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VYTAUTAS MAGNUS
UNIVERSITY

VYTAUTAS MAGNUS UNIVERSITY

Lithuania, Europe

Prof. Dr. Chief Researcher Algirdas Jasinskas

The International Scientific Seminar
BIOMASS FOR ENERGY
29 July, 2025

LITHUANIA

- Northern European Country
- Member of European Union the euro area, the OECD, and NATO
- The Lithuanian language is one of the oldest spoken in the world
- Population - 2,8 mln.
- Currency - Euro

KAUNAS

2nd

Largest city

19

Years of being a capital of Lithuania during Interwar period

11th

Place in the World in terms of buisness friendly eviroment

16

Green spaces (parks, recreation areas) in and around Kaunas

8

Higher Education Institutions

120

Students per 1000 inhabitants in Kaunas

1st

Established Lithuanian origin University

1st

City according Major Transit routes in Lithuania

VYTAUTAS MAGNUS UNIVERSITY

HISTORY

1922 established

1930 granted the name of Vytautas Magnus

1950 closed by the soviet regime

1989 re-established

2019 enlarged: + Agriculture and Education Academies

2020 Transform4Europe Aliance member

VISION

- We are one of the strongest, wide-ranging universities in the Baltic region, fostering the principles of *artes liberales*, bringing together a community to build the future of Lithuania and Europe.

MISSION

- To be the community institution of science, arts, and study which continues the mission of the University of Lithuania, established in Kaunas in 1922, creating liberal learning conditions for an individual, developing partnerships and taking an active part in the life of Lithuania to advance its future and contribute to the global cultural and academic development.

VALUES

- Personal and Academic Freedom, Democracy, Openness, Responsibility, Creativity, Sense of Community, Harmony, Academic Excellence.

VMU |RANKINGS

VYTAUTAS MAGNUS UNIVERSITY
MCMXXII

European Ranking:
position #267

North European University Ranking:
position #99

World University Ranking:
position #741-751

Agriculture Forestry

QS ranking by subject: position #301-350

Performing Arts

QS ranking by subject: position #51-100

VMU| Community: diversity, excellence, internationality

8,500+

total number of students

1,800+

international students from more **than 80 countries**

49,000

number of graduates

1,500

average number of staff

54

first cycle study programmes (**19 provided in English**)

71

second cycle study programmes **(21 provided in English)**

24

third cycle study programmes in **24 fields of science**

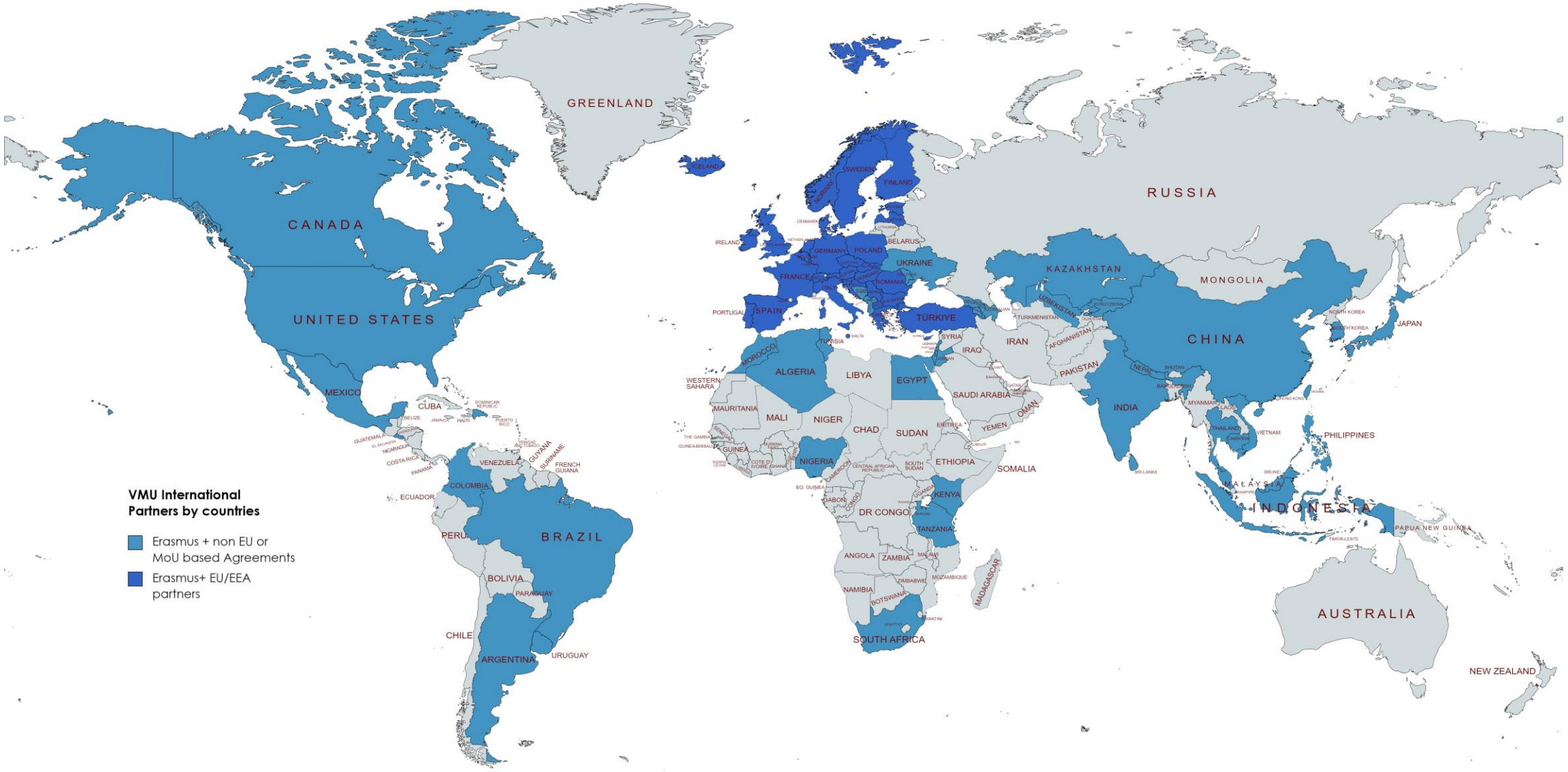
VMU| CAMPUS (KAUNAS/VILNIUS):

VYTAUTAS MAGNUS UNIVERSITY
MCMXXII

- 9 Faculties
- Modern lecture rooms, computer classes and labs
- The largest University Sport Centre in Lithuania
- Leisure spaces for students
- Botanical Garden
- VMU Theatre
- VMU Student Centre, Mentors's Program
- 3 Academies
- Institute of Foreign Languages
- Study-friendly entenviroment: university spaces, lecture rooms
- Dormitories in Kaunas City Center, Academia Campus and Vilnius City Center
- VMU Psychology Clinic
- VMU Arts Gallery 101
- VMU Ambassadors

VMU| COOPERATION:
>700 International Partners at 81 countries

VYTAUTAS MAGNUS UNIVERSITY
MCMXXII



Created with mapchart.net

VMU|Contacts:

Erasmus@vdu.lt
International@vdu.lt

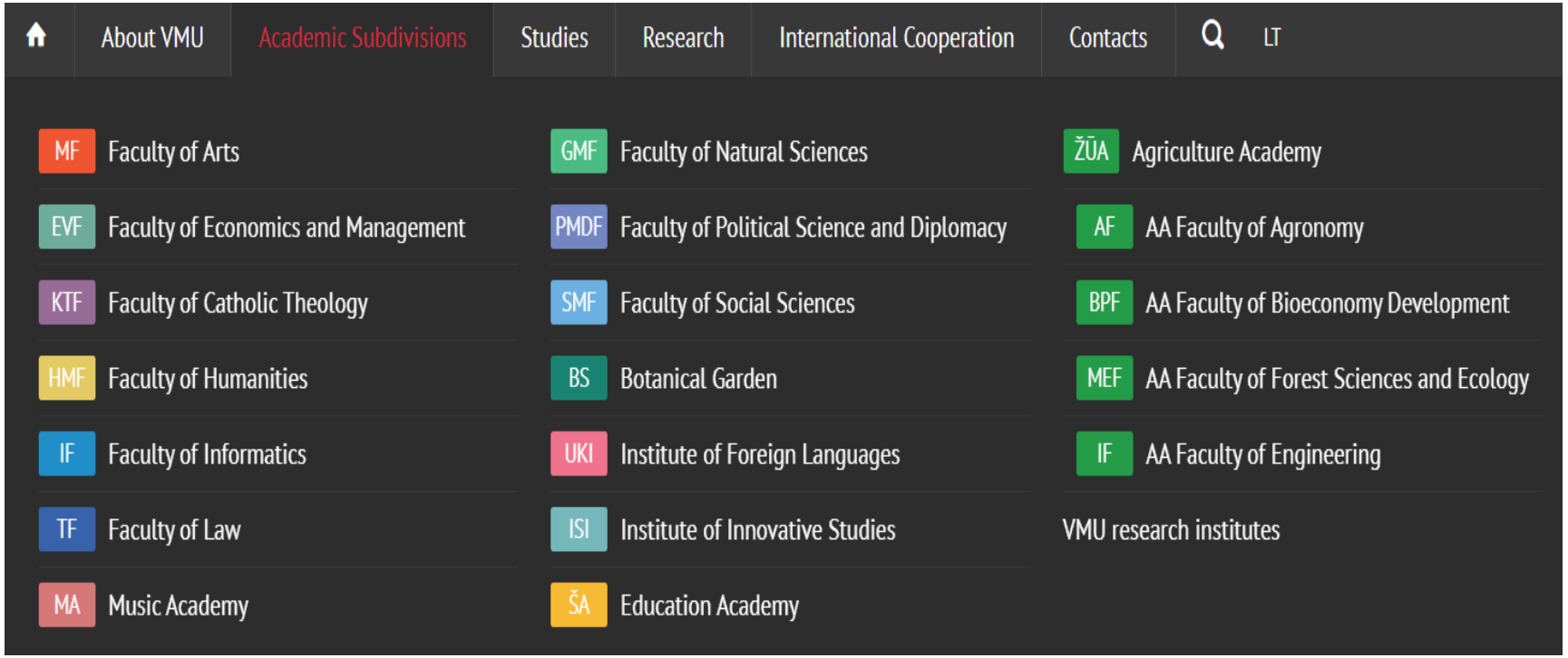
www.vdu.lt/en

vmuinternational

vmuinternational

[VMU representative video]

Presentation of Vytautas Magnus University



VMU University Structure

- 15 academic divisions: 10 faculties, Agriculture Academy, Education Academy, VMU Botanical Garden, Institute of Foreign Languages and Innovative Studies Institute
- 9 departments and 5 other subdivisions
- Students' Representative Council
- 7 public enterprises founded by VMU

VMU is located in Kaunas and Kaunas District

- Kaunas - City in Lithuania
- Kaunas is a city in south-central Lithuania. At the confluence of the Neris and Nemunas rivers, Kaunas Castle is a medieval fortress housing historical exhibitions. Area: 157 km²
- Weather: 8°C, Wind NW at 3 m/s, 81% Humidity weather.com
- Population: 295,269 (2016) United Nations

Vytautas Magnus University Agriculture Academy

Faculty of Engineering

Faculty of Engineering

***More than 300 students*:**

- *Three bachelor degree study programmes: Agricultural Mechanical Engineering, Smart Engineering, Water and Land Engineering (three specializations: Aquaculture Engineering, Hydraulics, and Land Management);*
- *Six master degree study programmes: Agricultural Mechanical Engineering, Agricultural Engineering and Management, Hydraulic Engineering, Transport Engineering, Sustainable Energy, Land Use Planning;*
- *Three doktorship schools in the science area of Technologies: Environmental Engineering, Mechanical Engineering, and Transport Engineering (about 30 PhD students).*

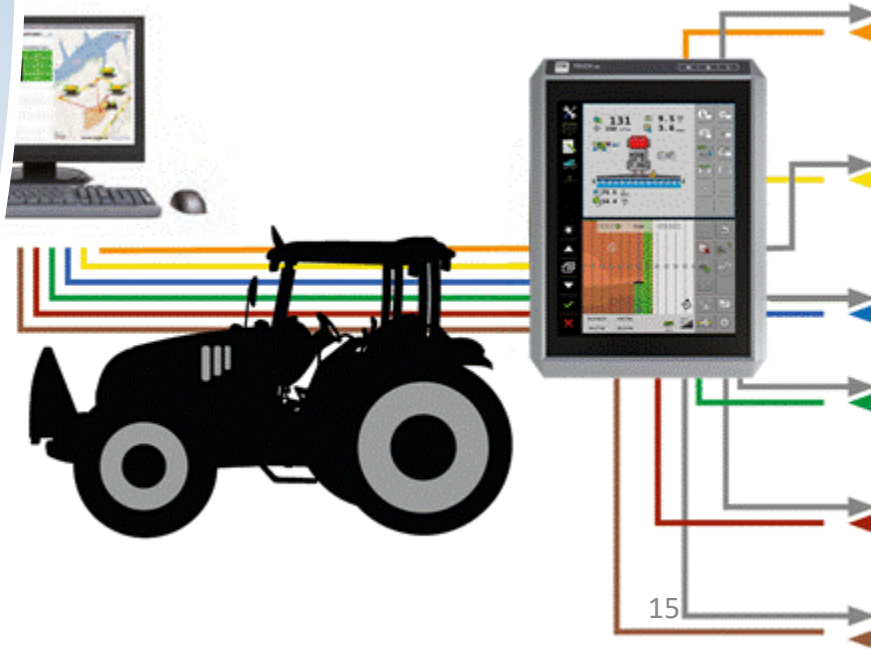
Teachers and researches staff - about 50 .

Main scientific activities:

- environmentally friendly construction;
- innovative aquaculture technologies;
- smart soil and water engineering;
- smart agricultural and mobile machine systems;
- sustainable engineering systems, and mitigation of the effect on climate change;
- technologies of renewable energy resources and biomass engineering;
- tribological processes in mechanical and biological systems.

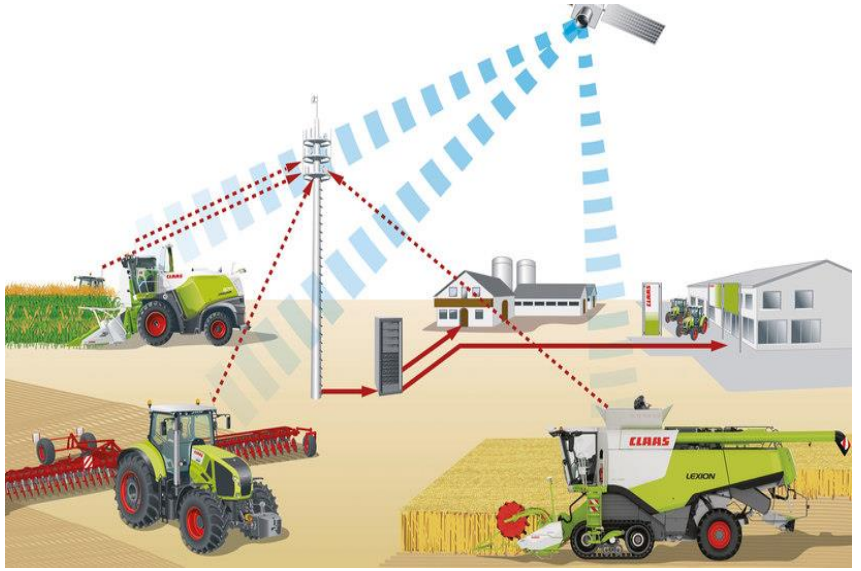
Study program:

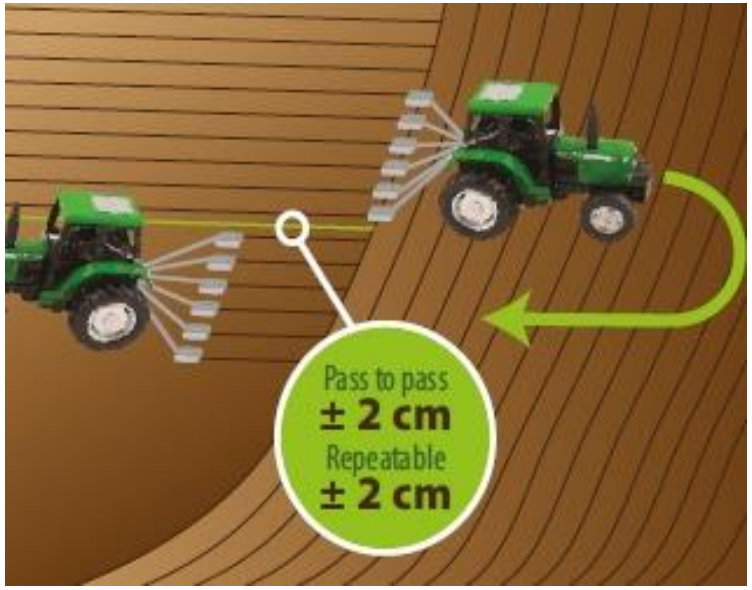
AGRICULTURAL MECHANICAL ENGINEERING



Study program:

SMART ENGINEERING





In 2015 was evaluated the Science and Education Monitoring and Analysis Center – Biosystems Engineering Unit. Now it consists from Faculty of Engineering, Laboratory of Environmental Technology Chemical and Biochemical Research. This Center is a leader in the field of Technological Sciences in Lithuania.

Scientific Cooperation Between VMU AA (*Lithuania*) and UWMO (*Poland*)

Erasmus vizit to Olsztyn, 2014

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BRANCHES

BOOSTING RURAL BIOECONOMY NETWORKS

Lithuanian-Polish cooperation in the framework of BRANCHES

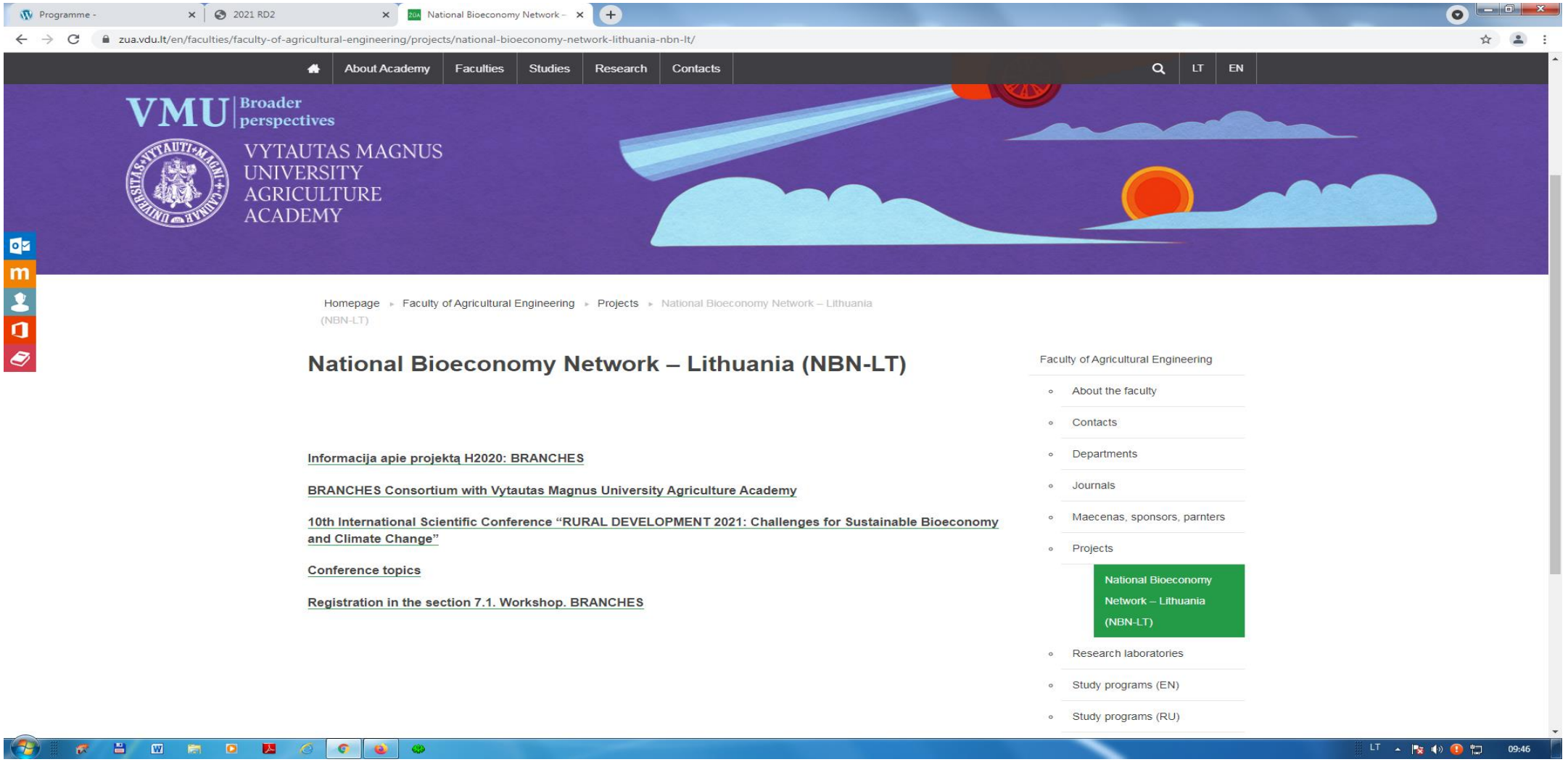
Prof. Dr. ALGIRDAS JASINSKAS
Vytautas Magnus University Agriculture Academy

Education 360°

2022-04-24

Information about the Project H2020: BRANCHES_National Bioeconomy Network – Lithuania (NBN-LT)

This information can be found on the Vytautas Magnus University Agriculture Academy (VMU AA) website:
https://zua.vdu.lt/en/faculties/faculty-of-agricultural-engineering/projects/national-bioeconomy-network-lithuania-nbn-lt/



BRANCHES Consortium with Vytautas Magnus University Agriculture Academy

It was established the cooperation of the UWM research team represented by **Prof. Marek Marks** with **Prof. Dr. Algirdas Jasinskas** as one of Facilitators of H2020:BRANCHES for knowledge transfer to 3 rd countries and the Coordinator of the Vytautas Magnus University contribution to the Project.

Cooperation between Consortium of BRANCHES and Vytautas Magnus University Agriculture Academy in the frame of the Project would cover following activities:

- Receiving and transferring information about BRANCHES to interested Lithuanian actors.
- Cooperation in the field of a cross-border exchange of innovative practical knowledge for the mobilization of biomass and the integration of bioenergy solutions in rural environment.
- Invitations to relevant workshops and show-case days
- Reporting on the actions, which could be developed in Lithuania in connection with BRANCHES, especially your role as a national contact point for BRANCHES in Lithuania
- Involving the target actors of the BRANCHES actio ns to ensure an appropriate impact of the knowledge transfer.

The practical knowledge collected by BRANCHES can be relevant to the development of new initiatives on biomass supply and bioenergy generation in rural areas of Lithuania.

Coordinator Johanna Routa,

Natural Resources Institute Finland

Presentations of project BRANCHES in the Conference of VMU AA

The 10th International Scientific Conference RURAL DEVELOPMENT 2021:
Challenges for Sustainable Bioeconomy and Climate Change
21-23 September, 2021

Section 2. **Biosystems Engineering and Environment Integrity**

2.7.1 Workshop. BRANCHES: Boosting Rural Bioeconomy Networks – Lithuanian-Polish Network	
IN PERSON Auditorium No. 514 *Central building* (Studentų str. 11, Akademija) ***Chairperson prof. dr. Algirdas Jasinskas***	
8.30–8.45	Welcome and introduction; Bioeconomy networking – presentation of project BRANCHES **Algirdas Jasinskas[1], Johanna Routa[2]** *[1]Vytautas Magnus University (Lithuania);* *[2]LUKE (Finland)*
8.45–9.00	Presentation of the Lithuanian and Polish regions represented in BRANCHES **Algirdas Jasinskas[1], Jarosław Sarnowski[2], Tomasz Balicki[2]** *[1]Vytautas Magnus University (Lithuania);* *[2]Marshal Office of Warmia and Mazury (Poland)*
9.00–9.15	Energy systems in rural areas in the light of recommendations of EIP-Agri Focus Group "Enhancing production and use of renewable energy on the farm" **Janusz Gołaszewski[1], Algirdas Jasinskas[2], Marek Marks[1], Kinga Treder[1]** *[1]University of Warmia and Mazury (Poland);* *[2]Vytautas Magnus University (Lithuania)*
9.15-9.30	BIOGAL the green biogas plant in Boleszyn **Agnieszka Pyzel[1], Andrzej Galiński[2]** *[1] The Warmia and Mazury Agricultural Advisory Center Located in Olsztyn (Poland);* *[2]BIOGAL, Boleszyn (Poland)*
9.30-9.45	Evaluation of preparation and use of multi-crop plants for solid biofuel **Rita Petlickaitė[1,2], Algirdas Jasinskas[2], Kęstutis Romaneckas[2], Marius Praspaliauskas[1]** *[1]Lithuanian Energy Institute (Lithuania);* *[2]Vytautas Magnus University (Lithuania)*

Some photos of presentations in the Conference

CBEO

CENTER FOR BIOECONOMY AND RENEWABLE ENERGIES
UNIVERSITY OF WARMIA AQND MAZURY IN OLSZTYN
10-727 Olsztyn, PL. ŁÓDZKI 3, POK 202, tel./fax. 89 523 43 97
e-mail: cbeo@uwm.edu.pl www.uwm.edu.pl/cbeo

Olsztyn, February 20, 2023

Professor
Algirdas Jasinskas
Department of Agricultural Engineering and Safety
Faculty of Engineering
Vytautas Magnus University Agriculture Academy
Studentu 15A, LT-53362, Akademija, Kaunas r., Lithuania

Role of the Vytautas Magnus University in the project BRANCHES: to facilitate the BRANCHES knowledge transfer to Lithuania. Coordination of cooperation with UWM: prof. A. Jasinskas.

INVITATION LETTER

BRANCHES
BOOSTING RURAL BIOECONOMY NETWORKS

Dear Professor Jasinskas,

On behalf of the University of Warmia and Mazury in Olsztyn, I kindly invite you to participate in the ShowCase Day, organized by the ITABIA Italian Biomass Association

ShowCase Day and BRANCHES workshop (draft plan of the event is enclosed)

20-21 April, 2023

The ShowCase Day and workshop will be held in Calimera (the province of Lecce)
The ShowCase Day is organized by Italian partner in the framework of the EU research project BRANCHES: Boosting Rural Bioeconomy Networks following multi-actor approaches. During the event, Italian innovative solutions for biomass value chains and renewable energy technologies with a high potential for implementation in rural areas will be presented.
Taking into account your knowledge and our close cooperation in promotion of innovative solutions in rural areas presented in the framework of BRANCHES, I kindly ask you to be a part of discussion during the showcase day and workshop.
The cost of your participation in the event will be covered by the UWM.

Sincerely Yours,

Prof. Dr. Janusz Gołaszewski
The head of the project BRANCHES at the UWM

PHOTOS_Showcase day in Italy, Calimera_BRANCHES_20-21 April 2023

PHOTOS_Showcase day in Italy, Calimera_BRANCHES_20-21 April 2023

PHOTOS_Showcase day in Italy, Calimera_BRANCHES_20-21 April 2023

VYTAUTAS MAGNUS UNIVERSITY

BRANCHES: *Boosting rural bioeconomy networks following multi-actors approaches*

The practice of using fast-growing energy plants for biofuel and emerging problems in Lithuania

Prof. Dr. **ALGIRDAS JASINSKAS**

Department of Agricultural Engineering and Safety, Faculty of Engineering
Vytautas Magnus University Agriculture Academy

Olsztyn, 06 09 2023

VYTAUTO DIDŽIOJO
UNIVERSITETO
ŽEMĖS ŪKIO
AKADEMIJA

ENERGY FORESTRY AND FAST-GROWING PLANTS IN LITHUANIA

Prof. Dr. Algirdas Jasinskas,
Chief Researcher
Vytautas Magnus University Agriculture Academy
Faculty of Engineering, Department of Agricultural Engineering and Safety

VYTAUTO DIDŽIOJO UNIVERSITETO ŽEMĖS ŪKIO AKADEMIJA

INTRODUCTION

- *Forest and wood biomass* are woody perennial plants.
- Compared to other types of biomass, the biomass of woody plants has a high energy value and a good energy balance, i.e. the ratio between the energy obtained from the fuel and the energy used for cultivation, harvesting and transportation.
- Forest and wood biomass is further divided into: firewood, low value and logging waste.

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INTRODUCTION

- *A separate type of plants is distinguished* - plantations of short rotation or woody plant plantations.
- These plantations use intensive technology to specially breed and grow very high productivity plants for obtaining raw materials provided by the forest.
- Willows, dogwoods, blinds, hybrid poplars, birches, aspens, alders, etc. are mostly grown in the plantations.
- It is estimated that the growth of woody plants grown with intensive technology in plantations is from 7 to 20 t/ha of dry biomass per year.

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INTRODUCTION

- There are more than 5000 ha of cultivated willow (*Salix Viminalis*) plantations in Lithuania, which were started to be used as a hard bio-fuel.

- Therefore, with increasing uptake of renewable energy sources the research of new technologies and their development is necessary.

- Wood, quick-growing trees, bushes, willow, poplar and other energy plants are the most important renewable energy sources in Lithuania and now compose a substantial part of the local fuel.

Fig. 1. Willow plantation growing in the fields of Noreikupis, Sakiai District

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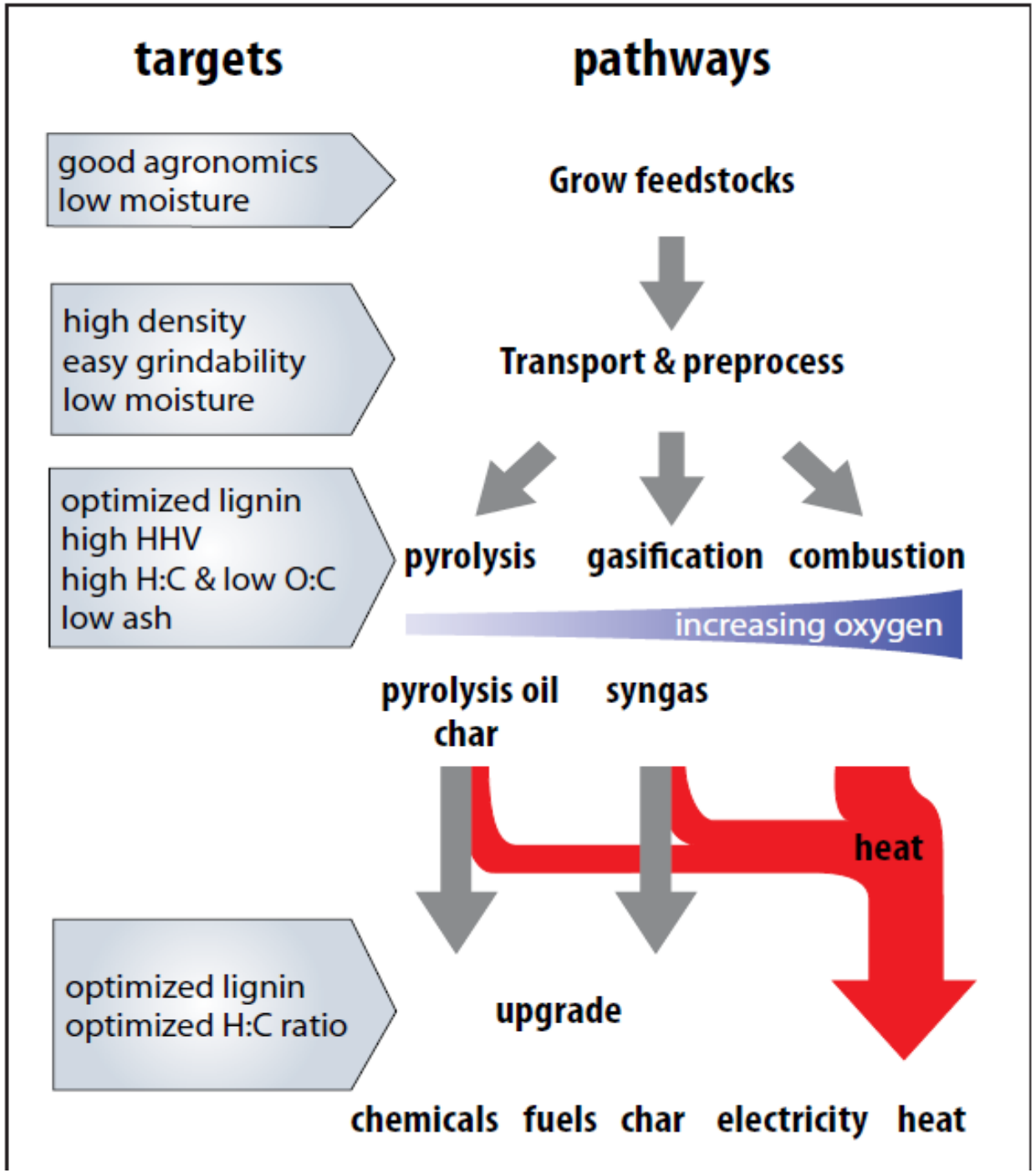
Methods of conversion of woody plants to energy

There are three known ways of converting woody plants into energy:
Thermochemical conversion:

- ***Combustion*** – used to heat water or generate steam in a turbine;
- ***Gasification*** – used to produce flammable gas that can be burned in boilers or used as fuel in engines or gas turbines;
- ***Pyrolysis*** – can be applied to convert plant into gas, oil or charcoal fuel.

Overview of the steps involved in growing, transporting, processing, and converting biomass into thermochemical energy products



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Use of woody plants conversion methods to energy

- **Burning** and **gasification** are the more common methods of conversion of woody plants these days.
- **Pyrolysis** is not so widely used.
- The preparation and use of biomass for **combustion** has been discussed in previous reports, so we will discuss **gasification** in more detail.

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THE EXPERIMENTAL STUDY OF THE EFFICIENCY OF THE GASIFICATION PROCESS OF FAST-GROWING WILLOW BIOMASS

Prof. Dr. **ALGIRDAS JASINSKAS**
and PhD student **Savelii Kukharets**
Department of Agricultural Engineering and Safety, Faculty of Engineering
Vytautas Magnus University Agriculture Academy

12th International Scientific Conference “RURAL DEVELOPMENT 2025: Resilience to Global Challenges”

2024 Gruodžio 12

We kindly invite You to the **12th International Scientific Conference “RURAL DEVELOPMENT 2025: Resilience to Global Challenges”**, which will take place in Vytautas Magnus University Agriculture Academy (Lithuania), **1-3 October 2025**.

This conference is aimed at fostering interdisciplinary scientific discussions by presenting new ideas for agricultural development, rural development, and resilience in the context of global challenges.

The main topics of Conference sessions:

- Biosystems Engineering for Sustainability;
- Climate Smart Agriculture and Food Technologies;
- Multifunctional Approach for Sustainable use of Bioresources;
- Social Research and Innovations for Strengthening Rural Areas.

Keywords: *Agriculture, Bioeconomy, Biosystems, Global Challenges, Resilience, Rural development.*

Thank you for your attention!