

# ATOMIC HYDROGEN HEAT GENERATOR

Alexander V. Frolov

2013

# Aim

- ▣ It is planned to produce experimental unit of high efficient heat generator.
- ▣ This method use hydrogen dissociation – recombination processes in closed volume of reactor. There is no radiation here.
- ▣ We have to patent it and start sales of licenses.
- ▣ In collaboration with industrial partners we can organize production facilities to fabricate high efficient heat generators for sale.

# Product

- ▣ Product is new method to provide generation of heat and equipment using this technology.
- ▣ Application:
  - Home heating 10 kW – 30 kW.
  - Industrial needs 30 kW – 100 kW.
  - Power engineering 1 MW – 100MW.

# Market

- Main market is home and industrial water heaters.
- Secondary market is electrical power plants using hot steam source for turbines.
- World market is about 15 Billion Euro + 3% year.
- It is planned to reach 1% of World market in 5 years.
- In 2016 sales can be about 165 Million Euro.

# Problems of market

- ▣ Traditional boilers require a lot of electric energy.
- ▣ Fuel and electricity are not low cost.
- ▣ Customers are seeking energy saving methods.
- ▣ There is demand in energy sources for space projects and new areas of the planet, where is not possibility to provide fuel.
- ▣ World economics require new markets.

# The idea

- ▣ Hydrogen molecule dissociation require energy input to get two atoms of hydrogen.
- ▣ Two Hydrogen atoms can be recombined into one molecule with great heat output.
- ▣ High efficiency of this processes (excess heat output) is possible if we'll use low-energy method of dissociation of hydrogen.

# How to use atomic hydrogen

- ▣ There are two main methods to use atomic hydrogen for heat generation:
  - 1. It is possible to get heat directly during recombination process  $H+H = H_2+Q$  on surface of catalizator (for example, tungsten).
  - 2. Other way is transmutation method, for example, according Prof. Rossi technology it is possible to get great heat output transforming nickel to copper  $Ni + H = Cu + Q$

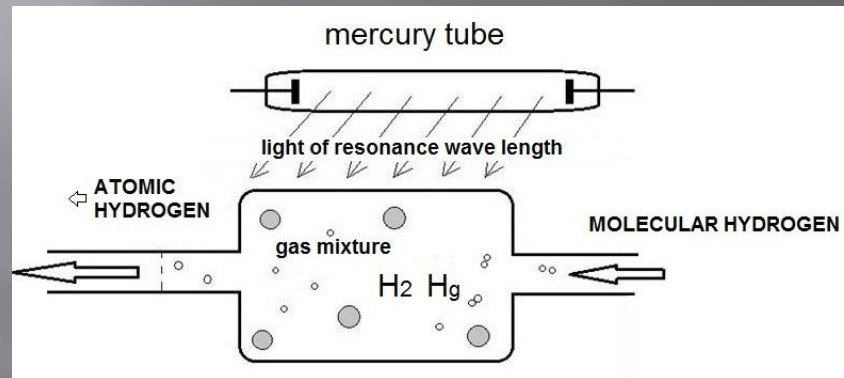
# Present stage of the project

- ▣ Project in development, photo of 2003.  
Experiments were made and we have got positive conclusion about excess heat output.
- ▣ Theoretical efficiency was 83 to 1 in this design of reactor.



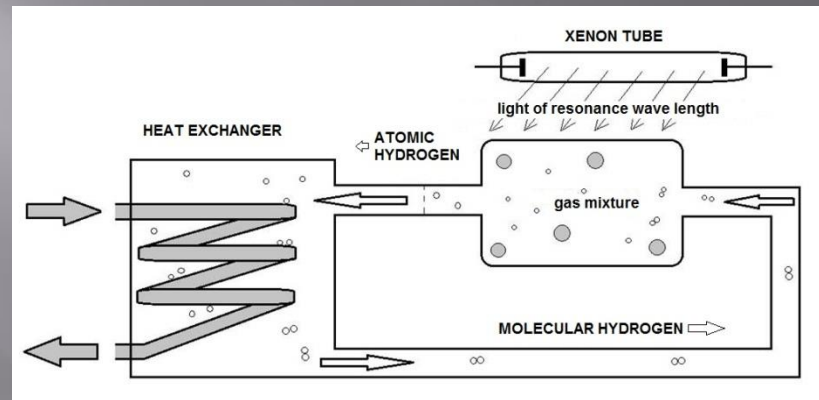


# Prof. Bongefer 1927



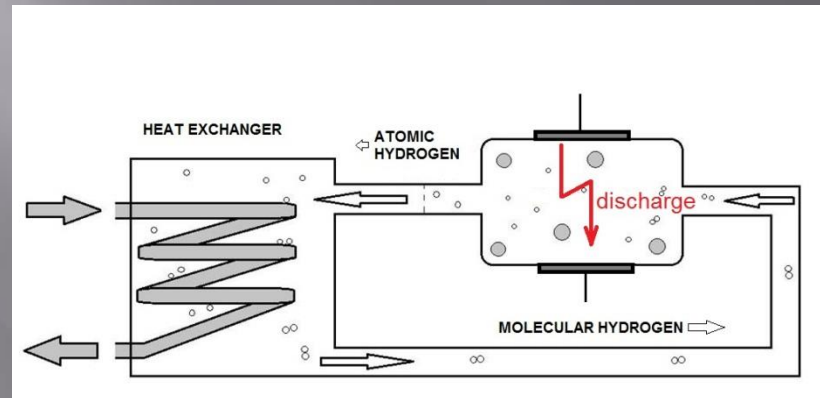
- ❑ Old method: Gas mixture  $H_2 + Hg$
- ❑ Resonance excitation by means of light

# New technical solution



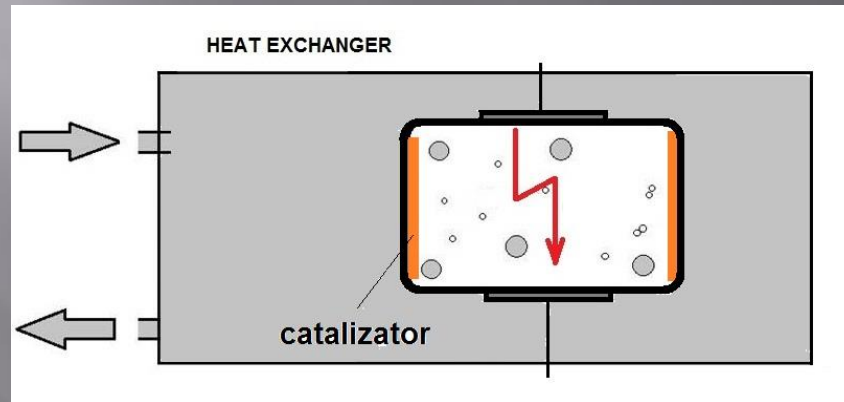
- ❑ Working body is mixture of hydrogen and xenon.
- ❑ Dissociation of hydrogen is stimulated by resonance wave length light source. Recombination of atomic hydrogen will produce excess heat output.

# Discharge method

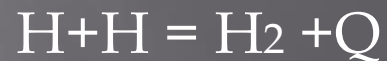


- ❑ Other method: barrier electric discharge in xenon & hydrogen gas mixture.
- ❑ Heat absorption is possible by tungsten layer on the pipe of heat exchanger.

# Recombination



- Catalizator (tungsten) is necessary to provide optimal conditions of recombination process



# Applications



Home heating systems (boilers)



Industrial heating equipment, large heat sources

# Analogies

- ❑ Italian team (Andrea Rossi). Efficiency was reported about 3000% (400 W input can provide 12 kW heat).
- ❑ The reactor also use catalizator and nickel powder saturated by hydrogen with 70 Atm pressure.
- ❑ Ni to Cu transmutation was reported.



July 20, 2011 this team reported about contract on 1MW power plant for Greece.

# Our advantages

- ❑ Our technology does not require spending of the catalizator.
- ❑ Rossi use cold fusion reaction of transformation Ni to Cu. Also reactor require hydrogen input and recharging.
- ❑ Ni and Hydrogen are fuel in this case.
- ❑ In closed cycles of dissociation – recombination there is not waste of materials, here is no fuel.
- ❑ Efficiency of the proposed technology can be much more better than Rossi' process.

# Stages of project

- ▣ 2003 – 2005 was invested 50,000 USD.
- ▣ Patent was applied in Russia but failed.
- ▣ Experimental equipment was exported to London and Sydney for testing. There are skeptical data.
- ▣ Next stage prototype require to be designed, tested and new method can be patented.
- ▣ In 2014 we can start sales of licenses.
- ▣ Production facilities (home boilers and industrial heat sources) can be started in 2015.



# Partners



- ▣ We can organize new stage of projects with EU partners.

2003 projects was joint work with Spectrum company, Dr. Nicholas Moller. Photo of his lab, UN visitors.

# Financial Plan (Euro)

		Period	Expenses	Income
1	Prototype building	5 months	40,000	-
2	Testing	1 month	20,000	-
3	Patent	6 months	30,000	-
4	Sales of license	2013	-	1 Mil. Euro
4	Production facilities	2014	500,000	5 Mil. Euro

Investments 90,000 Euro, 51%. Investor ROI (exit in 2015, third year of the project). ExitValue = 12,500,000Euro Discount factor R = 50%  
 StartValue = 1,925,925 Euro ROI = 100%  $(1,925,925/90,000)=2140\%$

# Proposal for investor

- Funds required 90,000 Euro.
- Team:
  - Investor 51%
  - Founder 39 %
  - Author 5 %
  - Top managers 5%
- Exit strategy is sale of company to energy corporation.

# Founder



Alexander V. Frolov

+7-910-948-2509

Skype alexfrolov2509  
a2509@yahoo.com