

RUSAL

RUSAL Business System as
a tool of production and management process
improvement

Oleg Burkatskiy
Director for Sustainability and
RUSAL Business System

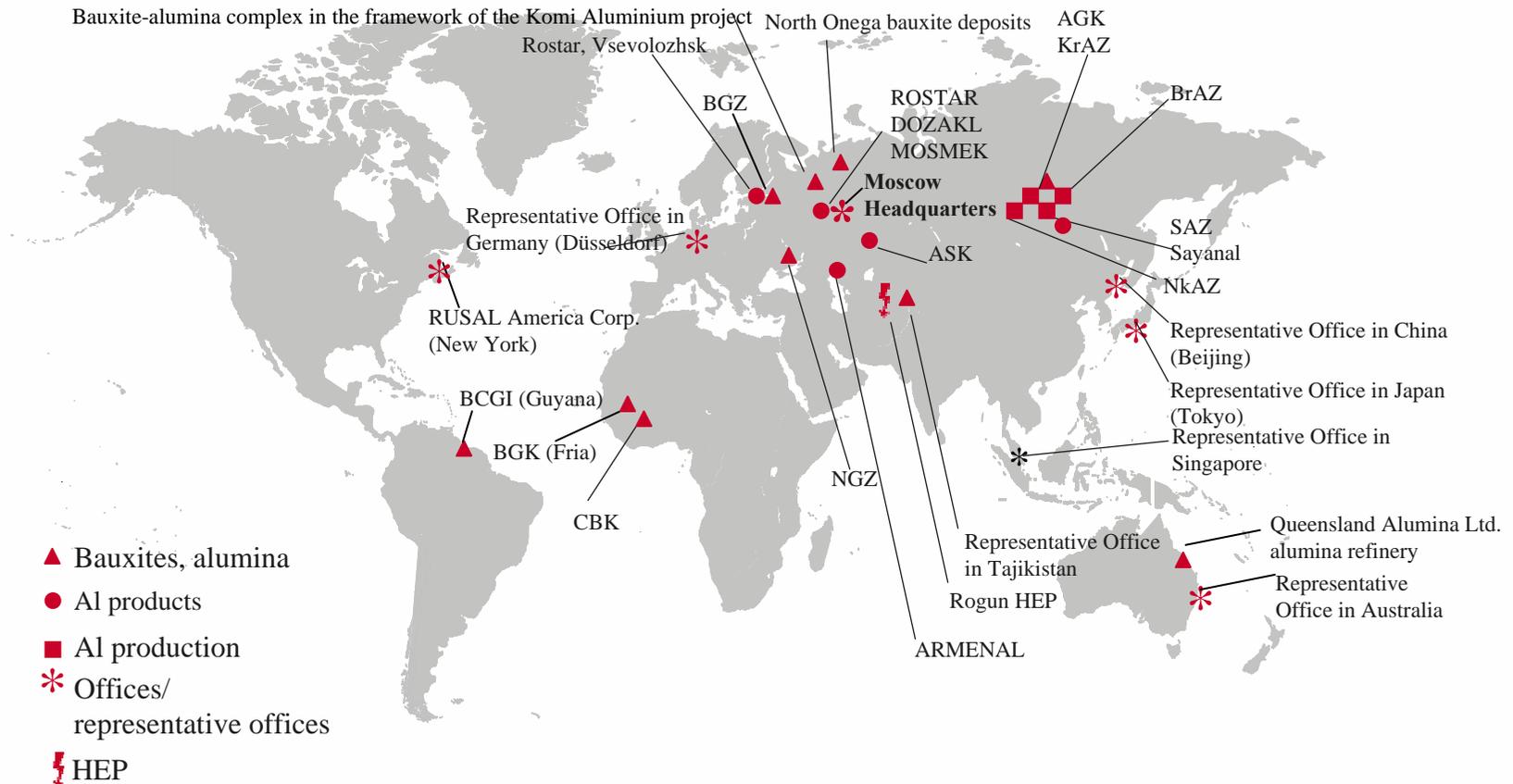
marcus evans conferences
Six Sigma and Lean in the CIS
30th March 2006, Moscow



RUSAL geography



We are represented in 13 countries worldwide and in 9 regions of Russia; our production is exported to 50 countries worldwide



- ▲ Bauxites, alumina
- Al products
- Al production
- * Offices/
representative offices
- ⚡ HEP

RUSAL today



No.3 in the world

No.1 in Russia

10% of the world market

2.7 mln. tonnes of aluminium

USD 6.1 mln. turnover

USD 2+ bln. in investments, 2006

47,000 employees

- No.1** aluminium producer in the world
- No.1** in efficiency and productivity
- 5** mln. tonnes of aluminium
- 8** mln. tonnes of alumina
- USD 8** bln. in investments for 10 years

Tools for achieving strategic goals



- 1. In-house manufacturing technologies (RA-300, RA-400 cells)**
- 2. Outsourcing (establishment of service centres, Sibir industrial park)**
- 3. Advanced management technologies (SAP R/3)**
- 4. RUSAL Business System**

Traditional corporate culture



- **Directions from the top: What to do and How to do it**
- **The major goal is to produce as much as possible, not considering the production process itself**
- **The workers' creativity potential is not taken into account**
- **Complex and long decision-making chain**
- **Conviction: Only specially assigned people can work on improvement implementation**
- **Increasing profits by means of large capital investments.**

This is YESTERDAY's philosophy!

- **Common sense is the basis.**
- **Management principle: “These are our goals. Tell us what assistance you need in order to achieve them at the minimum costs, with the best quality and in the least time possible.”**
- **The goal is the maximum customer satisfaction. The focus is on the **process****
- **The workers are the main characters**
- **There are partnership relations between managers and workers**
- **Work on improving the current situation is everyone’s business**
- **Small everyday changes in which all the staff take part.**

Lean Production philosophy

- **RBS is the system of activity, organisation and management based on principles and tools ensuring achievement of maximum efficiency by universal involvement of the staff in the continuous improvement process**
- **Expression of lean production philosophy as applied to aluminium business**

TWO aspects:

- In-house production system (has been implemented at plants since 2003);
- Effective system of company management (under development since November 2005)

- **5S:** workplace organisation
- **Visualisation:** reporting on production system effectiveness
- **Description of processes** as value-creating flows
- **Description and standardisation of the manufacturing technology (RMT):** effective process management; determination of staff duties.
- **Step-by-step operation execution charts (SOEC)**
- **“Just in time”**
- **Effective equipment maintenance:** elimination of loss related to equipment operation
- **Equipment reset “at a single touch”**
- **Statistical process management**

In order to adapt the lean production principles and develop the methods and implement RBS at the plants, the following has been done:

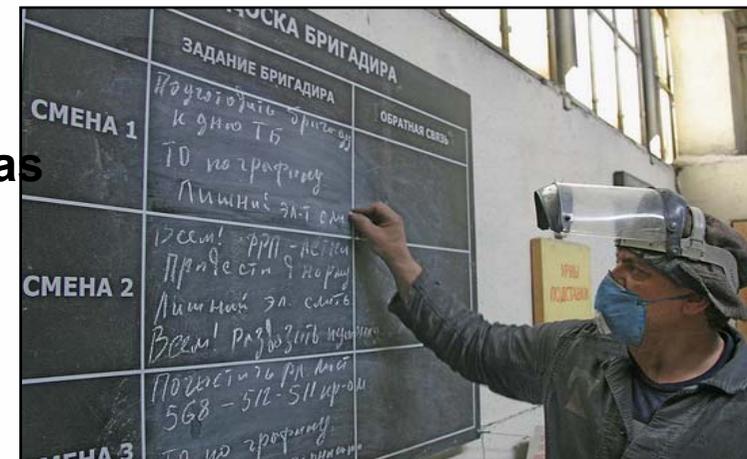
- **Pilot areas (business units) have been created:**
 - Five – in 2003
 - Eighteen – currently exist
- **Work groups have been formed to deal with formulating and implementing new approaches immediately at the business units.**

Objective:

Build “benchmark production” on the basis of business units and then distribute the gained experience to other divisions.

RBS: Team organisation

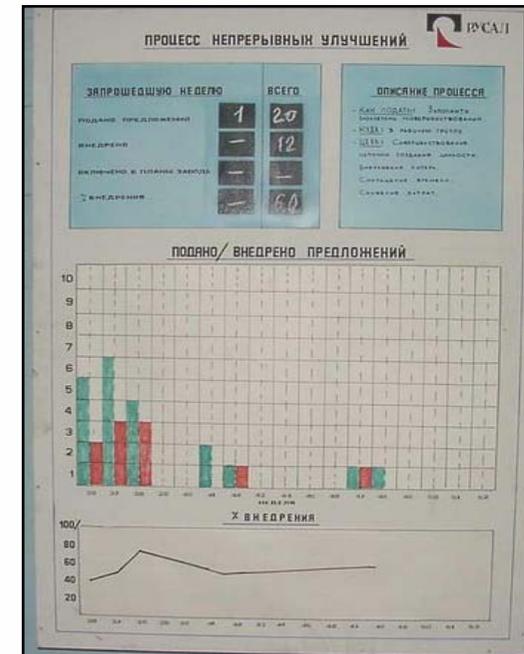
- **Transfer to labour organisation based on small teams and assignment to workplaces and equipment.**
 - An autonomous cell which does not require control on the manager's part and which makes decisions itself,
 - Effective training of all re-hired employees,
 - Increasing responsibility of team members for achievement of the set goals and for appropriate condition of equipment, tools and materials;
- **The “freed” foreman is the team leader and tutor.**
- **Team goals and performance.**
- **Team meetings: joint generation of new ideas and problem-solving methods.**
- **Inter-team corporate competition.**



RBS: Analysis of a value-creating flow



- **Analysis of product traffic. Arrangements for products to pass all the stages without delays**
- **Analysis of the whole activity in order to reveal the operations which are of no value**
- **Involvement of staff in improving the current situation and in solving the existing problems**
- **Implementation of a staff proposal collection system, consideration and implementation of proposals**
- **Visualisation of statistics on the amount of proposals received and implemented**



RBS: Using the 'just in time' tool

Results of implementation within a SAZ business unit (2005):

- **The cost of current assets has been reduced by 30 %**
- **The cost of raw material stock at workplaces has been reduced by 70 %**

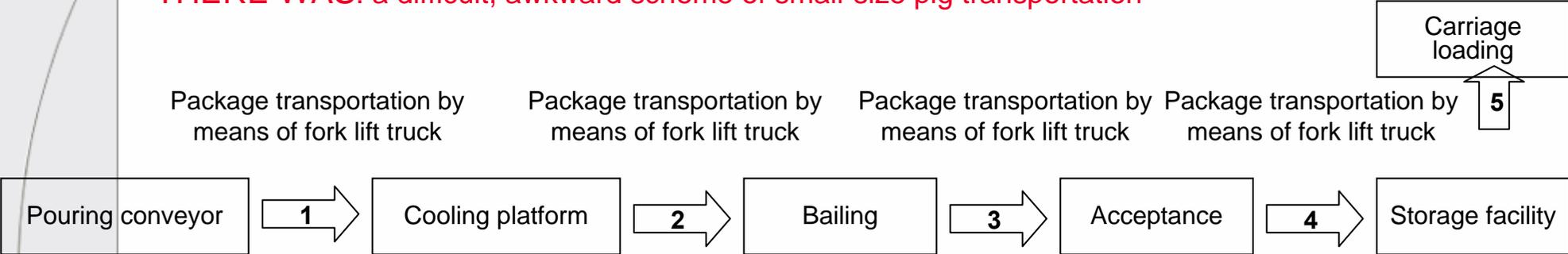
Results of implementation within a BrAZ business unit (2005):

- **Analysis of delivery and storage of process tools (scrapers, skimmers) used at the potline has been made**
- **The delivery scheme has been changed from weekly to daily delivery: reducing simultaneous storage of tools at the potline**
- **Index card system for ordering process tools (KANBAN) has been implemented**
- **Tool order stand has been made**
- **As a result of implementation, they managed to reduce the amount of tools ordered by 23% (70 pieces)**

RBS: Improvement examples

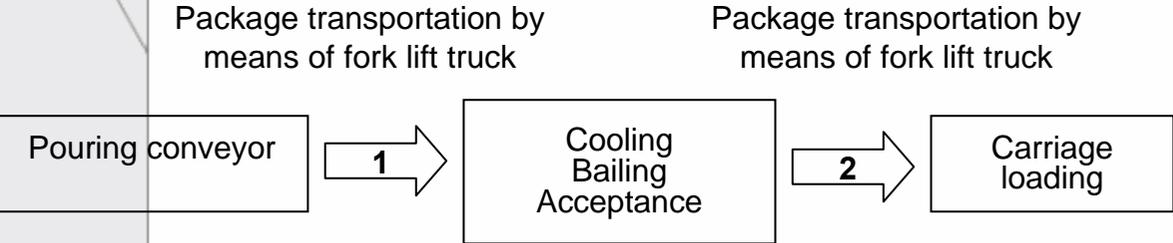


THERE WAS: a difficult, awkward scheme of small-size pig transportation



IT WAS DECIDED: To install “rails” on the floor and perform bailing and acceptance at the package cooling location.

- Reducing the lift truck use from 5 to 2 times. Reducing equipment expenses and decreasing the amount of equipment
- Reducing the shipment time, therefore, reducing the order delivery time to the Customer



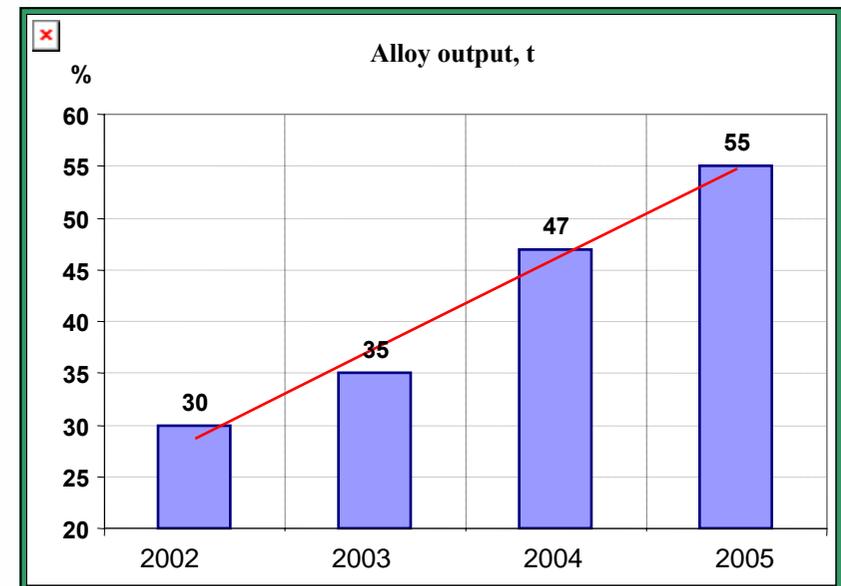
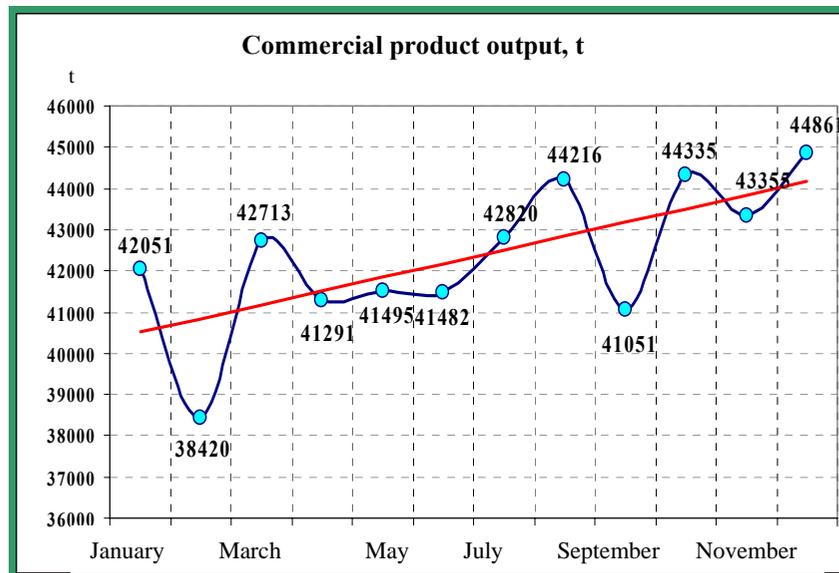
The economic effect from removing the transportation operations No. 2 and 3 only is RUR 270,000

RBS: Changes for the best



Performance indicators: SAZ casting production business unit

- Growth of commercial product output in 2005 was **6.7 %**
- Growth of commercial product output as compared to 2004 increased by **24,458 t.**
- Alloy output as compared to 2004 increased by **8 %**, **totaling 55 %** from the total product output.



www.rusal.ru

Tel.: +7 495 720 51 70

Fax: +7 495 728 49 12