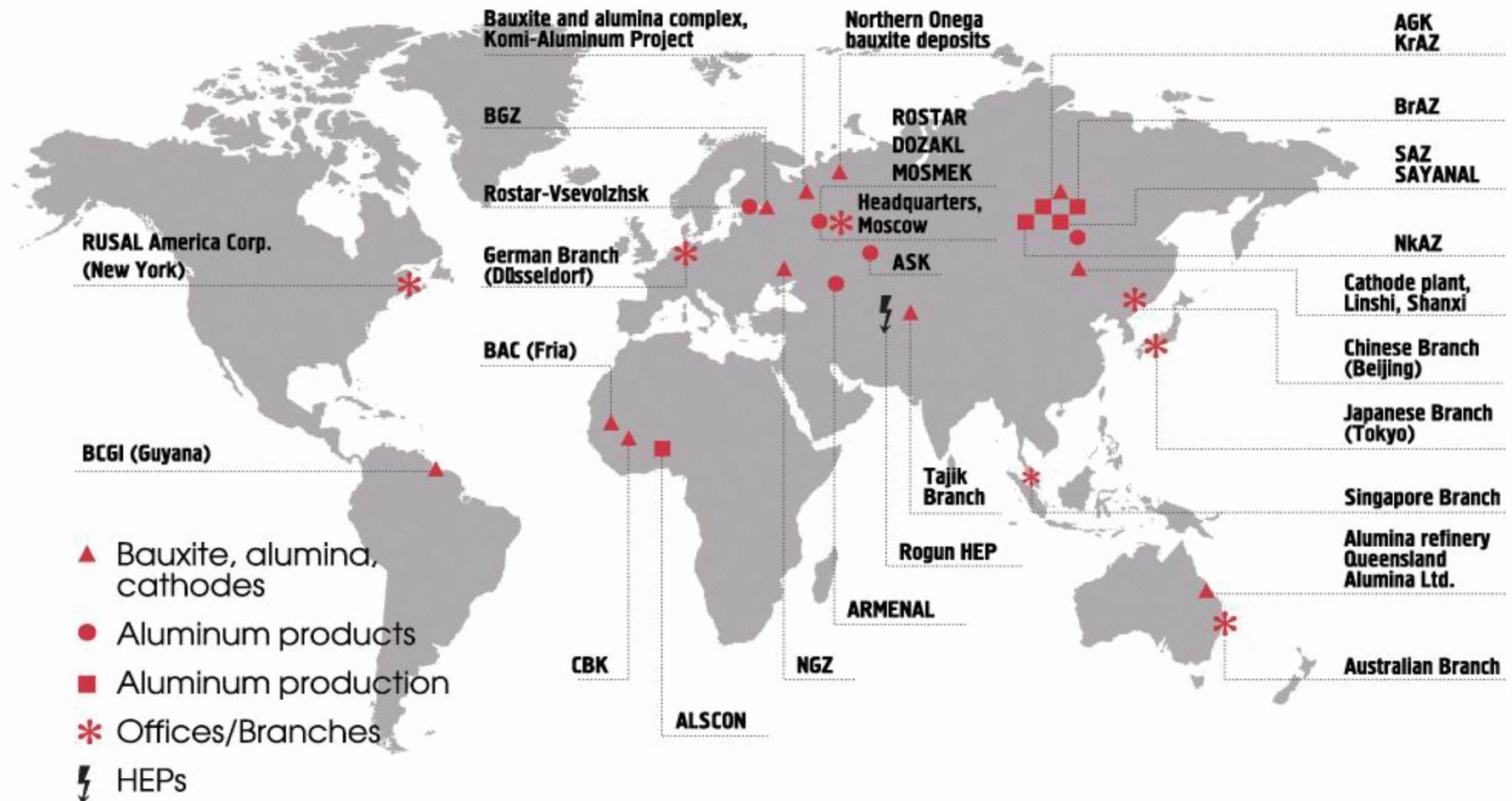


- **Foundation Year - 2000**
- **One of the top three world's producers of aluminium and its alloys**
- **Apprx. 10% of the entire global aluminium output**
- **In 2006, the annual output reached 2.7 mln tonnes of aluminium**
- **Revenue in 2006 - US\$ 8.18 billion**
- **Investments in capacities expansion, revamping and modernisation in 2006 - US\$ 603 million**
- **Total investment budget in 2006 - US\$ 1.4 billion**
- **Headcount – 47, 000**

# From Local Production In Siberia To Worldwide Operations



RUSAL's operations and offices are located in **9** regions of Russia and **14** foreign countries. We are present in the **five** continents. Our products are sold to **50** countries



**The strategic goal of RUSAL is to become the largest and most efficient aluminium company in the world, i.e.:**

- **Bring its production capacities to 5 mln tpa of aluminium**
- **Increase alumina production to 8 mln tpa**
- **Raise the alloys share in the total primary aluminium output to 50%**
- **Become one of most cost-effective companies in the worlds in terms of costs per one tonne of aluminium**
- **Double the productivity parameters**
- **Become an Employer of Choice (a company where people feel comfortable, have optimal labour conditions and attractive wages)**

# The Chosen Approach To Achieve The Strategic Goals



**To meet the strategic goals of RUSAL, the company management decided to establish its own structure:**

- **Engineering and Construction Division –**
  - **And also Russian Engineering Company (Russkaya Inzhiniringovaya Kompaniya, or RIK) as a legal entity and a subsidiary company of the RUSAL Holding to manage the business of Engineering and Construction Division**

- **R&D**
  - ✓ Design and introduction of new technologies for aluminium and alumina production
- **Modernisation of the existing operations**
  - ✓ Modernisation projects
- **Maintenance and repairs of process equipment**
- **New construction projects**
  - ✓ Implementation of investment and construction projects ('full-cycle': from a feasibility study stage, construction, commissioning and start-up)
- **Manufacturing of key process equipment (the product list is continuously expanding)**

# Engineering And Construction Division Today



- **Headcount – 9,500 people**
- **Technology improvement investments: US\$ 26.2 mln in 2006 (US\$ 137.5 mln to be further spent until 2010)**
- **Construction and modernisation investments (production facilities) until 2010: over US\$ 10 bln**
- **The completed projects (over US\$ 1 bln investments in 2006):**
  - **Construction of the Khakass aluminium smelter (start-up of the first half-potroom)**
  - **Modernisation of the Sayanogorsk aluminium smelter**
- **Activities in 4 foreign countries:**
  - ✓ **Russia (modernisation of aluminium smelters and construction of new smelters)**
  - ✓ **Ukraine (capacities expansion)**
  - ✓ **Guinea (capacities expansion)**
  - ✓ **Nigeria (aluminium smelter start-up and modernisation)**
- ✓ **8 branches and autonomous affiliates**

**RUSAL wants to design and develop its own competitive technologies which would allow our Company to reach required technical, economic and environmental parameters**

## Own RUSAL's technologies

### **Development of new technologies**

*(Cell RA-300 kA and RA-400 kA, alloys production, smelting process at high density of current, potassium bath, emissions reduction, alumina production, and also tests at own pilot areas)*

### **Upgrade of the current technologies**

*(improvements of the Soederberg technology, Increased density of current, emissions reduction)*

### **Modernisation and engineering of new process equipment**

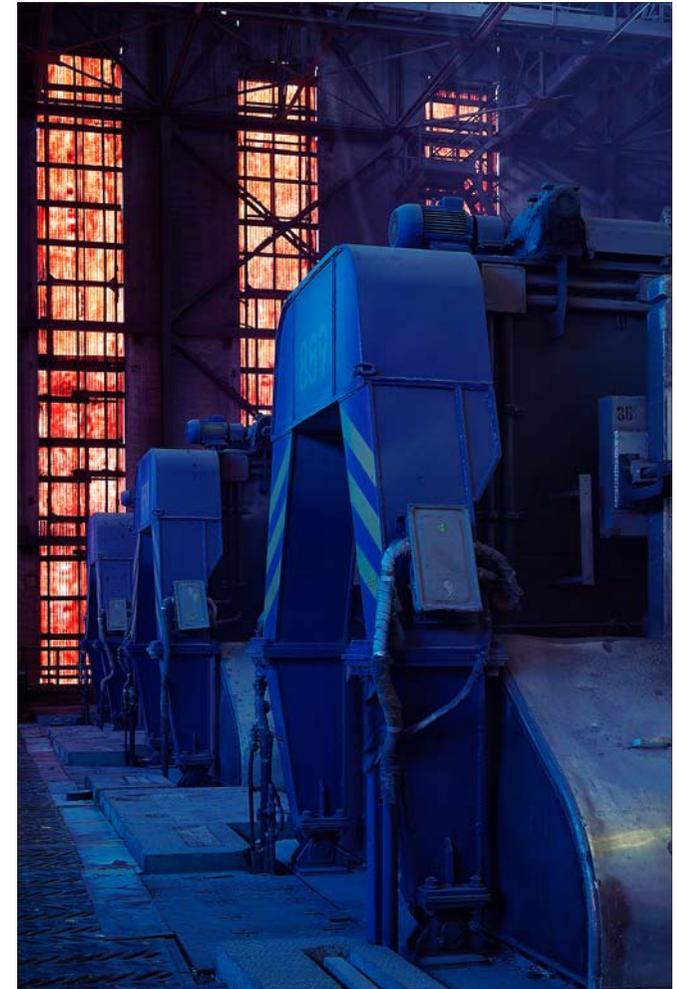
*(development of high-efficiency 'new generation' equipment for alumina production, creation of 'RUSAL's Industrial Park' in Russia open to foreign equipment suppliers and manufacturers such as HENCON, NKM Noel, Mechatherm, Areva, Lefebvre, Storvik and others)*

## Cells RA-300 and RA-400

- Lower electricity consumption
- **30%** less roof emissions
- **30%** higher productivity

Capex in a new construction if equipped with these new cells:

- ✓ RA-300 **US\$2,700-3,000** / mt of aluminium
- ✓ RA-400 **US\$2,400-2,700** / mt of aluminium



# Current Projects Of Capacities Expansion And Modernisation At The Existing Production Sites



BUSINESS / PROJECT	STATUS
<b>ALUMINIUM PRODUCTION</b>	
Modernisation of RUSAL Krasnoyarsk	Construction
Modernisation of RUSAL Bratsk	Planning
Modernisation of RUSAL Sayanogorsk	Completion
Modernisation of RUSAL Novokuznetsk	Construction
<b>ALUMINA PRODUCTION</b>	
Modernisation of RUSAL Achinsk	Planning
Capacity expansion of RUSAL Nikolayev (Ukraine)	Construction
Capacity expansion of Fria alumina refinery (Guinea)	Planning

# Projects Of New Construction



BUSINESS / PROJECT	STATUS
<b>ALUMINIUM PRODUCTION</b>	
Construction of the Khakass aluminium smelter	Start-up of first half-potroom – Q4, 2006
Construction of the Taishet aluminium smelter	Beginning of early works – Q4, 2006
Construction of the Boguchansk aluminium smelter	Planning
<b>ALUMINA PRODUCTION</b>	
Construction of a bauxite-and-alumina complex in the Komi Republic	Early works
<b>POWER GENERATION</b>	
Completion of the Boguchansk hydropower plant	Construction
<b>CIVIL CONSTRUCTION</b>	
In the regions where new industrial projects are implemented	Planning

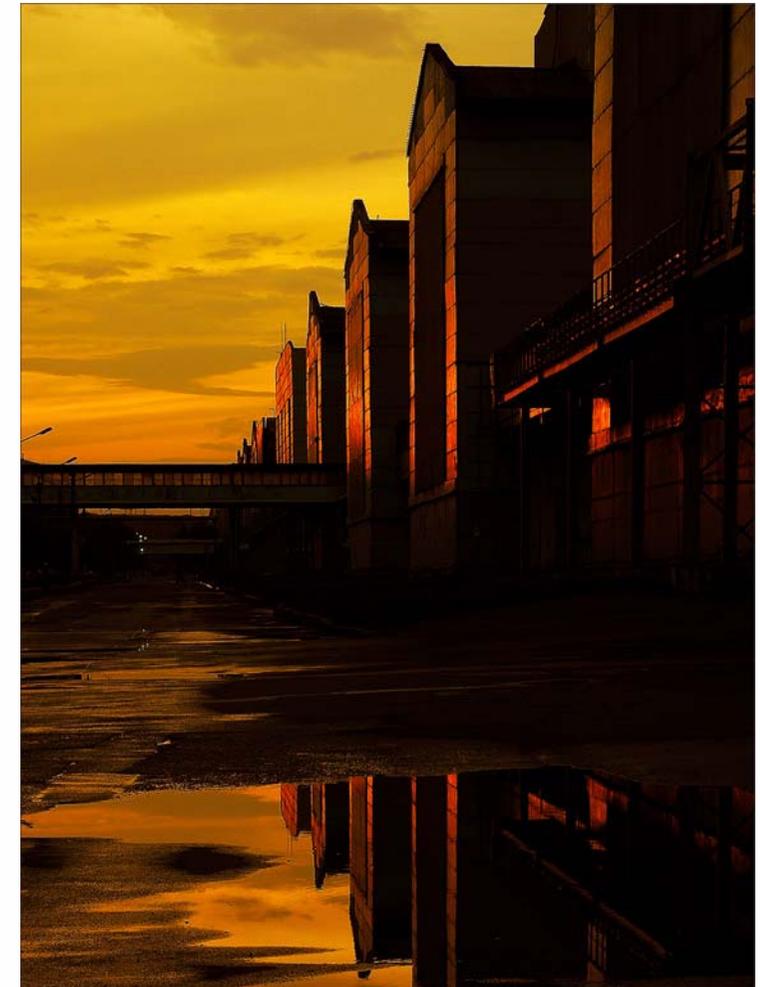
**Our modernisation projects are aimed at a reduction of industrially-induced environmental impact and also, a production output increase**

- ✓ **Use of advanced technologies with best possible environmental parameters**
- ✓ **Construction of high-efficiency dry gas scrubbers**
- ✓ **Enhanced wastewater treatment systems and water return, conversion to closed-loop water system**
- ✓ **Reduction of wastes, construction of mud disposal fields which meet international safety standards**

# Modernisation Project At RUSAL Krasnoyarsk



- **Project implementation period: 2003 - 2008**
- **Capital investments will be over US\$ 300 mln:**
  - **New automated alumina supply**
  - **New dry gas scrubbers**
  - **Conversion to modern 'dry anode' technology**
  - **Higher amperage**
  - **Environmental impact assessment study**
- **Planned production growth – apprx. 10%**
- **Planned emissions reduction:**
  - **Hydrogen fluoride - 33.3%**
  - **Tars - 37%**
  - **Benzapyrene - 40%**



# Modernisation Project At RUSAL Sayanogorsk



- **Total investments – US\$ 62 mln:**
  - **18 new cells**
  - **Higher amperage**
  - **Upgrade of the gas scrubbers**
  - **Modernisation of baked anode production**
  
- **Planned production growth – appr. 5.5%**



# Modernisation Project At RUSAL Nikolaev



- **Capacity expansion at the Nikolaev alumina refinery (Ukraine)**
- **In 2006 – completion of the capacity expansion project (from 1.1 to 1.3 mln tpa)**
- **In 2006 – start of the modernisation works at all the stages of alumina production and introduction of a ‘sweetening’ technology to further increase annual production output to 1.6 mln of alumina**
- **Construction of a dry-stacking red mud disposal**



➤ **In 2003 RUSAL founded its Service Centre**

**Functions:**

- Overall and minor repairs of process equipment
- Same approach to repairs at all production sites
- Modern test and diagnosis methods of equipment
- Advanced repair and maintenance practices
- Participation in investment projects (assembly, installation)

**Maintenance and repairs branches:**

- 12 regions
- 14 different areas of services

## New Construction Projects (Aluminium Business)



- **December 15<sup>th</sup>, 2006 – RUSAL commissioned the Khakass aluminium smelter**
- **The first production facility in the Russian aluminium and metals industry ever built in last 20 years**
- **Total investments in this project – over US\$ 750 mln**
- **Annual design capacity of the smelter – 300,000 mt of aluminium**
- **Capex in the regional infrastructure – over US\$ 21 mln**
- **Over 1,000 new jobs for local community**
- **Modern RA-300 cells (RUSAL's own technology)**
- **Advanced baked anode technology**

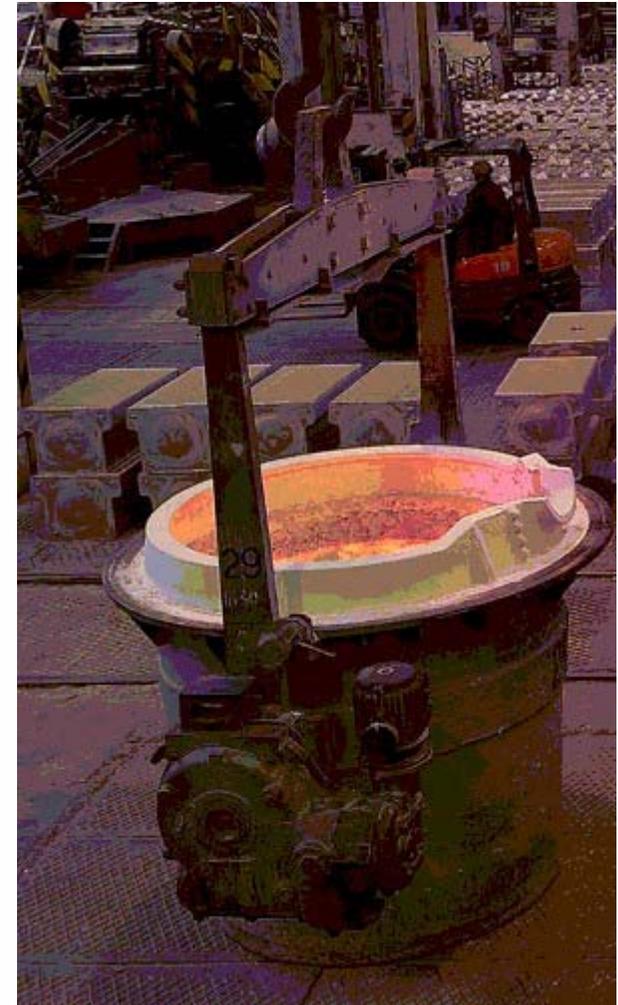


## New Construction Projects (Aluminium Business)



### **Construction of an aluminium smelter in Taishet (the Irkutsk region)**

- **Annual design capacity to be 600,000 mt**
- **Total investments – up to US\$ 2 bln**
- **First hot metal scheduled for early 2009**
- **Creation of apprx. 1,700 jobs at the smelter  
and apprx. 500 at auxiliary services**



## New Construction Projects (Aluminium Business)



**RUSAL and Hydro OGK are building the Boguchansk aluminium smelter (as a part of their joint BEMO project):**

- **Use of RUSAL's own smelting technology RA-300**
- **Annual aluminium production capacity – 600,000 mt (300,000 mt after the start-up of Line 1)**



## New Construction Projects (Alumina Business)



### **Construction of a bauxite-alumina complex in the Komi Republic (a JV between RUSAL and SUAL):**

- **Construction of a 1.4 mln tpa alumina refinery in the Komi Republic**
- **Expansion of the Ilman bauxite mine to 6 mln tpa of bauxite by 2008**
- **Participation of IFC and EBRD as financing providers**

### **After the start-up:**

- **Own alumina production will increase to 4.5 mln tpa**
- **70-80% of raw materials for the domestic aluminium industry will be produced inside Russia**
- **Additional investment (US\$ 25-30 mln) in the development of the Komi Republic's infrastructure**
- **Up to 10,000 new jobs**
- **Considerable tax revenues to the regional budget**



## New Construction Projects (Power Generation Business)



**RUSAL and Hydro OGK are working on the construction completion project of the Boguchansk hydropower plant (as a part of their joint BEMO project):**

- **Capacity - 3,000 megawatt**
- **Capex - US\$ 420 / kWt**
- **Completion of Stage 1 - 2009**
- **Completion of Stage 2 - 2012**



# Advantages Provided By Engineering And Construction Division



## **A structure which:**

- **Has its own methodology of project management**
- **Designs new technologies**
- **Has its own engineering elements (the VAMI institute)**
- **Manufactures key process equipment**
- **Carries out assembly and installation works**
- **Provides service maintenance at the existing capacities**

## **THIS ALLOWS TO:**

- ✓ **Reduce capex at new construction projects**
- ✓ **Complete construction within the shortest periods**
- ✓ **Increase competitive abilities of RUSAL by own R&D resources**
- ✓ **Improve the quality of and have same approaches to service maintenance and repairs at the existing production sites**
- ✓ **Develop bankable feasibility studies for investment and construction projects**

## Strategy for growth



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