

THE PREPARATION AND EDUCATION OF CREW MEMBERS FOR INLAND WATER TRANSPORT

PRÍPRAVA A VZDELÁVANIE ČLENOV LODNÝCH POSÁDOK PRE VNÚTROZEMSKÚ VODNÚ DOPRAVU

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Summary: Although inland water transport (IWT) belongs to the most efficient mode of transport, in the last a few years there have been a low interest from the side of the EU countries and a big lack of well educated workers who could work in this area. The European Commission considers this lack as a big problem of a next development of inland water transport and tries to solve it through various European projects and programmes. These projects and programmes are interested in the analysis of the educational institutions which prepare students or young workers for IWT and the harmonisation of the education system in the Danube countries.

Key words: inland navigation, crew members, education, programmes and projects of the European Union

Anotácia: Hoci vnútrozemská vodná doprava patrí k najefektívnejším druhom dopravy, v posledných rokoch zaznamenáva nízky záujem zo strany krajín Európskej a veľký nedostatok vzdelaných pracovníkov, ktorí by mohli pracovať v tejto oblasti. Európska komisia považuje tento nedostatok za veľký problém pre budúci rozvoj vnútrozemskej vodnej dopravy a pokúša sa ho riešiť rôznymi európskymi projektmi a programami. Tieto projekty a programy sú zamerané na analýzu vzdelávacích inštitúcií, ktoré pripravujú študentov alebo mladých pracovníkov pre vnútrozemskú vodnú dopravu a harmonizáciu vzdelávacieho systému v dunajských krajinách.

Kľúčové slová: vnútrozemská plavba, členovia lodných posádok, vzdelávanie, programy a projekty Európskej únie.

1. INTRODUCTION

Transport is a key factor in modern economies. With the growth of the economy and living standards rise the requirements for transport services. By 2013, the EU expected to increase road transport more than 60% and 12 new Member States in 2020 expected to double. This will result in traffic congestion, environmental damage, accidents and the threat of loss of competitiveness of European industry in managing their supply chains must rely on cost-effective and reliable transport systems. It is therefore in the interest of the EU have more

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energy efficient transport system, in terms of improved environmental efficiency, as well as more stable transport economy. It is therefore necessary to decrease growth of road traffic control and provide other, greener forms of transport means in order to become competitive alternatives. With two-thirds of its external maritime borders is a maritime power in the European continent, especially after enlargement. Europe's long coastline and many ports predetermine the maritime sector to become a valuable alternative to land transport.

Sea transport in recent decades has demonstrated its ability to achieve levels of competitiveness, which is usually attributed only to road transport. In the nineties of last century as it was the only means of transport that can keep up with the pace of output growth in road transport. From 1995 to 2004 increased performance in sea transport (expressed in ton kilometres) in 25 EU Member States by 32%, while road performance grew by 35%. The share of sea transport in the EU-25 performance on all freight traffic is 39% while the share of road is 44%. The share of EU-15 (old member states) is 42% for sea transport and 44% for road transport. Shipping is 90% of EU external trade, the shipbuilding industry has an annual turnover of € 20 billion and approximately 350,000 employees.

2. THE EUROPEAN PROGRAMMES AND PROJECTS OF THE EUROPEAN UNION FOR THE SECTOR OF INLAND WATER TRANSPORT

Even the transport route can be used for transporting cargo from seaports and contribute to reducing road congestion, improved safety and freight, to achieve greater energy efficiency and environmental protection. A number of EU projects is therefore modernization and integration of inland river shipping in multimodal logistics chains more efficient.

The adoption of the project of integrated European Action Programme for Inland Waterway Transport (NAIADES - Navigation and inland waterway Action and Development in Europe) of the Commission of the European Communities is creating a new platform for concrete actions in order to fully exploit the market potential of inland navigation and its use more attractive. Integral part of this project is to invest in human capital, i.e. support the development of education and training as the basic condition of creating a healthy and competitive labour market. An important document in this sense, the directive for the implementation of river information services on the waterways of international importance.

On the European action and development program for inland navigation waterways in Europe NAIADES in the coming years engage its specialized application projects in the framework of European programs, such as Platinum, EWITA, EDINNA and NELI. They should jointly create a coordinated platform and application space for NAIADES program. The Department also seeks a permanent waterway from the Faculty of Operation and Economics of Transport and Communications for these international projects, work effectively and improve the conditions for the educational process at our university.

The next project NELI is from April 2009 an international collaboration to create an information network for logistics and navigation training (Cooperation - Network & logistics

for nautical education focusing on inland waterway transport in the Danube corridor supported by innovative solutions).

The project is committed to:

- establish a cooperation network among the different organisations activating in the inland waterway navigation sector with a view to facilitating the exchange and future cooperation regarding educational and training matters,
- design and implement eLearning services for the inland navigation aimed at reducing digital divide among the regions in the South East Europe,
- conceive and implement Information and Training Centres (at Galati in Romania and at Ennshafen in Austria),
- increase public awareness on the role and importance of new innovative teaching methods in the field of inland navigation in order to promote the specific activities among youngsters.

It is a project aimed at shipping freight by inland waterway in the Danube corridor, with the support of innovative solutions. The collaboration involved 15 members from European countries:

- CERONAV – Romanian Maritime Training Centre (RO)
- via donau – Austrian Waterway Company (AT)
- Ennshafen Oberösterreich GmbH (AT)
- University of Applied Science Upper Austria Research & Development Ltd (AT)
- EAMA – Executive Agency Maritime Administration (BG)
- Budapest University of Technology and Economics (HU)
- National Association of Radio Distress-signalling and Infocommunications (HU)
- University of Craiova, Faculty of Engineering and Management of Technological Systems (RO)
- Romanian Naval Authority (RO)
- Technical University of Košice, Faculty of Manufacturing Technologies with a seat in Prešov (SK)
- University of Žilina, Department of Water Transport (SK)
- Faculty of Transport and Traffic Sciences (HR)
- Inland Navigation Development Centre Ltd. (HR)
- School of shipping, shipbuilding and hydrobuilding (SR)
- Odessa National Maritime Academy (UA)

The project consortium covers a well-balanced mix of heterogeneous organisations needed for implementing and promoting innovative education and training solutions in the Inland Waterway Transport sector. The project activities are divided into six work areas:

WP 1 Transnational project management and coordination,

WP 2 Communication and dissemination,

WP 3 Cooperation network implementation,

WP 4 Educational and training Services

WP 5 Information and training centres for inland waterway.

The share of co-operation the Department of the project is in all six areas, in particular, however, should focus on creating an information network of educational institutions, improve education and training services through the establishment of information systems, educational materials and practical training for the improvement of inland navigation which has its place on the simulator practice of management of inland barges Shipmaster P60.



Fig. 1 – NELI project partners



Fig. 2 – The logo of the NELI project



Fig. 3 - The NELI project countries

3. HIGHER EDUCATION

3.1 Theoretical preparation

Application of the Programme of Action and the need for implementation of new guidelines into practice requires a qualified management for the Department of Management of waterways and operation of vessels and spheres of government. Within the EU, in terms of

waterway works in gear and operating the relatively low percentage of qualified experts with the necessary education, most of them have only practical experience and relatively high physical age. Already apparent shortage of qualified crews to operate vessels in the expected future growth performance will suffer and management activities in existing or emerging national shipping companies.

In that regard, therefore, we have to mention share the University of Žilina in the preparation of qualified components control apparatus for the conditions of inland navigation and ports. Through the Department of waterway prepares graduates professionals in bachelor level and engineer level education in the curriculum "Water transport". Experts - to view the profile and the focus of the university - is preparing for the jobs of all levels of management of transport and forwarding companies providing services transport and inland shipping services and inland waterway or seaport.

Graduate Bachelor degree study program "Water transport" is ready to implement any lower operational and technical functions in a company dealing with activities related to the provision of shipping operations or the provision of port services. It is familiar with the legal standards governing the operation of transport and port operations, including business conditions in the waterway. He knows all types of inland vessels and transshipment facilities in inland and sea port and is familiar with their operational, technical and technological characteristics. He controls work on a computer with a text editor and computing, including the use of database pages. It is ready to communicate in a foreign language in the scope of the underlying common terminology, with professional foreign literature is able to work satisfactorily. It is familiar with the work on electronic compiler. With regard to the profile presented by the graduate can apply to the lower levels of executive management professions in the transportation and shipping companies providing transportation services for inland and maritime transport services and inland waterway or seaport. Graduate may apply also in the field of tourism in organizing and securing personal shipping on navigable waterways or in closed water areas. The graduate is able to find its application and in state administration and government, national professional organizations in the surveillance of inland navigation in the management and maintenance of waterways and in the provision of multimodal logistics service centres and so forth.

Graduate Master of Science degree study program "Water transport" is ready to implement all senior management positions in the company, dealing with activities related to management of shipping operations and port activity. It is familiar with relevant legal standards for inland and maritime navigation, including business conditions in the waterway and demonstrating proficiency carrier and crew of the vessel. They know the technical basis of waterways, its navigation and port operations and the principles of efficient use of shipping fleet and technical equipment of the port. It is familiar with the principles of business enterprise and navigation can use the services of banks for the purpose of renewal or extension of business activities. They know the current traffic-related conditions on the inland waterways, including the shipping documents accompanying the cargo. These documents can be processed, analyzed and properly used. Controls work on a computer with a text editor and computing, including the use of database pages. He knows all the latest information and

communication technologies in transport. Able to communicate in a foreign language in general and the scope of basic technical terminology and can work with a professional foreign literature corresponding to the profile and focus. The operation can use an electronic translator. The inland navigation can serve cadets. With regard to the profile presented by the graduate can apply for positions in middle and senior management of transport and forwarding companies providing transport or intermediary services in the inland and maritime transport services and inland waterway or seaport. Graduate may apply also in the field of tourism in managing passenger shipping on the navigable waterways of international and domestic or closed water areas. The graduate is able to find its application in international organizations and institutions involved in water transport in the central state administrative bodies, the state administration and government at all levels in organizations, state professional supervision in the field of inland navigation in the area of maintenance and management of water road traffic management in multimodal logistics centres, transport, research and so forth.

Graduates of the study of waterborne meet proficiency requirements under the Act no. 338/2000 Inland Navigation, as amended on entrepreneurship in the waterway. In the recommended minimum length of professional experience the students get acquainted with the operation of vessels and the use of technical facilities in ports. During the course, candidates can receive training and practical management training and small-vessel qualifying leader of a small vessel.

3.2 Practical preparation

Theoretical training is accompanied by practical exercises on the PC in a virtual environment. In 2008, the water transport department has received from the State Navigation Administration Bratislava training simulator for training the management of river barges Shipmaster P60, built on Virtual Reality Research Institute of Nuclear Energy, Inc. Trnava. When his work was used modern information technologies in the field of training of personnel in the field of 3D graphics and virtual reality simulation of the physical processes and management of technological processes in real time. The device is made using a standard PC-type computers running Windows 2000. In terms of hardware training simulator consists of:

- body counters steering tug-type Muflon, including the most important elements affecting the management of a pushed convoy (joystick for rudder deflection, control lever for the award of engine power button to start the engine, buttons to run hydraulic pumps, control buttons for boat horn, the panel control signal lights, etc.),
- application server simulator (communication module, math module and driver electronics to operate), the graphic server software, which generates a virtual scene and treats all interactions with objects in the scene,
- LCD projector with a resolution of 1027 x 768,
- screens measuring 229 x 305 cm for the rear projection,
- PC - instructors console - management training scenarios.

- In terms of software is equipped with:
- mathematical module to simulate the type of voyage the tug pushed the Muflon group,
- application software for generating virtual scenes, including modules for treatment interactions with objects in the scene,
- communication module for sharing the simulation database in real-time,
- programme for scanning of the control and management signals to the body counters wheelhouse,
- programme for the training instructor.

Simulated vessel is universal pushed convoy 1PT + 1PB, while the scheme may extend to assembly 1PT + 4PB. Math code simulates the movement of traffic reports in three degrees of freedom and includes the simulation of reflections from objects in the virtual scene, the impact on navigation of the river flow reports, and various options of convoy formations. The simulator allows training trip in two shipping locations:

- model shipping line on the Danube r.km from km 1864 to km 1873 and
- model sites around the canal locks on VD Gabčíkovo



Fig.4 - Ship Simulator Shipmaster P60

The present simulator is built as a "scalable", i.e., the simulator can be extended to a simpler version of the complex using a previous installation of hardware and software. It is that the feature was used recently in a simulator has been upgraded under the project the use of electronic technologies in the telematics "technology trip" processed under the "Program of promoting quality education" foundation Tatra Bank and loving her financial contribution. It is now official view of water transport in the submitted and approved follow-up project "The completion of the prototype simulator shipping service" Operational Research and Development Programme (Measure 2.2 The transfer of knowledge and technology from research and development into practice). financed by EU Structural Funds continue to upgrade and further development ship simulator to fully meet the requirements of the job practical training to gain the professional qualifications of the office space in the crew of inland navigation.

3.3 Lifelong Learning

In order to fill the deficit in the system of secondary education and training in the field of inland waterway transport, in October 2008 asked the University of Zilina - in accordance with Law no. 386/1997 Z. z. on continuing education, as amended, - the Ministry of Education for accreditation of educational activity entitled "Training for candidates to fill functional positions in the crew of inland waterway transport. In this educational project in the University of Žilina subsequently won "The decision to issue the certificate of accreditation (0494/2008/539/1) and lifelong learning right through the University Department of waterway implement training to the extent that 110 hours of educational activity in the modular structure:

- 1st Module: Waterways and technical equipment for navigation,
- 2nd Module Technology and safety shipping,
- 3rd Module: Ships, ships and electric power equipment,
- 4th Module: Shipping - legal conditions of inland navigation.

Given the complexity of training selected target groups, it was necessary substantive content of the educational activities in accordance with Law no. 338/2000 Inland Navigation and amending certain laws, as amended, and Ministry of Transport Decree No. 12/2005 on the details of qualification, verification of competence of the crew member and leader of the vessel craft patterns and certificates of competence of the crew of the vessel designed modular, the modules are thematically homogeneous and form an integral part of the requirements to demonstrate appropriate professional capacity vessel crew member. The modular structure allows for real time content and scope of this issue to adjust claims and demands of the office space in the crew of the vessel for inland waterway transport.

In Module 2 - Technology and safety of shipping expected time form of education - theoretical and practical solution of the case the situation on the ship simulator Shipmaster P60.

Graduate receives the corresponding theoretical knowledge and practical skills necessary for demonstrating competence and the subsequent inclusion of the corresponding functional space in the crew of the vessel for inland waters (sailor, cadet, helmsman, captain, commander of the vessel, shipping traffic controller, dispatcher port lock controller, the state inspector safety of navigation), in accordance with the requirements of the law on inland navigation and the implementing regulations to this Act.

So if the results of the programme NAIADES, lack of workers and entrepreneurs to become a major problem: in the 90th 20th century it was possible to partially counterbalanced by technological innovations and the mobility of crew members from the EU and beyond, must now be the basis of such a strategy to improve working and social conditions through a constructive social dialogue at European level. In this sense, an essential condition for a healthy and competitive labour market is functioning system of education and training. It is therefore necessary to ensure that the institutions of education and training curricula adapted to current managerial, technological, linguistic and shipping needs. Basic tools to control the position of EU structures deemed necessary to achieve that objective, namely:

- Social dialogue within sector (working conditions, working time, definition of the requirements of professional qualifications across the EU),
- recruitment campaign,
- support for projects in education and training specific training programs for the inland waterway,
- a common framework for standards of education and training it is necessary to support and promote the specific circumstances and national levels and to adapt to local conditions or local specificities.

Without strong and meaningful support for the development of inland waterway capacity as a State, concerned ministries, authorities, state technical supervision well as of free carriers and their coordinated action to this area, including a system of education, it is not possible to achieve significant progress in the development of inland waterway transport in the Slovak Republic.

4. CONCLUSION

The following programme of the European Union like PLATINA or NELI help in the cooperation among education institutions which work in the area of inland water transport on the harmonization of the qualification requirements. The output of these projects will be in the increasing of the role of inland water transport on the transport market of the European Union. The higher quality and harmonisation of the education systems will bring more qualified staff and the higher safety in inland navigation and ports.

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