

Web based course: preliminary training phase for crane driver

The world is changing, and so is sea transport, with an ever-increasing number of containers; faster transit times and ship stopovers, and more intensive competition between ports.

All this demands first-class performance: any port has to strive for nothing less than excellence. And excellence is determined entirely by people and tools. Indeed, clients are demanding capable people in the fastest possible turnaround time, with trustworthy professionals, obviously in a safe environment, since capacity for performance is at stake.

To do so, it is necessary to give relevant training to men, give them the skills, the precision and the knowhow to perform. The simulator is a tool which enables to develop skills in real operating conditions (every aspect of the simulation is strikingly realistic in terms of the environment, sounds and motion) and on several different engines (up to 5 different kind of cranes).

Indeed, training through simulator is the guarantee to take home a set of proven, validated skills: through exploring the various modules on the simulator, the trainees are confronted with the range of operating scenarios. Moreover, it is the guarantee to be ready for the job in one month, compared to eight months under standard apprenticeship training. One instructor takes in charge only two trainees, which makes that the trainee learns just as much from watching in the control room what his fellow trainee is doing on simulator. And it works both ways.

Training through simulator represents a progressive apprenticeship, safe and measurable.

1. Objectives of the WP2

The objective of WP2 is to develop a web based course for people who intend to follow a training course on simulator.

Indeed, people working in this sector, in addition of simulating based training, need to acquire theoretical information on procedures, regulations, safety, work processes...

This web based course is intended to get any future crane driver the essential information before transfer on simulator. Its aim is to make the user aware of the various procedures and the didactic contents do be assimilated, mastered and used when learning on simulator.

The advantage of such a web based course is to create a unique pedagogical guide and program adjustable to any level of public, and uniform the training of crane drivers in Europe to create a "European standard".

2. Content of the issue

The WP 2 includes a threefold issue. The first part is dedicated to the definition of profiles and selections of candidates eligible to the training, on the basis of pre defined criteria.

The second part deals with the didactic contents of the classroom training

- Development of didactic contents
- Transfer of contents on a web based platform

The different steps of this work package are the following:

May 09: Presentation of the profiles and the structure of the web based course

September 09: Validation of the structure of the web based course in accordance with other ports experience

Report on the aims, objectives and methodologies of the web based course

In the meantime, and until November 09: redaction of the contents of each "module" identified in the structure of the web based course presented in May 09

November 09: Presentation of the redacted contents of each "module" of the web based course

The didactical contents will be tested in WP3 – Pilot experiences

3. Profiles & candidate selection

Before initiating the web based course, it is necessary to proceed to the trainee selection, in order to know if the latter has the profile to drive a crane. This selection will be based on a list of criteria of skills, competences and abilities: first of all the age of the trainee, then its skills in terms of study level and general culture, and then a series of tests which allows to measure its abilities to drive a crane or gantry crane. These different selections are the guarantee of a successful training and a competent future crane driver.

In terms of work, the main tasks of a crane driver are to drive the handling engine such as cranes and gantries and to participate to the maintenance of engines. But also to get involved in work security and service quality procedures.

The required age for a future crane driver depends on the kind of crane he will drive and he will be trained to :

For a gantry crane, the required age is of 23 to 35 years old.

Regarding RTG, the future driver has to be 23 to 40 years old.

And if the driver is already experiences on a port engine, he has to be 35 to 45 years old.

In terms of training standards, the minimum required to be eligible to the selection is the certificate of technical education (French BEP), or the school vocational diploma (French Bac Pro), or the advance vocational diploma (French BTS)

During the selection, the future trainee is tested on its general knowledge.

And finally, he has to pass through a series of tests which will enable to evaluate:

Its cognitive abilities, such as space orientation, memory

Its psychomotor abilities, such as coordination, reflexes

Its perception abilities, i.e. hearing, eyesight, heightened apprehension

Its personality in terms of stress apprehension; ability to work by night, on weekends and holidays; respect of the machine; respect of general instructions; behavior

Its physical abilities, especially regarding lumbar muscles

Its motivation and knowledge on port and commercial environment

4. Web based course skeleton

The training is based on objective-oriented learning. This method uses three key stages to ensure a step-by-step comprehensive transfer of knowledge

The indispensable classroom training is given through the web based course (approximately 4 days of theory), and immediately followed up with full exposure to handling operations on the simulator.

Teaching resources are at the core of the method for the classroom training phase. General and detailed course content is available for each module, completed by training handouts, monitoring and correction sheets.

These resources constitute a real roadmap for the trainee, and guarantee the transparency and comprehensive nature of the training.

In addition to these pedagogical tools, the general training for crane drive (i.e. including the training on simulator) includes a detailed program day by day of every lessons and steps to pass through, and the objectives to be reached by the trainee.

Hereafter is the general skeleton of the web based course.

CHAPTER I. General information on job description and work environment

Module I.1 : crane driver job description

- Abilities: cognitive, psychomotor, perceptive, physical abilities; motivation and personality
- Required competencies
 - Use the relevant techniques in order to realize the horizontal and vertical driving of charging/discharging equipments
 - Driving apprehension in total safety
 - Realize any possible movements
 - Control and avoid any unintended moving of a suspended charge
 - Knowing use procedures of lifting equipments
 - Knowing technical characteristics of equipments to be driven
- Work process description: moving, charging, discharging goods from one point to another (ship, barge, quay, truck).

Module I.2: work environment and risks prevention

- Risks prevention linked to the circulation of equipments – quay adjustments
 - Adjustments of circulation lanes

- Definition of circulation rules and separation of the various circulation lanes
- Road signs and marking
- Risks prevention: fall, jamming and crushing of persons.
 - Ship access
 - Hold access and hatch protection
 - Lifting machines access
 - Work places (ship floor)
 - Doors of usual work places
- Risks prevention linked to work atmosphere
 - Lighting
 - Airing and ventilation
 - Fire and explosion
 - Room temperature
 - Noise

CHAPTER II. Handling operations and materials

Module II.1: Handling operations

- The different kind of handling operations
 - Handling of metallurgical products : tubes, coils...
 - Handling of containers
 - Bags handling
 - Handling of solid bulk products
 - Handling of logs
- Manual handling
 - Principle of limitation of manual handling operations
 - Systems of assistance for manual handling
 - Risks factors
 - Limitation of charge handling
 - An adapted formation
- General rules for the use of work equipment
 - Equipments adapted and appropriated to the operation
 - An installation adapted to the particular requirements and conditions of work
 - Use of individual protection equipments

Module II.2: the use of handling and lifting material

- Risks linked to charges lifting
- Risks linked to the movements of lifting material
- Lifting of persons
- The use of lifting accessories : choice, storage and maintenance
- Maintenance, conformity and check of lifting equipments

Module II.3: Professional risks prevention

- Information on risks prevention :
 - Use and maintenance of work equipments
 - Use of individual protection equipments
 - Varieties of ships, organization of terminals
- Professional training :
 - Security
 - Specific risks at work
 - Driving of lifting machines
 - Maintenance operations of lifting machines
 - Gesture and command of lifting machines
 - Measures to be respected during handling operations

CHAPTER III. The simulator

Module III.1: Bases

- Description of the different movements : orientation, direction and slack
- The driving cabin and its commands
- How to start up the machine
- How to get some points of reference
- Direction, orientation, lifting and slack

Module III.2: Acquisition of the bases

- Slack control
- Movement coordination : orientation, direction & lifting
- Distance perception
- Use of the control screen

Module III.3: Synchronization

- Adjustment and control of slack
- Coordination and synchronization of movements
- Special conditions of work : weather conditions, incidents

- Security measures and instructions

Module III.4: Qualification

- Transfer of learning
- Improvement of weak points
- Synchronization, independency, productivity

CHAPTER IV. Evaluation and tests

5. Pedagogical handouts

The detailed course of each lesson is composed as follows (in italic are some examples in order to illustrate the description):

TITLE: *acquisition of fundamental abilities – direction coordination/handling and slack control*

OBJECTIVES OF THE LESSON

*Take some pinpoints in order to estimate the height
Estimate the height for the final approach...*

ORGANISATION OF THE LESSON

Description minutes by minutes of the different exercise of the day

CRITERIA OF SUCCESS

*Selection of pinpoints to estimate the heights
Selection of pinpoints to estimate the approach distances*

CORRECTION

Heighten trainee's awareness to the respect of handling heighten in order to guarantee security

6. Users' charter

In order that the creation of a web based course be used as clearly as possible and do not create any future misunderstanding or contestation, it is important to build it upon a users charter, which will describe any obligation of each parties. Indeed, such a tool is intended to be used by many different actors of the port environment, and many of them will wish to use it as a support, but not always correctly.

That is why the creation of a users' charter can avoid any future problems in the use of this tool.

With the support of Lifelong Learning Programme of the European Union

OPTIMUS project has been funded with support from the European Commission. This report reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

