

Investment project
«Creation of competitive production of
autocomponents of new generation»
for 2011-2015

The Open Joint Stock Company



Project title: «Creation of competitive production of autocomponents of new generation».



Project objective: **Realization of the innovative project of the Government program of innovative development of the Republic of Belarus for 2011- 2015**

Mastering of new technologies for processing parts of type bodies of rotation and case-shaped parts for anti-lock braking system , anti-lock traction braking system, vehicle stability control system and ABS system for a trailer with function against overturning, and also electronic system for pneumatic suspender control and other products of autotractor subjects, that will expand a bottleneck in manufacturing. It will allow to increase considerably release of braking systems of on cars MAZ both other lorries and buses of production of The Republic of Belarus, and also to have an opportunity expansions of geography of export deliveries of control systems of brakes. Manufacture of case-shaped parts by a moulding method under pressure and details from various thermoplastic materials, suitable for processing by a moulding method under pressure are also necessary at the enterprise.

Project implementation method : **Creation of joint venture or partial sale of a share fraction**

Project implementation period : **2011-2015**

Total amount of investments : **6,8 mln. dollars of the USA, including direct foreign investments 5,7 mln. dollars of the USA**

Volume of investments on years of realisation of the project : **2012 – 0,403 mln. dollars of the USA, 2013 - 1,390 mln. dollars of the USA, 2014 – 1,559 mln. dollars of the USA, 2015 – 1,800 mln. dollars of the USA.**

Directions of use of the received investments: **purchase of equipment**

The OJSC «Ekran»

History of the OJSC «Ekran» has begun in 16 May 1974, when Ministry of aircraft industry of the USSR signed order «About creating constructing BIP». New plant should bring output of production of aviation devices in deadlines.



In 7 January 1976 Ministry of aircraft industry signed order №3 «About commissioning in operating amount BIP». This date is celebrating as plant date of birth.

The Open Joint Stock Company «Ekran» is a single factory in the Republic of Belarus in producing flight-navigation complexes, automatic controlling systems, command flight devices, connection blocks, controlling and steering blocks, air control verifying equipment for airplanes SU-17, SU-24, SU-25, SU-27, SU-30, SU-33, SU-35, MIG-21, MIG-23, MIG-25, MIG-27, MIG-29, MIG-31.

Technological cycle of manufacture of autoelectronics is mastered at the factory:

machining of details (milling, turning, gear-cutting, grinding, drilling, punching operations);

casting of parts (pressure casting of aluminum alloys, casting of plastics materials);

furnacing (vacuum remelting furnaces, salt baths);

platings;

production of board on thick-film technology;

gathering production (electromounting, locksmithing, adjusting operations, superficial mounting, packaging);

testing (electrical, mechanic, climatic).

Machining section of the OJSC«Ekran»



Section of CNC the OJSC «Ekran»



Punching section of the OJSC«Ekran»



Section of casting of plastics materials of the OJSC «Ekran»



Gathering production of the OJSC «Ekran»



Section of thick films of the OJSC «Ekran»



Production of the OJSC «Ekran»



- Anti-lock braking system ABS: (anti-lock braking system of truck, anti-lock braking system of trailers structure)
- Anti-lock traction braking system
- Electronic system for pneumatic suspender control
- Detectors: pressure control device, combined pressure transducer, fuel lever sensor, transducer of signaler contaminated air filter), emergency temperature of liquid detector, liquid temperature indicator detector, emergency air pressure detector, signaling oil pressure detector, emergency oil pressure detector
- Devices: electric window washer, pneumatic switch of braking signal, emergency signaler, electronic interrupters of turns indicators, accumulator battery switch

Commodity of air subjects of the OJSC «Ekran»



Anti-lock braking system of the OJSC «Ekran»



Anti-lock braking system is installing in cars and buses with braking pneumatic circuit and has two modifications:



ABS-T – for self-propelled vehicles, motor vehicles, buses and so on.



ABS-II – for trailer part.

During vehicles moving electronic control unit constantly measure speed of all connected wheels, and also their speedup, and at overflow some threshold values actuate anti-lock regulation algorithms. Regulation is performing up to speed less 10 km/h, or to the moment when driver will finish braking. For information about last 40 seconds of emergency braking storing nonvolatile RAM is using.

Completeness of anti-lock braking system of the OJSC «Ekran»

System has two modifications:

*ABS-T – for truck
vehicle*

In system *ABS-T (4S/4K)* elements enter:

- wheels rotary speed transmitter – 4 pc.
- electric pneumatic truck modulator – 4 pc.
- electronic control unit – 1 pc.
- bundle of sensors and modulators – 1 pc.
- feeding cable of electronic of electronic control unit – 1 pc.

*ABS-II – for
trailers staff*

In system *ABS-II (4S/4K)* elements enter:

- wheels rotary speed transmitter – 4 pc.
- electric pneumatic trailer modulator – 3 pc.
- electronic trailer control unit – 1 pc.
- cable of rotary speed transmitter – 4 pc.
- cable of modulator – 3 pc.
- feeding cable of semitrailer system
or feeding cable of trailer system – 1 pc.
- spiral cable – 1 pc.

Anti-lock traction braking system of the OJSC «Ekran»

Anti-lock traction braking system provides wide range of applications, as the set of execution units overlaps the basic types of engines Euro-I, Euro-II, Euro-3, Euro-4, MMZ, YaMZ, KAMAZ. Control unit has four versions of programs ensuring and universal circuit solution.



System can work as with engines with mechanical adjuster of transmission of fuel supply of any types, and with engines with electronic control of high pressure pump, including imported. Anti-lock traction braking system provides executing rules 13 and 89 EEC UN. Elements of anti-lock traction braking system – electric pneumatic truck modulator, wheel rotary speed transmitter, cable of modulator, cable of transmitter are the borrowed elements of anti-lock braking system.

In addition in structure of anti-lock traction braking system, for cars with engines Euro-2, enter:

- proportional valve,
- valve ASR (for all types of engines),
- pneumatic cylinder,
- electronic cabin control unit.

Electronic system for pneumatic suspender control the OJSC «EKRAN»



Electronic system for pneumatic suspender control of vehicle is intended for security of comfortable conditions of operation of a driver, transfer of passengers and safety of fragile weights at transportation.

Electronic system for pneumatic suspender control components:

1. Remote-control panel;
2. Electronic unit for pneumatic suspender control;
3. Electromagnetic valves box;
4. Electronic pressure sensing transducer;
5. Displacement transducer.

Detectors of the OJSC «Ekran»



Combined pressure transducer are applied in a double-wire system of electric equipment with rated voltage 24 V a direct current in complete with corresponding ratio metric indicator and combined functions of the index and emergency transmitter.

Liquid temperature indicator detectors are designed for working in electric circuit of temperature indicator, which are installed in engines with water cooling of cars, tractors and special equipment.



Emergency temperature of liquid detectors are designed for switching on warning lamp on dashboard at emergency excess liquid temperature in cooling system and are installed on cars, tractors, buses, special equipment.

Fuel level sensor of rheostatic type, electromechanical, is designed for maintenance of fuel level control by means of connecting with it indicator pointer of fuel level and switching on signal lamp of reserve fuel level in the tank.



Devices of the OJSC «Ekran»



Electric window washers



Pneumatic switches of braking signal



Emergency signalers



Electronic interrupters of turns indicators



Accumulator battery switch

Articles in a stage working out and series manufacturing mastering of the OJSC «Ekran»



Informational control module for the bus MAZ-231



Electric pneumatic truck modulator



Control system of brakes and stabilization of movement



Anti-lock traction braking system with electronic regulation of braking forces



Electromagnetic pneumatic valve



Complex control system of electrical equipment of articulated bus

The test center of the OJSC «Ekran»



The OJSC «Ekran» has own test center, which is accredited on conformity to STB ISO/IEC 17025. Certificate of accreditation BY/112 02.2.0.0424. Period of validity to 29.08.2016.



The system of quality management of the OJSC «Ekran»

✓The system of quality management of the OJSC «Ekran» is certificated on conformity to requirements STB ISO 9001-2009. The certificate of conformity BY/112 05.01.002.0065. Period of validity to 14.12.2015.

✓The system of quality management of the OJSC «Ekran» is certificated in German system of accreditation DAR/TGA on conformity to requirements DIN EN ISO 9001-2008. The certificate of conformity QMS 00071. Period of validity to 20.11.2015.

✓The system of quality management of the OJSC «Ekran» is certificated on conformity to requirements ISO/TS 16949:2009. The certificate of conformity №55744/A/0001/SM/Ru on 06.12.2012. Period of validity to 05.12.2015.



The production plan of the OJSC «Ekran»



The main activities of the enterprise is production and realisation of products of autotractor subjects and low power electric motors on Ivatsevichsky branch. Specific weight of autotractor products in total output is 51,9%. Specific weight of production of low power electric motors in total output is 44,4 %. 3,7 % are constituted by production volume of a special equipment and other products.

As a result of the innovative project will be a saving foreign exchange by enterprises producing automobiles and tractors.

Planned development of the product, dollars of the USA

Production	The annual program	The price of the OJSC «Ekran»	The price of analogue	The sum at the price of the OJSC «Ekran»	The sum at the price of analogue	The sum of deviation
Electronic cabin control unit ЭБК 016-05	3 289	106	118	348 634	388 102	39 468
Electric pneumatic modulator ЭПИМ-01	84 000	25	30	2 100 000	2 520 000	420 000
Electric pneumatic modulator ЭПИМ-02	8 000	25	33,5	200 000	268 000	68 000
Valve ASR	14 400	14	20	201 600	288 000	86 400
Electronic pressure sensing transducer ДДЭ	3 258	32	36	104 256	117 288	13 032
Electromagnetic pneumatic valve ЭМПК	48 000	20	21	960 000	1 088 000	48 000
Total:				3 914 490	4 589 390	674 900

The implementation of the business plan will provide opportunities to make deliveries of products for export 564,7 thousand dollars of the USA.

Investments in fixed capital, mln. dollars of the USA

The equipment name	Quantity, unit	The total sum	including on years				
			2011	2012	2013	2014	2015
The equipment for manufacture and testing of an armature and commutator electric motor DP-62	6	0,26		0,26			
CNC lathe	15	3,22			1,18	1,18	0,86
Vertical-milling processing centre with CNC Vcenter	6	1,16		0,58	0,58		
The pressure casting machine OLS-420 or LK-28	2	0,84				0,33	0,51
Thermoplastic automatic machine V=60-254 cm, locking force 50-125 tf	2	0,19			0,19		
Personal computer facilities	10	0,01			0,01		
The milling and knife crusher ДФ 3/168, ДН 150/280	2	0,02				0,02	
Total:		5,70	0,00	0,84	1,96	1,53	1,37

Key performance indicators the OJSC «Ekran»



The enterprise acquired five CNC automatic lathes and three vertical-milling processing centres with CNC, and also two CNC lathes within the limits of the State Program of innovative development of the Republic of Belarus for 2007 - 2010 years «Technical re-equipment of production for expansion of release of ABS systems and completing items of autotractor technics». Two milling centres with three tables and one milling centre with pallet are acquired within the limits of the this project in the first half of the year 2012.

Production site of CNC machines for processing of case-shaped parts for anti-lock braking system, anti-lock traction braking system, intended for vehicles with engines of Euro 3, Euro 4, is organized at the enterprise.

Planned performance on separate KPI are shown in the following table:

Planned performance	unit of measurement	2012 fact	2013 forecast	2014 forecast	2015 forecast
Volume of output in the comparable prices for 1.01.11	mln. dollars of the USA	35,2	36,8	42,0	44,0
including from the project	mln. dollars of the USA	0,76	1,42	5,58	6,4
Profitability of sales	%	4,8	5,4	6,7	7,9
Net income from the project	mln. dollars of the USA	0,12	0,22	1,06	1,65

The following indicators are planned, based on the expected performance in the 2013 - 2015 years.

Planned performance	2010	2011	2012	2013	2014	2015
The growth rate of output in comparable prices, %	112,4	107,2	109,1	104,5	115,8	104,6
Profitability of sold products, %	5,6	5,9	6,1	6,8	8,6	10,4

Planned results from project realisation

The implementation of the business plan will allow :

- *To increase deliveries of issued products, to begin serial release of elements of anti-lock traction braking system.*
- *To raise quality and competitiveness of products.*
- *To reduce production costs.*
- *To improve the financial position of the enterprise.*
- *To increase the production of import-substituting products, which will save foreign exchange of OJSC "MAZ", PA "MTW".*
- *To be revenues to the state budget 19.7 billion rubles an additional .*
- *To create 32 high-performance workplaces an additional.*
- *To provide opportunities to make deliveries of products for export 564,7 thousand dollars of the USA.*

The chief goals and objectives of perspective strategic development of the OJSC «Ekran»:

- *To consolidate positions in the market of the Republic of Belarus and to increase the presence in the markets of the CIS countries, first of all in the Russian and Ukrainian markets.*
- *Escalating the volume of issued products and the beginning of serial release of anti-lock traction braking system.*
- *Improvement of product quality and satisfaction of requirements of consumers.*
- *Decrease of production costs and increase of competitiveness of the OJSC "Ekran" products.*
- *Improvement of the financial and economic condition of the enterprise.*

The initial phase of the project is implemented at the present moment, including works:

- *Marketing researches have been conducted and the quantity of anti-lock braking system , anti-lock traction braking system and electronic system for pneumatic suspender control, needed to meet domestic market, have been determined.*
 - *The business - plan of project has been developed.*
 - *The modernization program has been developed*
 - *The list of the special process equipment for production of details has been determined*
- Preparation of manufacture plan is made for its own account.*

Conclusions:

This project is implemented within the limits of the State Program of innovative development of the Republic of Belarus for 2011 - 2015 years.

Analysis of the indicators of efficiency of this innovative project allows us to conclude

that the project is a reliable and cost-effective at predicted volumes of capital investments, volumes of production and profitability of a goods sold .



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Thank you for attention!