



SUMMARY REPORT OF THE EXTERNAL EVALUATION

of the cluster of educational programmes

- “Heat Power Engineering and Thermal Technology” (140100.62, 140100.68),
- “Industrial Heat Power Engineering” (140106.65),

delivered by
Northern (Arctic) Federal University

While preparing this Summary Report we used information from the Self-Evaluation Report and the Report on the External Review of the cluster of educational programmes in "Heat Power Engineering and Thermal Technology" (140100.62, 140100.68), "Industrial Heat Power Engineering" (140106.65) offered at Northern (Arctic) Federal University.

The presentation document for the use by the National Accreditation Board.

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GENERAL INFORMATION ON EDUCATIONAL INSTITUTION

Full name of the educational institution	<i>Federal State Budgetary Educational Institution of Higher Professional Education Northern (Arctic) Federal University named after M.V. Lomonosov (NArFU)</i>
Founders	<i>Ministry of Education and Science of the Russian Federation</i>
Year of foundation	<i>1929 –Arkhangelsk Forestry Engineering Institute 1994 – Arkhangelsk State Technical University 2010 - Northern (Arctic) Federal University named after M.V. Lomonosov (NArFU)</i>
Current state accreditation status:	
Type	<i>Educational Institution of Higher Professional Education</i>
Kind	<i>Federal University</i>
Location	<i>Arkhangelsk Region, Arkhangelsk, 17 North Dvina Emb.</i>
Rector	<i>Elena Kudryashova, PhD, professor</i>
License	<i>Series AAA No. 002105 reg. No. 1417 of 15.06.2011 permanent</i>
State Accreditation	<i>Certificate of State accreditation No. BB N°001043 reg. N° 1031 of 12.07.2011 valid till 22.06.2014</i>
Number of students	<i>9551</i>

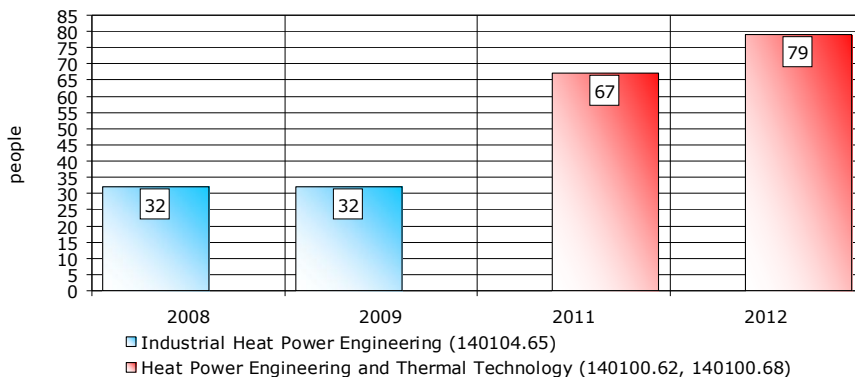
INFORMATION ON THE EDUCATIONAL PROGRAMMES UNDERGOING ACCREDITATION

Educational programmes	<i>"Heat Power Engineering and Thermal Technology" (140100.62, 140100.68), "Industrial Heat Power Engineering" (140106.65)</i>
Level of training / Standard period of training	<i>Specialist's programme / 5 years Bachelor's programme / 4 years Master's programme / 2 years</i>
Structural subdivision (head)	<i>Institute of Energy and Transport Lobova Olga Alexandrovna (Candidate of Technical Sciences, Associate professor)</i>
Major departments (heads of major departments)	<i>Department of Industrial Heat Power Engineering Lobov Victor Konstantinovich (Doctor of Technical Sciences, professor) Department of Thermal Engineering and Power Systems Petukhov Sergei Vasilievich (Candidate of Technical Sciences, associate professor)</i>
Date of the site visit	<i>3-5 June 2013</i>
Person responsible for public accreditation of the educational programme	<i>Vorozhtsova Ludmila Alexandrovna, Deputy First Vice-Rector</i>

SAMPLING RESULTS OF THE PROJECT 'THE BEST EDUCATIONAL PROGRAMMES OF INNOVATIVE RUSSIA'

Indicators	2013
Cluster of educational programmes "Heat Power Engineering and Thermal Technology", "Industrial Heat Power Engineering"	
Number of such programmes delivered in RF	95
Number of such programmes delivered in RF	59
Number of programmes – winners of the project (% from the total number of these programmes delivered in RF)	13 (14%)
Arkhangelsk Region	
Number of such programmes delivered in the region	3
Number of programmes – winners of the project (% from total amount of these programmes delivered in the region)	3 (100%)
Number of higher educational institutions and branches in the region	20
Total number of programmes delivered in the region	207
Total number of programmes – winners of the project (% from the total number of these programmes delivered in the region)	14 (7%)

REFERENCE DATA ON STUDENT ENROLLMENT IN THE PROGRAMMES



ACHIEVEMENTS OF THE EDUCATIONAL PROGRAMMES

The quality of the study programmes delivery

Quality of specialists' training in the cluster of educational programmes is highly appreciated by the leading manufacturing enterprises of the region.

Employability of graduates

100% of graduates are employed in the sphere of power industry.

Provision of up-to-date education

During study of the leading discipline, specialty 140104.65 «Industrial heat power engineering» and 140100.62 «Heat power engineering» the following aspects are in the focus: implementation and organization of the most contemporary constructions and particular properties of exploitation of innovative equipment, which is installed at energy objects.

Research activity

Institute of energy and transport has two leading scientific schools specialized in complex efficiency improvement of heat radiating equipment and study of heat exchange in power devices with a ribbed heating surface.

Material and technical resources

The laboratory of the department of industrial heat power engineering is fitted with unique equipment used for studying the processes of production and combustion of wooden pellets «KAHL» (Germany), «HERZ» (Austria), «IKA» (Germany) and others; instrumentation pool on evaluation of efficiency of heat radiating equipment «TESTO» and others (Germany) was created. The laboratory has a wide range of home-made ribbed pipes and ribbed pipes from CIS countries. Three aerodynamic tunnels, which are used for studying the heat exchange processes were produced.

International projects

International cooperation is aimed at the participation of employees, postgraduates and students of the Institute in international research projects, which are executed by the European Union, the countries of the Barents and Arctic region, Canada and USA. The employees of the department of industrial heat power engineering participate in international projects of the European Union: project «Herz Energietechnik GmbH» in the field of bio-energy; project on bio-energy in Arkhangelsk region under the aegis of the Norsk company «Norsk Energi», project of cooperation with University of Upper Alsace on researching bio-energy resources.

EXTERNAL REVIEW PANEL



Viktor Bolgov (Estonia)
Review Chair, foreign expert

Doctor of Technical Sciences, senior researcher of the Institute of Electrical Engineering of the Tallinn Technical University

A nominee of the Estonian Higher Education Quality Agency (Estonia)



Tamara Salova (Russia)
Deputy Review Chair

Doctor of Technical Sciences, professor, Head of the Department of "Heat Power Engineering and Thermal Technology", Deputy Director of the Institute of Technical Systems, Service and Power Engineering of the St. Petersburg State Agrarian University

A nominee of the Guild of Experts in the sphere of professional education (Russia)



Viacheslav Ruzhiev (Russia)
panel member

Candidate of Technical Sciences, assistant professor, Director of the Institute of Technical Systems, Service and Power Engineering of the St. Petersburg State Agrarian University

A nominee of the Guild of Experts in the sphere of professional education (Russia)



Andrey Shchelokov (Russia)
panel member, representative of professional community

CEO of JSC "Arkhangelsk Regional Power Engineering Company"

A nominee of the Regional Association of Employers "Union of Industrialists and Entrepreneurs of the Arkhangelsk Region" (Russia)



Anastasia Molchanova (Russia)
panel member, representative of students

4th year student of Medical Faculty of the North State Medical University

A nominee of National Centre for Public Accreditation (Russia)

COMPLIANCE OF THE EXTERNAL REVIEW OUTCOMES WITH THE NCPA'S STANDARDS

STANDARD 1. Policy (mission, vision) and procedures for quality assurance

Compliance with the standard: **substantial compliance**

Good practice

The Institute of Energy and Transport implements regional priority educational programmes using bio resources of the North. Educational activity is aimed at satisfying the region's needs.

The management of the University and Institute has set development goals for the Institute and its educational programmes. The management of the University and Institute, and the teaching staff participated in the process of setting these goals.

The development of the educational programmes under accreditation is implemented within the context of the mission and development strategy of NArFU.

The methods of achieving and revision of the educational programmes' goals comply with the standards and criteria set by the NCPA.

The Institute has an internal system of quality assurance of educational programmes.

The external review panel noted traditions of a high quality education, striving to comply with contemporary requirements and tendencies in educational and research areas.

Areas for improvement

The official policy and the mission of the Institute should represent a single structure, which promotes efficiency of the quality assurance system of educational programmes.

The participation of representatives of students and professional society in the process of definition of goals and objectives was insufficient.

The Institute lacks an integral system of educational quality assurance, which guarantees participation of departments, other structural subdivisions, teachers, students in the procedures of quality assurance.

The external review panel members did not succeed in forming a clear opinion on the presence of a developed and fixed strategy of international activity in the Institute.

STANDARD 2. Approval, monitoring and periodic review of educational programmes

Compliance with the standard: **substantial compliance**

Good practice

Revision of working plans and programmes of educational subjects is conducted annually according to the objectives and results of educational programmes: the revising process covers the content of the working programmes of educational courses, methodological materials, which provide implementation of the relevant educational technology with a due account of development of science, technology, informational technology, economics, culture and social policy.

The procedure of educational plans revision touches upon all the elements of professional educational programmes and is considered a starting point for developing plans of methodological, personnel, material and technical support of educational process for the next year.

Coordination of the educational process in the HEI, development of normative documents, monitoring, control over development and implementation of educational programmes is executed by the department of educational process organization. The methodological commission of the Institute considers and presents for approval study plans of specialties and training specializations, as well as working programmes of educational subjects.

Development of educational plans is executed with a due account of coherence of subjects' content, thus building logical sequence of the subjects' study.

The Institute has a thoroughly developed mechanism of response to market needs at the point of revising the programmes of educational subjects through involvement of representatives of professional societies into the educational process (the state certification commission – 50 %, review of graduation thesis – 100 %).

Areas for improvement

Accounting of the monitoring results of the effectiveness of educational programme implementation is shown unpersuasively.

The departments of the Institute of Energy and Transport use the experience of the analogous foreign educational programmes insufficiently.

Lack of the mechanism for getting the student feedback in the process of developing educational programmes.

Involvement of students and graduates into the system of quality assurance is sporadic.

STANDARD 3. Assessment of student learning outcomes / competencies

Compliance with the standard: **substantial compliance**

Good practice

The procedure of knowledge / competency evaluation of students at the intermediate and final attestation is strictly determined by the developed and confirmed documentation, which are developed by the relevant bodies.

Control over the quality of students' competency is executed during the whole study period. Conclusions on the quality of training are made according to the results of students' educational and research activity.

Evaluation of students' knowledge / competencies is executed by highly qualified teaching staff.

The Institute of Energy and Transport has a transparent point-rating system of knowledge / competency evaluation.

The system of point distribution in a studied subject is a compulsory supplement to the working programme of the subject.

The employability of students in the labor market of the region is high. It has to be mentioned that 90% of graduates work within their specialty field according to their educational profile.

The Institute of Energy and Transport has the inner system of quality control of students' training. The system is based on monitoring the most important parameters of educational process and its resource provision.

Students participate in exchange programmes of foreign universities (Memorial University - Canada), they also take active part in international conferences (Norway, Hammerfest).

Areas for improvement

Insufficient level of knowledge of foreign languages among teachers and students.

Students' mobility, particularly international mobility, is underdeveloped.

In most cases, students' research activity is connected with working on their graduation papers.

International partnership connections need further development.

STANDARD 4. Quality assurance of teaching staff

Compliance with the standard: **substantial compliance**

Good practice

The teaching staff is highly competent in the areas covered by the educational programme.

There is tight connection between research work and the educational process.

Personnel turnover at the departments of the Institute is minimal. Before the end of 2015 10 master's thesis and 2 doctor's thesis are planned to be defended, this will allow increasing the number of teachers with scientific degrees and academic titles.

The Institute's employees take an active part in international conferences and seminars, which are held outside Russia (Norway, Austria, USA, Kirgizstan, Malaysia, Germany) and at the Institute of Energy and Transport. The Institute's employees execute research work and go on research visits to international partners Universities (Emden-Leer University (Germany), Politehnik (Austria)).

Foreign teachers, researches and specialists are regularly invited to the Institute for conducting lectures and training the Institute's employees.

Highly motivated young employees, who are going to dedicate their lives to the Institute is one of the strong points of the educational programmes under accreditation.

Areas for improvement

There is no continuity in pedagogical experience between teachers of different ages. There is an age gap between experienced teachers and young postgraduates.

Monetary motivation of the Institute's employees for developing new methodological materials and scientific works is insufficient.

Lack of long-term research visits of the teaching staff (outside the Institute, particularly abroad). The number of teachers, who go to study abroad, is very limited. The level of participation of the Institute's employees in international research and educational projects is low.

INFORMATION ON THE LEADING TEACHERS OF THE STUDY PROGRAMMES

Saburov Eduard

Doctor of Technical Sciences, professor, Head of the Department of Thermal Engineering of NArFU named after M.V. Lomonosov, Honoured scientist of the Russian Federation, Honoured worker of higher professional education of the Russian Federation

Lyubov Viktor

Doctor of Technical Sciences, professor, Head of the Department of Industrial Heat Power Engineering of NArFU named after M.V. Lomonosov, Honoured worker of higher professional education of the Russian Federation

Karpov Sergey

Doctor of Technical Sciences, professor, professor of the Department of Thermal Engineering of NArFU named after M.V. Lomonosov, Honoured worker of higher professional education of the Russian Federation

Piir Adolf

Doctor of Technical Sciences, professor, professor of the Department of Industrial Heat Power Engineering of NArFU named after M.V. Lomonosov, Honoured worker of higher professional education of the Russian Federation

Maryina Zoya

Candidate of Technical Sciences, assistant professor, assistant professor of the Department of Industrial Heat Power Engineering of NArFU named after M.V. Lomonosov, Honoured worker of higher professional education of the Russian Federation

Leukhin Yuri

Candidate of Technical Sciences, assistant professor, assistant professor of the Department of Thermal Engineering of NArFu named after M.V. Lomonosov, "Inventor of the USSR"

Rzhanitsyna Lyudmila

Candidate of Technical Sciences, assistant professor, assistant professor of the Department of Industrial Heat Power Engineering of NArFU named after M.V. Lomonosov

Novozhilova Anna

Candidate of Technical Sciences, assistant professor, assistant professor of the Department of Industrial Heat Power Engineering of NArFU named after M.V. Lomonosov

STANDARD 5. Learning resources and student support

Compliance with the standard: **substantial compliance**

Good practice

The educational programmes under accreditation are supplied with adequate classroom facilities, laboratories, equipment. Multimedia classrooms, internet resources (which contain tasks for the students) are used for the optimization of the educational process.

The educational process of a number of subjects is supplied with publicly accessible electronic versions of manuals and methodological materials, as well as electronic methodological complexes of educational subjects and methodological materials developed in NArFU.

All the educational subjects are supplied with necessary electronic educational resources, the majority of which is available at educational servers of the University.

The Institute of Energy and Transport has in place a complex educational Centre of energy efficiency, the Energy Centre for collective use and demonstrational classroom of energy saving and energy efficiency are in the process of creation.

The Institute is setting up new laboratories, which are supplied with modern high-technology equipment, for example: the laboratory of laser aerodynamic measuring at the Department of heat power engineering, boiling and heating equipment at the Department of manufacturing heat power engineering, the laboratory of unconventional power sources at the Department of electrical technology and power systems.

Equipment and apparatuses are used in educational process, as well as for developing НИОКР, ВКР by bachelors and candidates for master's degree of all specialties. These laboratories are also used as practicing bases for students.

Areas for improvement

The level of supply with multimedia resources and computers with a free access to the Internet is low.

Lack of up-to-date graphical design software and packages of engineering calculation.

Lack of a setup infrastructure and educational means for disabled people.

The student feedback system is not developed.

STANDARD 6. Information system providing effective implementation of the study programme

Compliance with the standard: **substantial compliance**

Good practice

Informatization of educational process, active use of computers, students' interest in internet resources motivate them for active implementation of modules, which are available via the internet.

Electronic educational methodological materials partially or completely cover the delivered educational courses.

The IBS Company has developed and implemented informational system of information collection for the purpose of monitoring the Institute's activity. This enabled the Institute to automate the work in collection, accounting and control indexes of the Development programme.

Areas for improvement

The level of integration with intra-HEI electronic resources is low.

Benchmarking information on achievements of the educational programme implementation on the background of other specialties of the University and analogous educational programmes of Russian and foreign HEIs is insufficient.

The local informational system of the Institute and the University is in the stage of setting up.

STANDARD 7. Public information

Compliance with the standard: **substantial compliance**

Good practice

Publicly accessible information is available at the official site of the University, Institute and departments, in mass-media and reference books for school leavers.

The teachers of the faculty conduct professional orientation meetings, University contests on economics, state and municipal management, and consult school leavers on taking the Unified State Exam, etc.

The Institute conducts an active advertizing campaign among school leavers.

The University has a career development Centre, which is aimed at promoting employment of students and graduates.

Areas for improvement

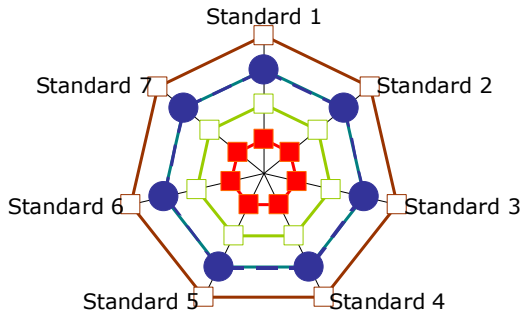
The University's web-site lacks information.

The University's web-site needs to be updated. There is no adequate English version of the web-site.

The web-site needs to be completed with more information on employability of graduates.

There is little publicly available information on the quality and achievements of the educational programme.

DISTRIBUTION DIGRAM OF THE EXTERNAL REVIEW OUTCOMES



- Non-compliance
- Partial Compliance
- Substantial Compliance
- Full Compliance
- Conclusion of the ERP

- Standard 1. Policy (mission, vision) and procedures for quality assurance
- Standard 2. Approval, monitoring and periodic review of programs and qualifications
- Standard 3. Assessment of student learning outcomes / competencies
- Standard 4. Quality assurance and competencies of teaching staff
- Standard 5. Learning resources and student support
- Standard 6. Information system providing effective implementation of the study program
- Standard 7. Public information

CONCLUSION OF THE EXTERNAL REVIEW PANEL

Based on the self-evaluation report analysis, documents and data submitted, interviews with the representatives of the professional communities, students, post graduates, doctor-degree students, staff and administration of the educational institution the External Review Panel came to the conclusion that the educational programmes in question offered at Federal State Budgetary Educational Institution of Higher Professional Education Northern (Arctic) Federal University named after M.V. Lomonosov (NArFU) to a large degree comply with the standards and criteria of public accreditation of the National Centre for Public Accreditation. Although there some areas, which need to be improved.

Among advantages of the accredited educational programmes the expert panel notes:

- traditions of a high quality education,
- striving to comply with contemporary requirements and tendencies in educational and research areas,
- the mission and priority trends of development of the Institute of Energy and Transport are clearly defined,
- a thoroughly developed mechanism of response to market needs at the point of revising the programmes of educational subjects through involvement of representatives of professional societies into educational process,
- high motivation of young employees, who are going to dedicate their lives to the Institute,
- huge number of high quality educational and methodological materials on a wide range of educational subjects, particularly electronic editions, contemporary apparatuses and educational laboratory equipment, which are integrated in the educational process,
- the Career Development Centre, which is aimed at promoting employment of students and graduates.

The Panel recommends the National Accreditation Board **to accredit the study programmes "Heat Power Engineering and Thermal Technology" (140100.62, 140100.68), 'Industrial Heat Power Engineering" (140106.65) for the period of 6 years.**

SCHEDULE OF THE SIGHT VISIT OF THE EXTERNAL REVIEW PANEL

Time	Activity	Participants	Venue
June, 3			
8.45	Arrival to NArFU		Administrative building of NArFU
09.00 – 10.00	First meeting of the external review panel and coordinators from NArFU		room 1220
10.00 – 10.30	Internal meeting of the panel	External review panel	room 1433
10.30 – 11.30	Meeting of the external review panel with the university's management and coordinators from DSU	Rector, vice-rectors, head of the international relations department, head of the department of international accreditation of educational programmes, external review panel	room 1220
11.30 – 12.00	Internal meeting of the panel	External review panel	room 1433
12.00 – 13.00	Excursion (visit to study facilities, library, etc.	External review panel	
13.00 – 14.00	Lunch		Banquet hall
14.00 – 15.00	Meeting with people responsible for accreditation	Director of the Institute, deputy-directors, who are responsible for accreditation, External review panel	room 1432
15.00 – 16.30	Paper work, visits of classes (if desired)	External review panel	room 1433
16.30 – 17.30	Meeting with graduates	Graduates, External review panel	room 1432
17.30 – 18.00	Internal meeting of the panel	External review panel	room 1433
June, 4			
9.45	Arrival to NArFU		
10.00 – 11.00	Meeting with teachers	Teachers, External review panel	room 1432
11.00 – 11.30	Internal meeting of the panel	External review panel	room 1433
11.30 – 12.30	Meeting with students	Students, External review panel	room 1432
12.30 – 13.00	Internal meeting of the panel	External review panel	room 1433
13.00 – 14.00	Lunch		Banquet hall
14.00 – 14.30	Meeting with postgraduates, doctoral candidates	Postgraduates, doctoral candidates, External review panel	room 1432

Time	Activity	Participants	Venue
14.30 – 16.30	Paper work, visits of classes (if desired)	External review panel	room 1433
16.30 – 17.30	Meeting with employers	Employers, External review panel	room 1432
17.30-18.00	Internal meeting of the panel	External review panel	room 1433
June, 5			
9.45	Arrival at NArFU		
10.00 – 13.00	Internal meeting of the panel: preliminary conclusions, preparation of the oral presentation of the final report	External review panel	room 1433
13.00 – 14.00	Final meeting of the external review panel with representatives of NArFU	Representatives of the management of the HEI, heads of the departments, teachers, students, external review panel	room 1409
14.00 – 15.00	Lunch		Banquet hall
	Departure of the external review panel		