SME in the Russian Academy of Sciences: success of basic innovations

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The Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS) was created in accordance with the Decree of the Council of Ministers of July 28, 1976.

Scientific researches entrusted with the IAP RAS are concentrated in three scientific division:

- Plasma Physics and High-Power Electronics Division
- Hydrophysics and Hydroacoustics Division
- Nonlinear Dynamics and Optics Division
Pre-history

Laboratory of ultrasonic diagnostics (IAP RAS) 1977-1991

Doppler
Echocardiograph
UZKAR-D

Transferred to RAZDANMASH (Armenia) for full-scale production. Produced till 1991

VETER equipment for gas bubble detection and decompression sickness evaluation during extra-vehicle activity or diving.
An experience of small-scale enterprise nearby the academic institution: MEDUSA LLC (1992-2010)
REASONS TO FOUND A SMALL-SCALE ENTERPRISE

• Long time between R&D stage and full-scale production
• Long distance between fundamental science and industrial applications
• An attempt to apply skills and knowledge in various fields of technologies
• An attempt to keep the team of high-skilled R&D specialists under difficult economic conditions

MEDUSA LLC was established in 1992 by a group of researchers and engineers of IAP RAS

First products of MEDUSA LLC (1992-1997):

A series of PC add-in devices for medical ultrasonic diagnostics: echocardiograph, echoencephalograph, Doppler CW peripheral blood flow meter, Doppler fetal monitor (more than 1000 kits delivered to mid-range hospitals)
ADS-02 Automated Rail Flaw Finder

1998 – prototype
2000 – technical trials
2001 - certification

2002 - 2009 – full-scale production at Frunze plant (Nizhny Novgorod)

~ 350 devices delivered to Russian Railways

2008 - 2010 – modernization (ADS-02M)
Products of MEDUSA LLC (2006-2010):
AUZUR Automated Liquid Level Meters and Indicators

2006 – prototype
2008 – technical trials
2010 – certification and start of full-scale production
2010 – continuation of R&D, design of new devices in product line
Consumer products of MEDUSA LLC (2006-2010):

Universal A/M-mode ultrasonic locator and BX2000 Body Fat Meter *(jointly with Intelametrix Inc., USA)*

Ultrasonic acne remover and wrinkle remover for individual use

International Awards

2008 Brussels, Belgium
Silver medal of 57th World Trade Fair for technical Innovations

2009
Gold medal of American-Rusian Business Union (ARBU) “Innovations for investments to the future”

2005 San Francisco, USA
3rd Annual Design Contest of PC/104 Embedded Consortium
Best commercial product in industrial / medical / transportation applications

Consumer products of MEDUSA LLC (2006-2010):

Universal A/M-mode ultrasonic locator and BX2000 Body Fat Meter *(jointly with Intelametrix Inc., USA)*

Ultrasonic acne remover and wrinkle remover for individual use
Current status

• Form of ownership – private
• Owners – physical persons (no corporate persons)
• Persons employed – 9
• Byworkers from IAP RAS – 5
• Office and working area – rent from IAP RAS

Policy

• Design of “turnkey” hi-tech products (development, prototyping, trials, certification, documentation package)
• Outsourcing: complicated technology processes (transducers, PCB etc) are ordered outside
• Full-scale manufacturing at large enterprises on the base of license agreements

Interaction with parental institute (IAP RAS)

• Company ‘picks up’ side technologies being unprofitable or non-core for Institute
• Institute works as one of outsourcing companies – company invests into development of digital technologies in the Institute
• Company uses novel technologies that can ‘diffuse’ into scientific research and engineering activities of the Institute
• Company is used as a proof area for the ideas of young scientists
• Employees of Institute working in Company get additional fees and experience of management and design
INNOVATIVE “BELT” OF IAP RAS

11 independent companies
2 with IAP RAS foundation (217 ФЗ)

Fields of interests:
- high power gyrotrons;
- medical diagnostic equipment;
- technique for railway industry;
- technique for gas & oil industry;
- industrial & communication lasers;
- vibro diagnostic equipment;
- optical components and micromechanics;
- power supply and high power sources of energy;
Thank you for attention!

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