



Tempus Green Engine Final Conference

Final Report on the project "TEMPUS Green Engine"

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The list of partners

<i>Number of Partner</i>	<i>Role</i>	<i>The name of Organization</i>	<i>City</i>	<i>Country</i>
<i>P1</i>	<i>Grant holder</i>	<i>Wismar University of Applied Sciences, Technology, Business and Design</i>	<i>Wismar</i>	<i>Germany</i>
<i>P2</i>	<i>Partner</i>	<i>Riga Technical University</i>	<i>Riga</i>	<i>Latvia</i>
<i>P3</i>	<i>Partner</i>	<i>Tallinn University of Technology</i>	<i>Tallinn</i>	<i>Estonia</i>
<i>P4</i>	<i>Partner</i>	<i>Rudny Industrial Institute</i>	<i>Rudny</i>	<i>Kazakhstan</i>
<i>P5</i>	<i>Partner</i>	<i>Kostanai State University</i>	<i>Kostanai</i>	<i>Kazakhstan</i>
<i>P6</i>	<i>Partner</i>	<i>Karaganda State Technical University</i>	<i>Karaganda</i>	<i>Kazakhstan</i>
<i>P7</i>	<i>Partner</i>	<i>Kazan National Research Technical University</i>	<i>Kazan</i>	<i>Russia</i>
<i>P8</i>	<i>Partner</i>	<i>Vladimir State University</i>	<i>Vladimir</i>	<i>Russia</i>
<i>P9</i>	<i>Partner</i>	<i>Saint Petersburg National Research University of Information Technologies</i>	<i>Saint Petersburg</i>	<i>Russia</i>
<i>P10</i>	<i>Partner</i>	<i>The Ministry of Education</i>	<i>Astana</i>	<i>Kazakhstan</i>
<i>P11</i>	<i>Partner</i>	<i>Partner on Energy LLP</i>	<i>Almaty</i>	<i>Kazakhstan</i>

The main and additional purposes of the Project

- *Development, national accreditation and implementation of Eco-Engineering master's educational program at cooperating universities of Russia and Kazakhstan by the end of the 2-years project*
- *Admission of 7-10 students from each cooperating university (from Russia and Kazakhstan) who will work on the project*
- *Implementation into the educational course of disciplines on the environment's safety and efficient processing of electric energy produces in an environmentally safe way in accordance to EU standards and Bologna process.*
- *To provide the teaching staff with trainings, direct experience exchange between teachers, students and entrepreneurs.*
- *To provide effective adaptation of existing projects on cluster processing of energy which are in action or finished (national projects or Tempus program)*
- *To draw political and public attention to the problem of the project.*
- *To provide continuity, clarity of the project's results by means of effective and purposeful distribution.*

Package of documents

PD.1- Management and coordination

- Within the framework of realization of documentation “Management and coordination ” the following tasks were met:
- The design project of KSU was approved in accordance with the aims and tasks
- A working team was founded at KSU to work on the project - 2 coordinators (managers of the Project) and 5 experts (the working team)
- The trilateral contract was elaborated and approved stipulating regulation’s conditions of relationship between participants and the grant applicant

PD.2

Master's program “Ecological safety and renewal energy resources”

Aims:

To develop masters' personal qualities and form cultural and professional competence in accordance to SOSE of the Republic of Kazakhstan on “Electric energy”, to form professional competence required for exploitation of electric-power equipment for renewal energy resources, to control projects on creation and reorganization of the elements of devices made for effective processing of clean energy, to direct experts team of all kinds who exploit the equipment using alternative sources of energy.



The main competences

- *General:*

- Ability to develop and improve standards of knowledge
- Ability to analyze, synthesize and summarize the information critically

- *Professional:*

- Ability to operate profound theoretical and practical knowledge in professional activity;
- Ability to prevent and liquidate pollutants, rehabilitate the environment and utilize dangerous waste products;
- Ability to analyze a scientific content of the problem, taking place during professional activities;
- Ability to exploit the equipment for modern plants on renewal sources of energy professionally;
- Ability to define a task for elaborating of professional decisions connected with modernization of the technological equipment to improve field-performance data and resources-economy events;
- Readiness for carrying out engineering design, feasibility study on effectiveness of the project's decision.



The components of the program

Natural-science component:

- History and Philosophy of Science
- Foreign Language
- Scientific-and-engineering problems of power engineering
- Psychology
- Pedagogics

Ecological component

- Environmental quality
- Regional and sectoral nature management
- Geo-ecological aspects of power industry

Component on processing of energy

- Thermodynamics
- Theory of modeling and scientific experiment
- Theory of alternative and renewal energy
- Energy resources conservation
- Designing and exploitation of devices on alternative and renewal energy

Administrative component

- Ecological management

The curriculum of an educational program "Ecological safety and renewable resources ". Teaching term – 2 years. Teaching language – Russian (Kazakh)

the 1st year

Course of disciplines	Code	Discipline name	ECTS	Department
		1 semester	15	
		Obligatory components	6	
BD	IFN 5201	History and Philosophy of Science	2	Philosophy
	IYI 5202	Foreign language (professional)	2	Foreign Philology
PD	NTPE 5301	Scientific-and-engineering problems of power engineering	2	Electric energy and physics
		Components for choice	9	
An educational program 1 "Ecological safety and renewable resources "			6	
BD	TONVE 5205	Theory of alternative and renewal energy	3	Electric energy and physics
PD	TMNE 5302	Theory of modeling and scientific experiment	3	Transport, Transport Technique and Technology
		general elective disciplines	3	
	KOS 5207	Environmental quality	3	Ecology
BD	ROP 5208	Regional and sectoral nature management	3	Ecology
	DKYI 5209	business Kazakh language	3	Theory of languages and literature
		2 semester	13	
		Obligatory components	4	
BD	Psy 5203	Psychology	2	psychology and pedagogics
BD	Ped 5204	Pedagogics	2	psychology and pedagogics
		Components for choice	9	
An educational program 1 "Ecological safety and renewable resources "			6	
BD	Ter 5302	Thermodynamics	3	Electric energy and physics
PD	GAE 5303	Geo-ecological aspects of power engineering	3	Ecology
		General elective disciplines	3	
	EM 5210	Ecological management	3	Ecology
BD	IYDSC 5211	Foreign language for the professional purposes	3	Foreign Philology

The curriculum of an educational program “Ecological safety and renewable resources” the 2nd year.

Course of disciplines	Code	Discipline name	ECTS	Department
		3 semester	14	
		Components for choice	14	
<i>An educational program 1 “Ecological safety and renewable resources”</i>			14	
пд	IVIEPB 6305	Use of renewable resources in manufacturing and everyday life	3	Electric energy and physics
	RE 6306	Rational use of energy	3	Electric energy and physics
	ECEOSE 6307	Electromagnetic compatibility of the electric power equipment of systems of power supply	4	Electric energy and physics
	PEUNVE 6308	Designing and exploitation of devices on alternative and renewal energy	4	Electric energy and physics

Package of documents

PD.3 Training and equipment updating

- On January 31, 2013 the presentation of the equipment of a scientific and laboratory complex took place. Structure of a scientific and laboratory complex:
 - the "Heat-and-power engineering" module on a solar collector with elements of automatic equipment and connection to the consumer of hot water supply;
 - the "Wind-and-power engineering" module on the wind generator with elements of management and control of connected electric loading;
 - the "Solar-and-power engineering" module on photo-electric solar batteries with elements of management and control of connected electric loading.
 - the measuring equipment as a part of a measuring complex of quality check of electric energy and the heat-loss anemometer for measurement of a wind stream and air temperature.



On September 22-28, 2013 for the purpose of ensuring professional development of teachers and M.A. in the field of environmental protection and renewable resources, within the Project the lectures were delivered, scientists - experts of the Riga technical university(Latvia) gave practical classes.



From 22-26 April training seminars for teachers and postgraduate students were held. The seminars were conducted by Dieter Meissner and Julia Kois (Estonia, Tallinn University of Technology)

The themes of seminars were connected with the curriculum “Ecological safety and renewable sources of energy”:

- **Introduction. Renewables**
- **The Age of Stupid.**
- **Discussion of Critiques of the Story of Stuff.**
- **Energy, Power, and Entropy**
- **Wackernagel_Lecture**
- **World in Danger. Creating Sustainability**
- **World in Danger**
- **Summing-up.**

After seminars the poll by questionnaire was held.



Package of documents

PD.4 Implementation and exchange of experience

Practical training for teachers

In June 2014, 28.06-05.07., practical training for teachers was successfully conducted in Wismar University of Applied Sciences, Technology, Business and Design. (Germany)

The purpose of training:

-consolidating of theoretical knowledge and the formation of practical skills;

The tasks:

-to study the basic issues of the educational process and scientific-research activity in Wismar University;

-to study the curriculum of undergraduate and postgraduate programs;

-to visit production and scientific enterprises, which specialize in energy saving technology.

All tasks were successfully realized.



Practical training for students

In September 2014, 4 postgraduate students had practical training courses in Riga Technical University and Tallinn University of Technology.

The purpose:

-To train skills in scientific research work, and to extend knowledge in Methodology of applied analysis of the renewable energy and ecological problems

The tasks:

- to consolidate theoretical knowledge on the specialty “Eco-Engineering”;
- to give proof of the topicality of the research theme in comparison with foreign research in the sphere of “Eco-Engineering”;
- to give scientific proof of the novelty of research on the results of practical training:
To finish the collection, processing and analysis of the data for dissertations.

The tasks and purposes were successfully realized.



Package of documents

PD.6 Dissemination

- In 2012 academic year the first admission of M.A. to major in 6M071800 in number of 5 students was carried out. Two students were directed for training on a target magistracy to the city of Almaty where they successfully major in 6M071800 at Almaty University of Power Engineering & Telecommunications. In 2013 7 students entered the university for doing master's degree.
- Within the Program of the academic mobility the student majoring in 6M071800 was trained in the city of Almaty at the international master summer school ISAS-2013, with reoffset of four credits.
- - Contracts with bases of research work are signed
- Kazakhstan Electricity Grid Operating Company KEGOC JSC
- Kazakh research institute of agricultural sector economy and rural areas development, Almaty ;
- JSC Institute of Electricity development and Energy Saving, Kostanay
- “KostanayTalan”, Kostanay;
- «ЭПК Forfait» , Kostanay;
- S.Toraighyrov Pavlodar State University
- Omsk State Technical University, Omsk



- In June, 2012 permission to conducting educational activity in training of masters in electric energy field was given out by government body of management of the Republic of Kazakhstan.
- - Now the specialty for master's degree "Electric energy" and the elaborated educational program held in institutional accreditation to [KIQAAHE](#) , Kazakhstan.



Financial Management

ANNEX I / ПРИЛОЖЕНИЕ 1
Financing plan 2011-2014 / План финансирования на 2011-2014 гг.

Partner No./Партнер	Short name of the organization / Краткое наименование организации	Country code / Код страны	(1) Staff costs (1) Расходы на персонал (т)	СУЩАВНИМЪЕ финансирование (т)	(2) Travel costs (2) Расходы на командирование	(3) Equipment (3) Оборудование (т)	(4) Printing & Publishing (4) Печать и публикации (т)	(5) Other costs (5) Другие расходы (т)	TOTAL eligible DIRECT COSTS (1)+(2)+(3)+(4)+(5) Прямые расходы (т) (1+2+3+4+5)	INDIRECT COSTS (6) Косвенные затраты (т)	TOTAL ELIGIBLE COSTS (1)+(2)+(3)+(4)+(5)+(6) Прямые и косвенные расходы (т) (1+2+3+4+5+6)	A. Tempus Grant (т) А. Грант по программе Tempus (т) (т/год)	B. Co-Financing (т) (т/год) В. Софинансирование (т) (т/год)
1	HSW	DE	139 620,00	29 905,00	89 715,00	47 402,00	-	11 500,00	12 500,00	161 117,00	11 278,19	172 395,19	18 015,09
2	RTI	LV	90 840,00	7 200,00	22 980,00	33 202,00	-	-	-	56 182,00	3 202,74	60 114,74	6 011,47
3	BE	BE	51 750,00	7 535,00	23 805,00	36 000,00	-	500,00	-	52 307,00	4 151,49	63 458,49	6 345,85
4	BE	KZ	25 410,00	6 071,00	19 061,50	28 744,00	36 980,00	2 500,00	-	96 791,50	6 074,71	102 866,21	9 265,62
5	KoSTU	KZ	27 000,00	6 767,80	24 087,80	28 244,00	36 990,00	1 700,00	-	90 967,60	6 367,31	97 334,91	9 732,88
6	KoSTU	KZ	27 000,00	6 767,80	24 087,80	28 244,00	36 990,00	1 700,00	-	90 967,60	6 367,31	97 334,91	9 732,88
7	KoSTU	KZ	27 000,00	6 767,80	24 087,80	28 244,00	36 990,00	1 700,00	-	90 967,60	6 367,31	97 334,91	9 732,88
8	VIGU	RU	27 750,00	6 937,80	20 812,50	36 890,00	38 980,00	2 500,00	-	94 247,80	8 807,33	103 055,13	10 304,48
9	VIGU	RU	27 750,00	6 937,80	20 812,50	36 890,00	38 980,00	2 500,00	-	94 247,80	8 807,33	103 055,13	10 304,48
10	TKAO	RU	27 450,00	6 780,00	20 340,00	22 890,00	19 880,00	2 000,00	1 500,00	88 610,00	4 652,70	93 262,70	7 127,27
11	TKAO	KZ	-	-	-	9 872,00	-	-	-	9 872,00	691,04	10 563,04	0
12	TKAO	KZ	-	-	-	6 722,00	-	-	-	6 722,00	470,54	7 192,54	0
TOTAL PARTNERS			354 130,00	88 532,50	260 997,90	304 402,00	204 780,00	24 900,00	14 000,00	813 679,50	56 957,57	870 637,07	783 675,96

The Project Budget of the Partner 05 / Бюджет проекта партнера 05

BUDGET HEADING / Статьи бюджета	Сумма бюджета	Tempus grant / Грант проект	CO-FINANCING / Софинансирование	TOTAL eligible cost / Итого прямых расходов
(1) Staff costs (1) (1) Финансирование персонала (т) (т/год)		21 633,75	2 403,75	24 037,50
(2) Travel costs (2) (2) Расходы на командирование		24 782,97	3 461,13	28 244,00
(3) Equipment (3) (3) Оборудование (т)		33 282,00	3 698,00	36 980,00
(4) Printing & Publishing (4) (4) Печать и публикации (т)		1 530,00	176,00	1 700,00
(5) Other costs (5) (5) Другие расходы (т)		Not applicable	Not applicable	Not applicable
TOTAL eligible DIRECT COSTS (1)+(2)+(3)+(4)+(5) Прямые расходы (т) (1+2+3+4+5)		81 228,62	9 732,88	90 961,50
INDIRECT COSTS (6) Косвенные затраты (т)		6 367,31	Not applicable	6 367,31
TOTAL ELIGIBLE COSTS (1)+(2)+(3)+(4)+(5)+(6) Прямые и косвенные расходы (т) (1+2+3+4+5+6)		87 595,93	9 732,88	97 328,81

Hochschule Wismar, University of Applied Sciences Technology, Business and Design

Robert GRUNWALD
President



Akhmet Baltursynov Kostanay State University

Askar Nametov
Rector





УНИВЕРСИТЕТ

Thank you for your attention

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ҚОСТАНАЙ МЕМЛЕКЕТТІК
УНИВЕРСИТЕТІ

ҚАЗАҚСТАН РЕСПУБЛИКАСЫНЫҢ
ҚОСТАНАЙ МЕМЛЕКЕТТІК
УНИВЕРСИТЕТІ