



25th world gas conference
"Gas: Sustaining Future Global Growth"

EDUCATIONAL SYSTEM IN THE FIELD OF UGS

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Venue: CS2.3: Competencies & Innovative
Technologies For UGS, WOC2



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- General overview.
- Goals.
- Methodology.
- Further development.
- International cooperation.
- Conclusions.

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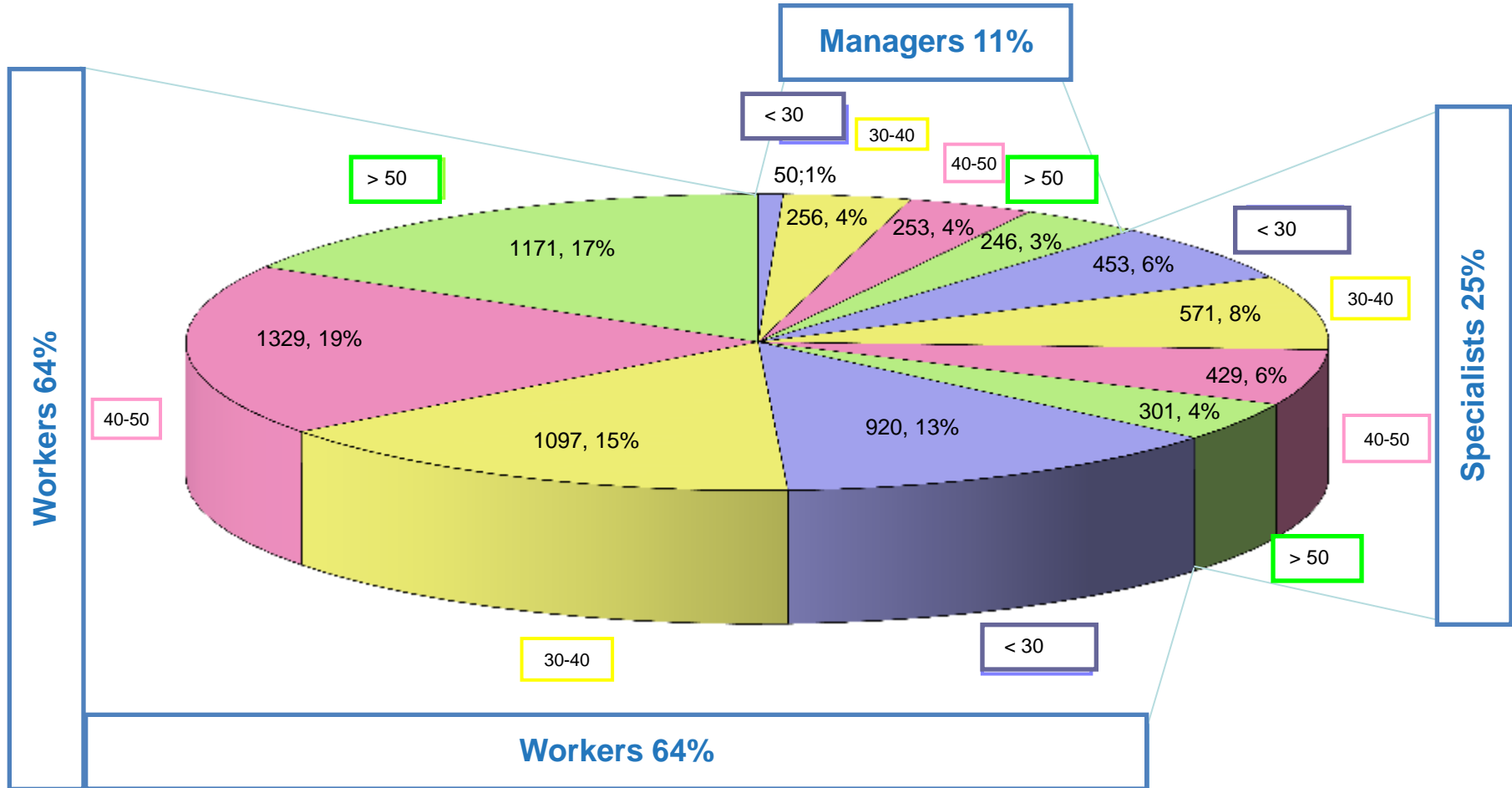
- No constant and gradual decrease of working pressure in reservoir - permanent maximum level of operational pressure.
- In some cases while injection pressure is increasing pressure in UGS could overcome operational pressure.
- No relatively constant withdrawal rate – withdrawal and injection rate are subject of variation.
- While injection and extraction well's casing, wellhead equipment, connections and other technological equipment are hit by counterdirected cycling thermo-barical stresses.
- Equipment should be under precise control and evaluation of it's technical condition to maintain it at the rated capacity.
- Well construction and UGS operational mode should be strictly coordinated.

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- **Students (specialists, bachelors)**
- **Postgraduate education**
- **Masters courses**
- **Complementary professional education (about 1000 academic hours of labor-output ratio)**
- **Skill conversion courses (more than 500 academic hours)**
- **Raising the level of skills courses (72 academic hours of labor-output ratio)**
- **Short courses (less than 72 academic hours)**

Age of different groups of employees at UGS



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- **program for Masters – 130500.34 “Underground gas Storage” (Gubkin University’s Gas Technology and UGS – “VNIIGAZ”)**
- **program of complementary professional education (about 1200 academic hours) -“Specialist in UGS field” (Institute of staff potential development in energetic complex – a subdivision of Gubkin University)**
- **educational skill conversion program (592 academic hours) - “Creation and operation of UGS” (run by ISD FEC in 2011)**
- **two independent programs for raising the level of skills (72 academic hours) in Gubkin University and in “VNIIGAZ”**



The Government standard diploma the graduates receive after the courses “Specialist in UGS field”



The Government standard diploma the graduates receive after the courses “Creation and operation of UGS”

- The program of complementary professional education was registered by the Government.
- The program for Masters and the skill conversion program are approved by the Academic council of the Gubkin University, that corresponds with the requires of Government educational system of Russian Federation.



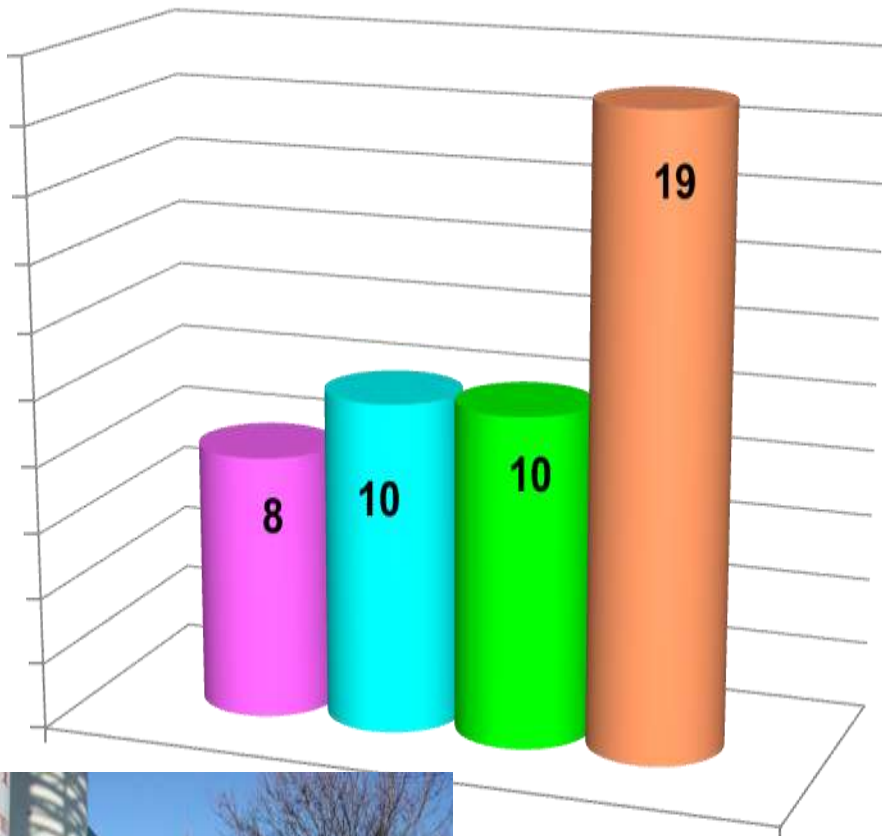
Magistracy September 2007 – June 2009



■ Magistracy

Beginning	Number of Students	Graduate
2007	9	2009
2008	2	2010
2009	6	2011





- Course 2009
- Course 2010
- Course 2011
- Plan for 2012



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Study-methodological materials to be prepared in 2012-2015:

- **“Role of UGS in the gas supply grid”**
- **“Search and exploring of geological objects for underground gas storage creation”**
- **“The peculiarities of drilling and well design at UGS”**
- **“Computer simulation of UGS operation”**
- **“Control of UGS operation”**
- **“Theory and practice of UGS designing”**
- **“Economic indexes of UGS operation”**
- **“Surface complex of UGS equipment”**
- **“Ecological monitoring of oil and gas fields and UGS”**
- **“Usage of horizontal and multilateral wells while creating underground gas storages”**

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The Integrated Gas Supply System (UGSS) of Russia is the world's largest gas transmission system



The IGSS gas trunklines length – more than 162 000 km



Presentation - “Development of continuous education system in the field of UGS”

Decision to participate in “IGU WOC2 Young Employees Exchange Programme”



Geosciences – Gubkin Russian State University of Oil and Gas and VNIIGAZ (Russia), sponsored by Gazprom 20 June – 1 July 2011



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Curricula can be classified in accordance with their aims:

- general education – many self coordinated disciplines;
- raising the level of skills – learning of nowadays knowledge and experience in the field of UGS.

UGS field of gas industry needs specific curriculums focused on different educational levels and on different peculiarities of UGS operation and design.

Thus the curricula developed by Gazprom for preparing specialized staff for UGS design, construction and operation could be a part of common system for the manpower development needed to serve the united Eurasian gas supply system.

**Thank You for
Your Attention!**

