

# **GTurbo - Token-option for gas turbine production**

## Table of Contents

<b>№</b>	<b>Name</b>	<b>Page</b>
1.	Brief Description of Project	1
2.	Definitions	3
3.	Current Industry Issues	4
4.	Detailed Project Description	6
5.	Historical background	7
6.	Market of Gas Turbines for Plants UKL-7	9
7.	List of Customers with Units UKL-7	9
8.	Competitors	10
9.	GTurbo Main Advantages	10
10.	Objectives	11
11.	Production Facility and Equipment	12
12.	Stages of Production Scaling	12
13.	Project financials	14
14.	Tokenomics	16
15.	Roadmap	17
16.	Legal Disclaimer	21
17.	Project Team	23
18.	Conclusion	25
19.	References	26

## Brief Description of Project

GTurbo is a unique project since it is the first token option for gas turbine production. The project is based on a real machine-building facility specialized in repair of gas turbines for nitric acid production.

Important fact: All the stages of designing and creation of the first head sample of the turbocharger are passed, and it has already been delivered to the Customer. Investments are needed for organization of the mass production. By taking part in the GTurbo option investors will contribute to expansion of an well-established business which is in operation since 1964.

The project combines profound experience and up-to-date technologies. At the same time, it employs blockchain technology for the needs of ICO to ensure an easier and more reliable investment.

The key features of this project are as follows:

1. Profitability, as the core manufacturing process is a high-margin one (production and repair of gas turbine plants cost a lot);
2. GTR tokens will not be affected by inflation and volatility, and it makes them a reliable tool for capital saving and multiplying;
3. Stable income source: continuous flow of orders will guarantee the investors profit up to 300% if they invest at the early stages of the project.
4. Full transparency at all stages of investment, that allows to check that the investments were put into the real production process;
5. Annual buyout of the GTurbo tokens after scaling the manufacture, according to the specified procedure.

The GTurbo project combines advanced technologies in the field of finance and industrial production of GTT-3PN gas turbine units (technological gas turbine).

Gas turbines GTT-3 (M) and GTT-3PN are used in UKL-7 (unified acid line) units for the production of non-concentrated nitric acid. It is the

basis for production of nitrate nitrogen fertilizers (ammonium nitrate and its modifications), as well as complex fertilizers (containing nitrogen, phosphorus and potassium). The industry of nitric acid in the countries of the former USSR still remains the largest in the world. Gas turbines are designed and produced only in 5 countries in the world including Russia.

Compared with GTT-3M, the new turbine GTT-3PN allows to produce 24,000 more tons of nitric acid per year (22% of the total production of one turbine per year), which is equivalent to a gain of \$ 3.5 million per year.

Decentralized direct investment in the project will be implemented through the purchase of the GTurbo option. The GTurbo financial instrument will be launched on the Ethereum blockchain platform.

## Definitions

*The main financial instrument* is a contract under which parties obtain the right and / or take the obligation to perform certain actions with respect to the underlying asset.

The *GTurbo derivative* is an optional contract for the sale of the GTT-3PN gas turbine in the form of GTurbo intangible asset (see below), which includes an option for the token buy-back at the agreed time at the agreed price. Gas turbine unit GTT-3PN is used in production of nitrogen fertilizers for agricultural needs.

Primary capital formation, or *ICO, Initial Coin Offerings*, is a way to attract capital through the use of crypto investments in the project at its initial stage (including using crypto currency). The text of the document will use the "ICO" abbreviation.

## Current Industry Issues

As in any other industry, among the main issues there are how to increase output and cut costs in order to increase the overall effectiveness and profitability.

If we speak about the nitric acid production, costs are composed of expenses for buying raw materials (ammonia) and catalysts (platinum-rhodium-palladium alloys) in addition to cost of man labor, equipment and other resources.

At the moment, the states of the former USSR produce about half of the total world output of weak nitric acid. All the nitric industry plants use equipment provided by Russian enterprises. Over 70% of the total nitric acid amount is produced with the use of modern large-scale UKL-7 and AK-72 plants (nitric acid of the project 1972 year). They are designed to produce 355 and 1150 tonnes of nitric acid per day, respectively. The temperatures at the catalytic gauzes in the ammonia oxidation reactors in UKL-7 and AK-72 are 840 and 900°C, and the pressures are 0.7 and 1.4 MPa.

Within this process, consumption of both ammonia and of the platinum-rhodium-palladium catalyst per tonne of the final product is determined at the ammonia conversion stage. The approximate losses of platinum per tonne of acid produced in UKL-7 and AK-72 are 0.135 and 0.12 g, respectively. About 85% of the costs of nitric acid manufacturing account for catalysts from ammonia and platinum metals.

The costs are high, they can be cut by increase of the total output. The key point here is upgrade of the equipment in use.

In our case, upgrade of plants UKL-7 can be performed by replacement of outdated and worn-out turbine units GTT-3M with new ones with improved design and performance characteristics. It is so because a turbine is the most loaded element of a plant for nitric acid production.

There is competitive Russian pilot product - GTT-3PN machine with single-step air compression in an axial compressor with higher performance has been developed.

Extensive use of new machines will prolongate the service life of plants UKL-7. On the basis of machines with total-head air compression and modified drive, next generation of medium power units are developed. Such units will have higher performance (20% higher in comparison with UKL-7).

## Detailed Project Description

Today, nitric acid is one of the most large-capacity and much-in-demand products in the chemical industry.

More than 50 percent of the total volume of nitric acid in the CIS countries is produced by large-tonnage UKL-7 units, the operated quantity of which on the territory of Russia, Ukraine, the Republic of Lithuania and Uzbekistan is about 100 units, including conjugate production of sodium nitrite-nitrate, concentrated nitric acid, etc.

Energy-efficient UKL-7 units with GTT-3 gas turbine drive were developed and started to be put into operation more than 30 years ago.

UKL-7 units operate in a mode of almost complete closed energy balance are the competitive ones by intensity of technology, structure, power, flexibility, autonomy and environmental friendliness. However, a long period of operation necessitated replacement of their engine parts.

The warranty resource of gas turbine units in the industry is exceeded in 1.5-2 excess.

We plan to reconstruct the energy-technological scheme of UKL-7 units by introducing a new development - GTT-3PN gas turbine unit with

full pressure axial compressor. This solution will allow to obtain a significant economic effect due to changes in the configuration of the unit, physical and architectural updating of the the gas turbine unit, which determines its productivity and reliability, the turbocharger unit, with relatively low capital costs, using the existing base of the UKL-7 machine.

To achieve this goal, we we will use have the relevant experience, gained over many years of work in the industry.

## **Historical background**

In 1992, on the ground of JSC Research and Engineering Institute of Turbine and Compressor Building of the Nevsky Plant (Saint Petersburg) employees of the departments of gas, steam turbines and axial compressors organized CJSC Nevturbotest as an engineering company. In parallel with this, OJSC Novurbo Research and Production Company was organized as the production base of Neurturbote AOZT, according to the process of privatization on the basis of an experimental industrial station (EIS) .

New control systems by Compressor Controls Corporation (CCC USA) were tested at the station. Later, they were installed in the most of compressor plants of PJSC Gazprom.

To keep its manufacturing facilities in operation we developed and launched manufacturing complex air-cleaning systems with heating and noise suppression units. The units were provided for gas pumping units of compressor plants of PJSC Gazprom, as well as for axial compressors of steel mills.

In the end of 1990's, CJSC Nevturbotest started development of design documents for reengineering of weak nitric acid units of GTT-12, KMA-2 GTT-3M types.

In 1999, the companies were restructured to form two firms: CJSC Nevturbotest or NTT (engineering) and CJSC Rigel (production).

NTT works closely with engineering enterprises.

Within recent years, NTT not only manufactured and repaired a large number of assemblies and parts of GTT-3M, GTT-12, KMA-2 turbochargers, but also provided Russian, Georgian and Uzbek enterprises with seven complete units of KMA-4 and KMA-5, and designed and manufactured a new turbocharger of the GTT-3PN type.

Due to its scientific and technological potential, experience in pre-commissioning activities and operation in enterprises of Gazprom



and Minudobreniya, the company can solve complex engineering tasks on reengineering and repair of turbo-compressor equipment.

Modernization of GTT-12 (KMA-5) was developed and implemented in order to increase production of weak nitric acid by 10-15% from the design value (50-60 thousand tons per year). The unit's runlife was increased up to 2 years.

Design documents for modernization of units UKL with the use of full-pressure turbo-compressor GTT-3PN and increase of the acid production up to 3 t/hour were developed (24,000 tons per year).

To implement the above mentioned projects in 2003 year, the company started acquisition of up-to-date metal-machining equipment to repair and manufacture turbine rotors and internal body assemblies and parts. Also, new assembly stands were designed and produced.

Turbochargers KMA-4 and KMA-5 (7 units), as well as main sample of turbo-compressor GTT-3PN were produced and delivered to Customers.

## **Market of Gas Turbines for Plants UKL-7**

At the moment, in addition to our production in Russia, few companies produce turbochargers for nitric acid production, but there is no large-scale produced engines with the performance higher than that of GTT-3PN.

The members of the project team have the experience of business cooperation with the largest enterprises of Russia and CIS.

## **List of Customers with Units UKL-7**

The operated number of units of UKL-7 on the territory of Russia, Ukraine, Lithuania and Uzbekistan is more than 100 units, including the associated production of nitrite-sodium, concentrated nitric acid, etc.

It is obvious that GTurbo has enough orders for the next 10 years. In such company position, investments made in the real production are secure.

## **Competitors**

At the moment, we have no competitors in Russia. Usage of gas turbines made by foreign manufacturers requires change of the entire process cycle (new design, equipment and construction). And it seriously incurs additional costs for production.

## **GTurbo Main Advantages**

- Experience. The company is in operation since 1964. It has provided repair and reengineering of gas turbines for the major nitric acid production enterprises.
- Networking. GTurbo has established tight cooperation with many partners (see above).
- Uniqueness. There are no competitors of the company in the regional market. The case is that the GTurbo solution is genuine and advanced.
- Robustness. Quality of the work performance is high, and the solution itself is well-developed and reliable.

## Objectives

The project team has set the following objectives:

1. Expanding production from 3 to 10 turbines per year;
2. Analyzing new markets for the turbine units;
3. Entering the energy market;
4. Analytical assessment of experience in mechanical engineering, metalworking and design work for process modernization.
5. Further promotion of the project using different channels;
6. Expanding customer network.

These objectives are planned to be achieved after the ICO, since the ICO is the main tool to attract and secure investments.

Speaking about the current production prospects, it shall be mentioned that we already have a list of orders for 10 years ahead from the companies that need our gas turbines to produce ammonium nitrate.

## **Production Facility and Equipment**

The industrial building and the land plot with a total area of more than 2500 square meters belong to the company on the property rights.

The site is equipped with all engineer communications, including autonomous space heating.

The two-span workshop is equipped with bridge cranes of 20/5 tons and 15 tons respectively.

The shop is fully equipped with: modern equipment with the ability to manufacture gas turbines with a capacity of up to 25 MW; modern welding equipment; gas-plasma cutting of metal; equipment for heat treatment of welded products and the process of austenization of heat-resistant materials.

There are laboratory equipment for hanging turbine blades and compressor, determining their own frequencies; optical stand to determine the geometry of parts of complex shape; equipment for determining the hardness of materials and their chemical composition.

## **Stages of Production Scaling**

The investment project under consideration provides for scaling production in two stages:

1. Outsourcing the manufacture of components for the GTT-3PN gas turbine. Appropriate arrangements with third parties have already been made. Assembling of plants is carried out in our own production facilities.
2. Expansion of our own production to increase the production capacity of components.

## **Expansion of Production**

Considering today's production capacity for output of 2-3 turbines per year, the main challenge is restructuring and expansion of the existing production in accordance with the renovation project to be ordered in a specialized design research institute. In line with the project, the annual output can be increased to 8-10 gas turbines per year.

The production renovation project shall include the following main stages:

- production expansion on the basis of the existing production site (general construction work);
- construction of 2 new assembly stands;
- construction of 1 new test stand;
- purchase of 3 new CNC machines;
- acquisition and installation of new blanking and auxiliary equipment;
- acquisition and installation of new of new control and measuring equipment;
- hiring new direct and auxiliary workers.

Total costs of restructuring and expansion of the production is 8-10 mln US dollars.

## **Project Financials**

### **GTurbo Project Expenses**

Upon receipt of the first investments, it is necessary to place orders to manufacture blanks for the first 2-3 turbines:

- gated patterns for bodies;
- body mouldings;
- shaft forgings;
- rotating blades of turbines and compressors;
- stationary blades of turbines and compressors;
- forgings for vane carriers and other parts;
- metal to cut required blanks.

The expenses will amount up to 400 - 450 mln rubles. It will allow to launch the complete process cycle of turbine production and to make contracts with customers under more favourable terms.

Simultaneously, the existing production will be reconstructed in accordance with the renovation project.

Such an approach will yield the first income from sales of the manufactured turbines within 2-3 years. The income will be used for both production expansion and dividend payment.

Upon receipt of the greater amount of investment, expenses for annual procurement of blanks shall be increased up to 1.2-1.5 billion rubles (for 10 turbine unit sets). Mainly, at that stage, the most funds, 8-10 million US dollars shall be used for production renovation.

Fixed annual expenses for the project implementation will amount up to 80-100 million rubles.

## GTurbo Project Revenues

Current revenues associated with the daily operation of the plant are presented in the table:

Indicator name	Value
The volume of production of gas turbine unit (GTT-3PN units)	3
Average cost of production of 1 turbine	\$4,166,667
Average sale price of 1 turbine	\$8,333,333
Total turnover per year	\$25,000,000

Note:

- the billing period is defined as 1 year;
- the exchange rate RUB/USD is taken 60

Planned revenues from the plant's activities for the year should be \$25 million. With large volumes of production, it is possible to scale up to 10 gas turbines a year.



## Tokenomics

Tokens are used to conclude an investment contract.

### Token Distribution

In general, all the GTurbo tokens will be distributed as follows:

	%	Amount of Tokens
<b>Airdrop</b>	1.00%	4,521,739.13
<b>Bounty</b>	2.00%	9,043,478.26
<b>Partners</b>	5.00%	22,608,695.65
<b>Pre-ICO</b>	5.75%	26,000,000.00
<b>ICO</b>	86.25%	390,000,000.00
Total		<b>452,173,913.04</b>

## Project Roadmap

This project assumes crowdfunding investment in the GTurbo derivative (see the definition above), which is implemented as a financial instrument on the Ethereum blockchain platform and is ensured with gas turbine unit GTT-3PN industrial product.

The main stages of the project are: "Fundraising (pre-ICO)", "Fundraising (ICO)", "Production" and "Buy-back". The road map of the project is as follows:

**Stage 1 "Fundraising (pre-ICO)"** November, 4 - November, 18, 2018.

Pre-ICO for the acquisition of GTurbo options using Ethereum blockchain. The cost of the token will be \$ 0.05, with a total of 26,000,000 tokens put out for sale (a total of 452,173,913.04 GTurbo tokens will be issued). On the first day of pre-ICO, a "bonus" of 30% of the purchased number of tokens will be available. Pre-ICO collected funds will generate a marketing budget for the ICO. Note: additional information will be posted on the project website.

**Stage 2 "Fundraising (ICO)"** November, 26 - December, 26, 2018.

Running ICO for acquisition of GTurbo options using Ethereum. The cost of the token will be \$ 0.1, only 390,000,000 tokens will be put up for sale. On the first day of ICO, a "bonus" of 30% of the purchased number of tokens will be available. ICO collected funds will form investment budget to upscale the capacity of gas turbines. Note: additional information will be posted on the project website.

We have the following milestones: the softcap is 5,000,000 US dollars, and the hardcap is 30,000,000 US dollars.

**Stage 3 "Production"**. February - June 2019 - modernization of business processes to increase capacity and start production of turbines with new business logic. March 2019 - March 2020 - the first cycle of production of turbines.

**Stage 4 "Buy-back"** June 2020.

GTurbo options buy-back will be as follows:

Buy-back Period	The percentage of tokens for buy-back from the total number of tokens sold	The buy-back price of one token	Profit in comparison with ICO price
June 2020	0.64%	\$0.15	50%
June 2021	36.06%	\$0.2	100%
March 2022	28.85%	\$0.25	150%
March 2023	24.04%	\$0.3	200%
March 2024	10.42%	\$0.4	300%

Note: the price of the token on the pre-ICO is \$ 0.05, on the ICO - \$ 0.1.

The main purpose of crowd investments in the GTurbo commodity option for investors is to acquire an option with a profit of 62% (the estimated average amount of future revenue per year); the acquired GTurbo derivative is ensured with a real commodity, which in the case of currency fluctuations is "protected" by the value of this constantly high-demand asset.

## Legal Disclaimer

To all intending purchasers: information provided in this white paper does not aim to be complete and composed on the basis of the relevant documents, which can be provided to each intending purchaser upon request.

White paper currently contains a is a description of the project based on the Gturbo's vision, of turbo, including information about the project implementation and security of the tokens.

An intending purchaser should thoroughly review the document upon its release and carefully consider whether purchasing GTR tokens corresponds to the buyer's purpose.

The regulatory regime of token sale is a dynamic process and no evaluation is final.

Despite the fact that legal expertise has been carried out and Gturbo has taken measures to minimize regulatory risks, blockchain technology is a relatively new and developing industry, so there are certain risks associated with the sale of tokens.

The legislation of some countries has established that a sale of security tokens can be qualified as an investment contract or as a sale through crowdfunding and can be regulated in accordance with existing rules.

Gturbo retains the exclusive right, at its discretion, to accept or reject purchases of GTR tokens in whole or in part, for any reason. Any rejected transaction shall be returned.

The information given in white paper was created by Gturbo and is based on its own documents and other published documents which are considered reliable. Prospective purchasers should be familiar with the legal requirements and tax implications in countries of their citizenship, residence, company activity and location with respect to purchasing, owning or management of GTR tokens.

## Project Team

The GTurbo project team consists of developers of innovative technologies, technologists, scientists-experts, managers, economists with experience in industry and finance.

**Vitaly Filipov, CEO.** Economist, manager, developer of financial technologies in banking, state, investment spheres. Vitaly was involved in investment campaigns to attract investments in the industrial sector, in particular, with the support of the state.

**Arkhip Agafonov, CTO.** In the team since 2014. Arkhip has devoted more than 20 years to the power engineering. He has been working in the development of gas turbine engines for small aircrafts, design of auxiliary gas turbine engine systems. He is concentrated in increase of production efficiency by introducing new machinery and production technologies.

**Evgeny Bukovshin, CPC.** Specialist in design of gas turbine engines and installations. He has over 3-year experience as a designer in the CIAM department of air-jet engines. Over 1 year experience in processing results of air-jet engine testing.

**Grigory Tret'yak, CRO.** Grigory has more than 13 years experience in the field of turbine unit operation in power and mechanical drive systems.

**Ivan Andrisyak, CLO.** Ivan is the experienced specialist in the field of logistics.

**Oleg Prokura, COO.** Academician of the International Academy of Social Technologies, Oleg's is the expert in the field of communication technologies.

The organizers of the project have publications, scientific articles, author's certificates and patents, corresponding to specialization in industry.

The experts of the team have experience of cooperation with industrial, construction, design, manufacturing companies in attracting financing from banking, private and foreign organizations.

## Conclusion

The participation of investors in the project involves the purchase of the GTurbo derivative, which is implemented as a financial instrument on the Ethereum blockchain platform; GTurbo is secured by an industrial product - GTT-3PN gas turbine unit. The sale of GTurbo options will occur within the ICO (at the 1st and 2nd stages of the project - in November - December 2018). The acquisition of GTurbo options can be carried out with the help of the Ethereum blockchain.

In the early days, the option will be offered to investors "with a bonus" from the base cost of the GTurbo asset. A more detailed description of the terms of investment in the GTurbo option is available on the project website. The presented technology for the production of the GTT-3PN gas turbine unit is an existing production facility with an annual turnover of more than \$16 million. The GTT-3PN gas turbine has a specific advantage over its "predecessor" GTT-3M, as well as higher service characteristics. This technology is in demand by the market, as the whole world uses ammonium nitrate in agriculture - fertilizer that can not be produced without our gas turbine units!

## References

<http://GTurbo.io>

<https://www.ethereum.org>

<https://medium.com/@argongroup/8-important-things-to-know-about-security-tokens-token-regulation-3d548a1a6367>

<http://www.essentialchemicalindustry.org/chemicals/nitric-acid.html>