

## Vortex Systems JSC

**Volume of investments required: \$ 1 200 thousand**

### Use of funds

R&D - 15 %

Acquisition of fixed assets - 25 %

Product upgrade - 10 %

Marketing - 15 %

Acquisition of current assets - 35%

### Company profile

1. Date of establishment –June 2005.
2. Size and source of investment to date – \$ 3 000. – The Foundation for Assistance to Small Innovative Enterprises, the “Start-05” program.
3. Production –gas generator.
4. Target market –none.
5. Sales 2004 – none.
6. Description and value of assets – none.
7. Goodwill and intellectual property rights – application for the invention is being registered, right holder – JSC “Vortex Systems”.
8. Signs of public recognition –Winner of the “Start-05” program of The Foundation for Assistance to Small Innovative Enterprises.

### Owners

Individuals (5)	each has 20%
Share of government property	0%

### Products characteristics

Vortex gas generator is a new (break-through) technological level in the method of obtaining producer gas serving as fuel for autonomous power plants. Biomass of one-year and long-termed cycles can serve as fuel for the gas generator:

- Side-products of timber cutting, wood working and timber processing (firewood, wood chips, sawdust, bark, hydrolytic lignine, etc.)
- Agricultural waste (husk, straw, oilcake, dung and others)
- Waste (wood scrap, paper, cardboard, domestic waste, sewage sludge)
- Peat and local coals.

The advantage of the vortex gas generator is the absence of costly fuel preparation, considerably lesser weight of the equipment, lesser content of resins in the producer gas (8–10 times) as compared to existing alternatives. The new development allows reducing the price of thermal energy obtaining process and, for the first time in the world practice of mini heat-electric generation stations, it is possible to generate cheap electric power. Field of application – equipment for supplying autonomous power stations.

### Markets & Competition

Gas generators with power up to 200 kWt is of great interest among the customers – small wood working enterprises and agricultural enterprises having bio-waste. Also a new market is forming – heating of low dwelling houses situated far from gas communications. A certain interest arises among officials of reformatory institutions, as these institutions have considerable, renewable amounts of bio-waste. Vortex gas generators can be applied in obtaining catalysts from biomass, which are used in metallurgy, oil industry, medicine, sewage disposal plants, etc.

	Data	Product of JSC “Vortex Systems”	“Flex Technologies” Inc., USA	“Thermotech”, Russia
	Geographical Region –Russia. Market size \$ 5 million			
2005	Company market share \$ ths / %	-	1 000 / 20%	750 / 15%
	Geographical Region – Russia. Market size \$ 35 million			
2009	Company market share \$ ths / %	15 000 / 42%	3 500 / 10%	5 250 / 15%

**Marketing & Sales**

Marketing strategy is aimed to introduce into potentially powerful, but "empty" market a new (non-traditional) gas generator installation having a pronounced competitive advantage (reliability, coefficient of efficiency, maintainability, optimal cost).

Sales methods are built – enterprises selling construction and wood-working equipment offer their dealer's services using their developed net of sales. Timber industry enterprises not only use gas generators for their own purposes, but also promote them among their customers. Construction enterprises specializing in building low dwelling houses consider projects with using vortex gas generator in the heating systems.

**Prospects of development**

Prospects of development of inner Russian market for consuming gas generator equipment are rather attractive, as the information concerning application of autonomous mini power stations and micro gas turbine units in the world-wide market. Schemes of application of similar equipment on the Russian market are being calculated now. The most real scheme of consuming development – next two years smooth growth of income up to \$ 2 500–3 500 ths per year, next 2–3 years – sudden increase of the income by 3–5 times. Future prospect of development is connected with a macro-project on adapting the principle of vortex gas generation into modernization of medium and large power stations aimed at increasing the coefficient of efficiency and decreasing harmful emission into atmosphere.