

THE INTERNATIONAL MARITIME TRANSPORT & LOGISTICS CONFERENCE (MARLOG 4)

A SUSTAINABLE DEVELOPMENT PERSPECTIVE FOR MEGA PROJECTS

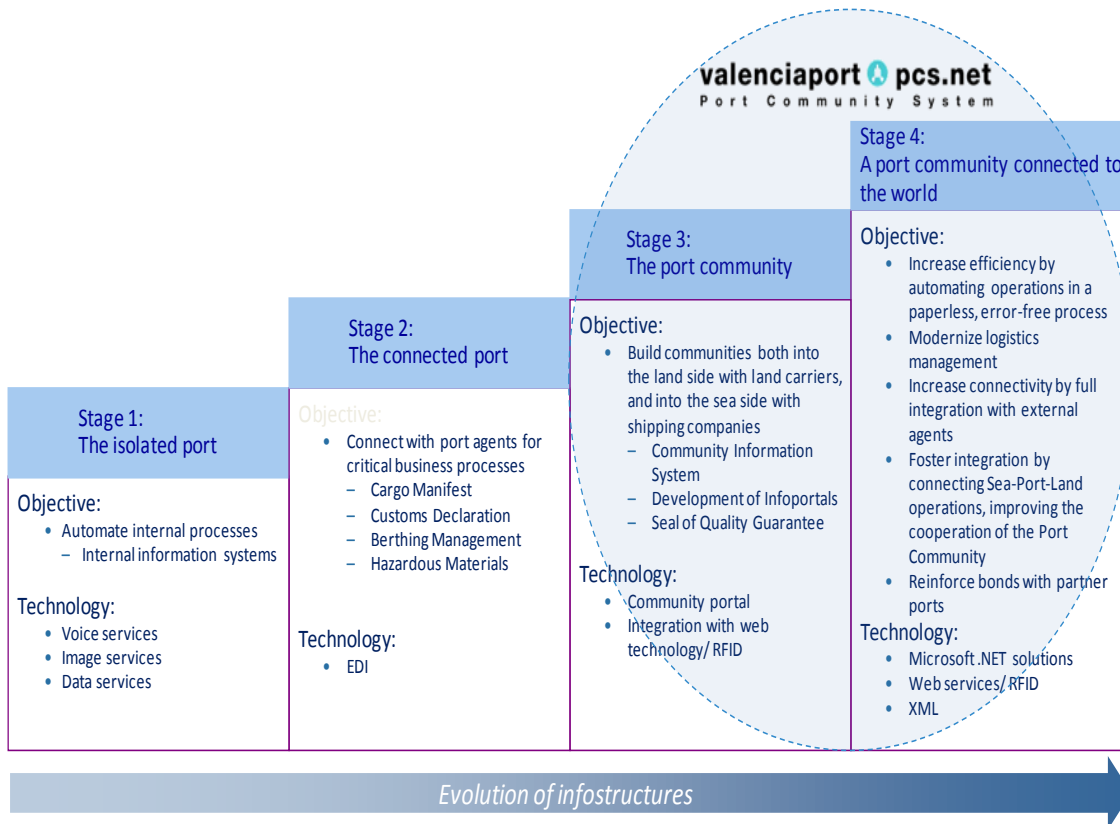
29 – 31 MARCH 2015

**Integrated Port Community System
and Energy Efficiency in Ports
Valenciaport Foundation (Vincent Ernoux)**

Integrated Port Community Systems opened to the world

Paper based on the development and results of an
integrated Port Community System in Valenciaport with
the support of Valenciaport Foundation

From an isolated port to a port community connected to the world: stages



The Port Community System increases its coverage at the same time that the port is growing

Final stage:

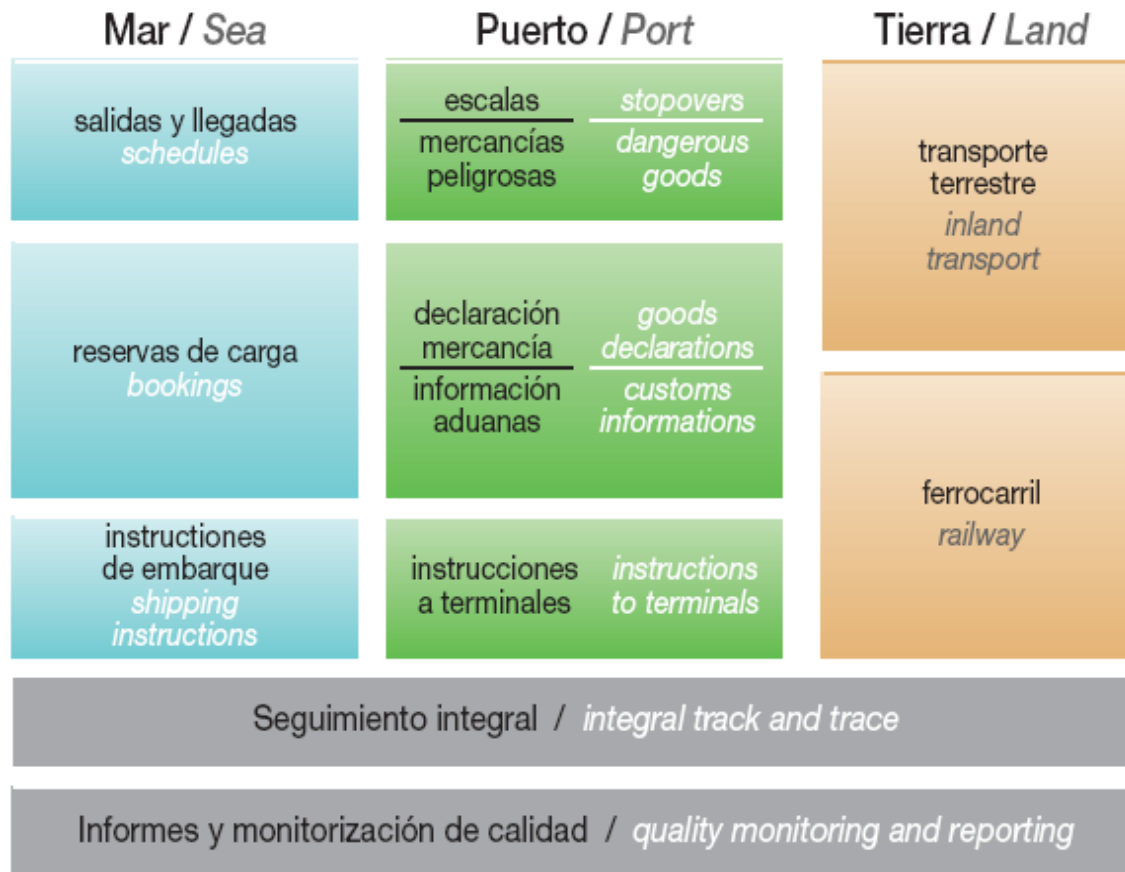
The PCS is fully integrated with land, maritime and port actors

The PCS is connected to the world through the ocean shipping's leading e-marketplaces

Full Integration of the PCS turns the Port into a totally paperless environment

 SUBSTANTIAL REDUCTIONS OF TIME AND COSTS ARE ACHIEVED

SERVICES TO INCLUDE IN A FULLY INTEGRATED PORT COMMUNITY SYSTEM



Land and Sea stakeholders all use the same PCS and have access to a full range of services

No more paper in between them

Main added-values of integrating the PCS

Easy access to all integrated logistics information

Better service quality and improved customer service

More efficient transactions

A single gateway that unifies the communication with carriers

Reduction of errors inherent to manual systems

Information and Communication are more secure

Substantial Time and cost reduction

Time Reduction in Customs Procedures

| <i>Process</i> | <i>Agent involved</i> | <i>Previous situation (minutes/consignment)</i> | <i>Current situation (minutes/consignment)</i> |
|-------------------------------|-----------------------|---|--|
| Prepare Customs Documentation | Shipping Agency | 5.4 | 0.4 |
| Check Customs Documentation | Customs' Police | 4 | 0.3 |
| Prepare Customs Documentation | NVOCC | 6.6 | 0.6 |
| Solving Errors | All agents | 30 | 0.5 |
| Total | | 9.4 to 46.2 | 0.9 to 1.1 |

Time Reduction of Trucks at Gateways

| <i>Process</i> | <i>Previous situation Manuel Lane Minutes/Truck</i> | <i>Current situation Manuel Lane Pick Hours Minutes/Truck</i> | <i>Current situation Automatic Lane Minutes/Truck</i> |
|--|---|---|---|
| Complete necessary processes to leave the terminal gate | 2 | 15 | 0.4 |
| Complete necessary processes to leave the port gate | 2 | 15 | 0.3 |
| Total | 4 | 30 | 1.10 |

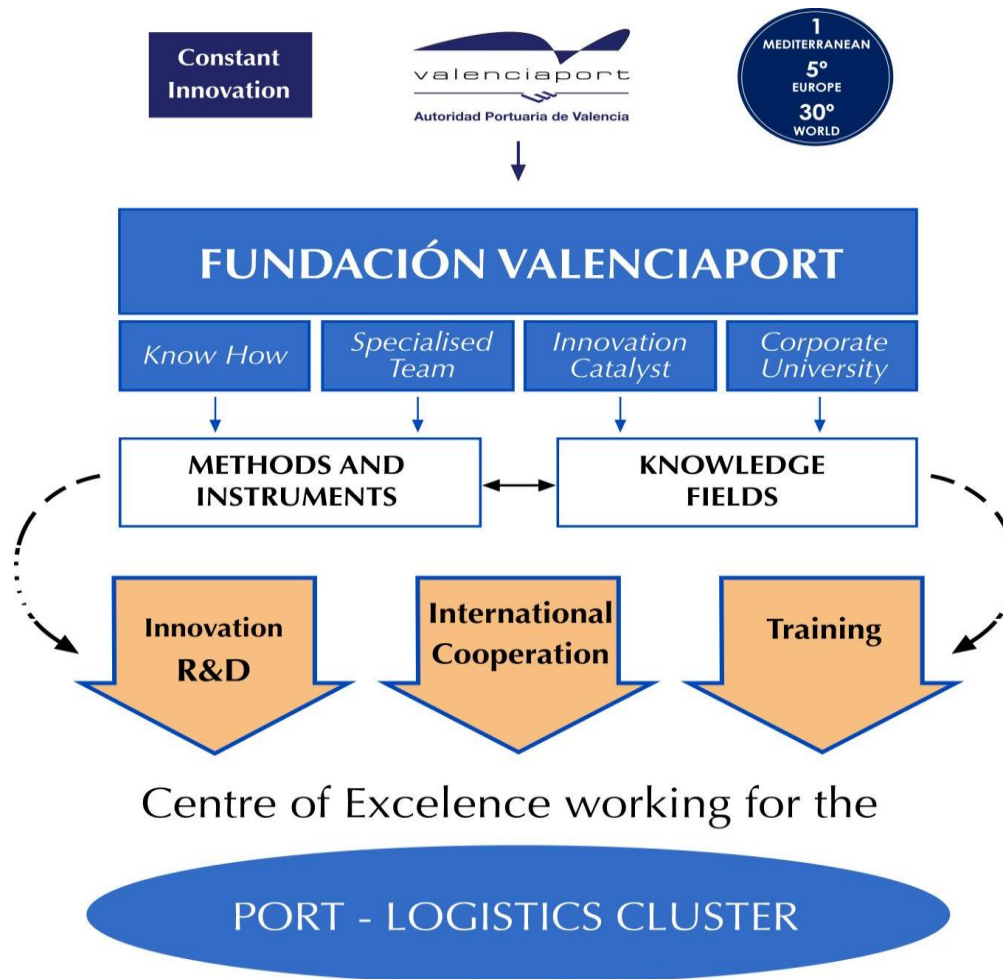
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**VALENCIAPORT FOUNDATION: A MAIN INNOVATION AND
TRAINING CENTER OF THE PORT INDUSTRY**

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**VALENCIAPORT FOUNDATION: A MAIN INNOVATION AND
TRAINING CENTER OF THE PORT INDUSTRY**

MAIN FIELDS OF KNOWLEDGE:

- PORT PLANNING AND MANAGEMENT
- LOGISTIC CHAIN AND INTERMODALITY
- PORT SERVICES AND INFRASTRUCTURES
- ENERGY EFFICIENCY
- SECURITY AND CYBER-SECURITY
- ICT IN PORTS
- FINANCIAL FEASIBILITY
- PORT HIGHER EDUCATION TRAINING
- PORT VOCATIONAL TRAINING
- Etc.

OUR CLIENTS:

- EUROPEAN UNION
- WORL BANK
- INTERNATIONAL DONORS
- MINISTRIES
- PORT AUTHORITIES
- PORT TERMINALS
- Etc.

MAIN TOOLS AND METHODS:

- AUTOMATIZATION MODELS
- TRAFFIC FORECASTS
- EVALUATION OF ALTERNATIVES
- FINANCIAL FEASIBILITY STUDIES
- MARKET RESEARCH
- MICROSIMULATIONS
- PROCESS REINGENEERING
- DATA ENVOLVMENT ANALYSIS
- CO2 EMISSIONS ESTIMATIONS
- GEOGRAPHIC INFORMATION SYSTEMS
- TRANSPORT MODELISATION
- HINTERLAND SIMULATION
- ENERGY EFFICIENCY AUDITS
- SAMPLING METHODS
- and many more.

VALENCIAPORT FOUNDATION: A MAIN INNOVATION AND TRAINING CENTER OF THE PORT INDUSTRY

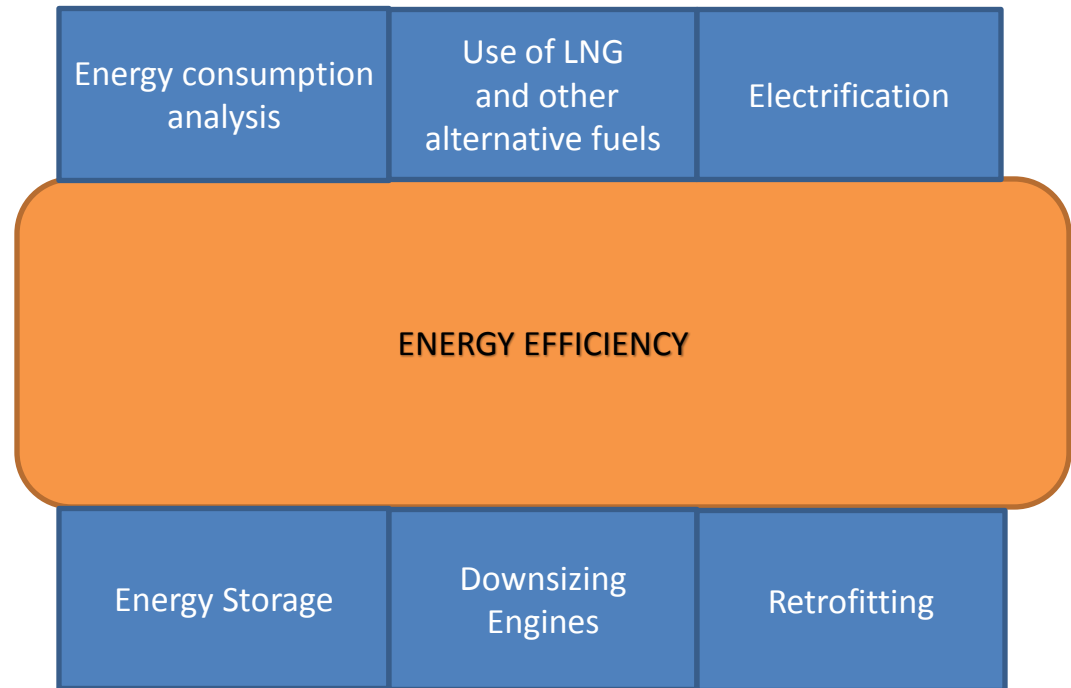
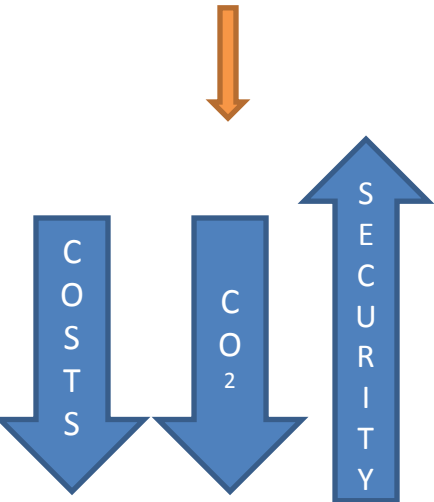
SOME OF OUR MOST RECENT PROJECTS:

- ✓ **ANALYSIS OF THE CAPACITY OF THE SOUTH BERTH IN CALLAO TERMINAL (PERU)**
- ✓ **DRAFTING OF THE DEVELOPMENT STRATEGY OF THE NATIONAL PORT SYSTEM**
- ✓ **MEDITERRANEAN NETWORK FOR CUSTOMS PROCEDURES AND SIMPLIFICATION OF CLEARANCE IN PORTS**
- ✓ **FUTUREMED - FREIGHT AND PASSENGER SUPPORTING INFOMOBILITY SYSTEMS FOR A SUSTAINABLE IMPROVEMENT OF THE COMPETITIVENESS OF PORT-HINTERLAND SYSTEMS OF THE MED AREA**
- ✓ **COSTA - CO2 & SHIP TRANSPORT EMISSIONS ABATEMENT BY LNG**
- ✓ **GREENCRANES – GREEN TECHNOLOGIES AND ECO-EFFICIENT ALTERNATIVES FOR CRANES AND OPERATIONS AT PORT CONTAINER TERMINALS**
- ✓ **SEATERMINALS – SMART, ENERGY EFFICIENT AND ADAPTIVE PORT TERMINALS**
- ✓ **CONTAIN - CONTAINER SECURITY ADVANCED INFORMATION NETWORKING**
- ✓ **BUSINESS TO MOTORWAYS OF THE SEA**
- ✓ **SUSPORTS – DELIVERY SUSTAINABLE ENERGY SOLUTIONS TO PORTS**

ENERGY EFFICIENCY IN PORTS

Valenciaport Foundation is developing innovation actions related to Energy Efficiency

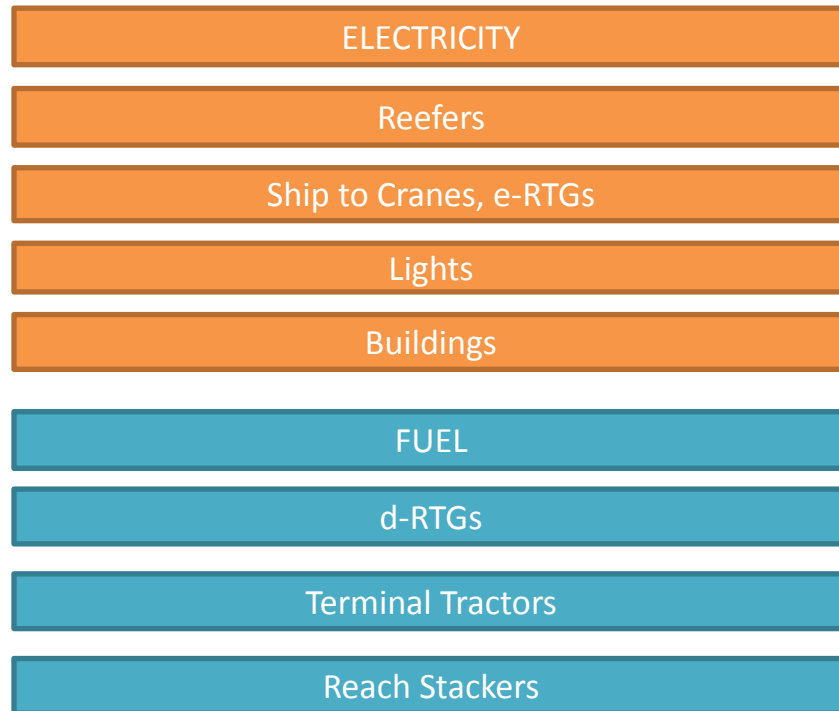
With the final aim of



ENERGY EFFICIENCY IN PORTS

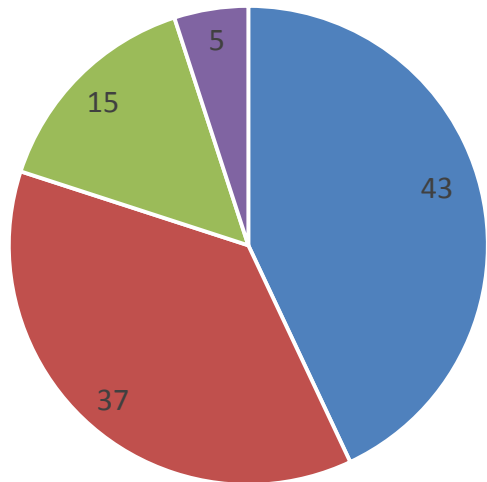
Energy
Consumption
Analysis

We mapp the
port container
terminals Energy
Profiles



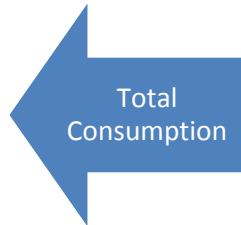
ENERGY EFFICIENCY IN PORTS

Electricity

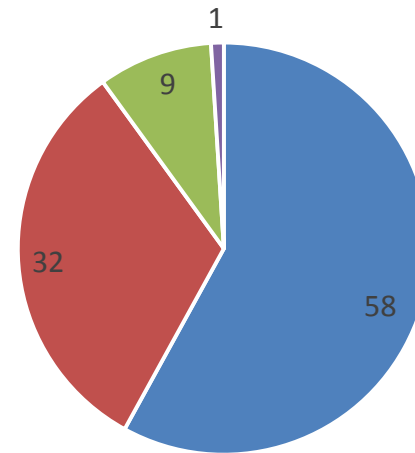


■ Refers ■ STS cranes ■ Lights ■ Buildings

> 30 GWh

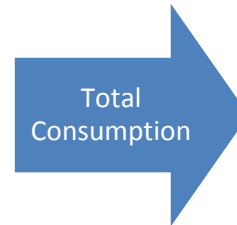


Fuel



■ RTG Cranes ■ TTs ■ Reach Stackers ■ Others

> 7 Millions
Liters



ENERGY EFFICIENCY IN PORTS: LNG

THE CASE OF NEW LNG TERMINAL TRUCKS

We assess the potential use of LNG in Port Machinery:

Terminal Trucks
Reach Stackers
RTGs



LNG Terminal Truck

Similar performance

Financially viable with a Payback Time stable at 9 years from 19 Units and an IRR around 20%

Less CO2 Emissions



Renew the fleet of Trucks can help maximise the profitability of in container terminals



The optimum number of Trucks to be replaced will depend on fuel prices in each country

ENERGY EFFICIENCY IN PORTS : ELECTRIFICATION OF RTGs



Viability depends on:

- Oil prices
- Electricity prices
- Cost of Electric Systems
- Fuel consumption of current RTGs
- Cost of investments in the terminal
- Number of container moves by meter

We assess whether electrification of d-RTGs is convenient or not

Technical Feasibility

Financial Feasibility

Environmental aspects



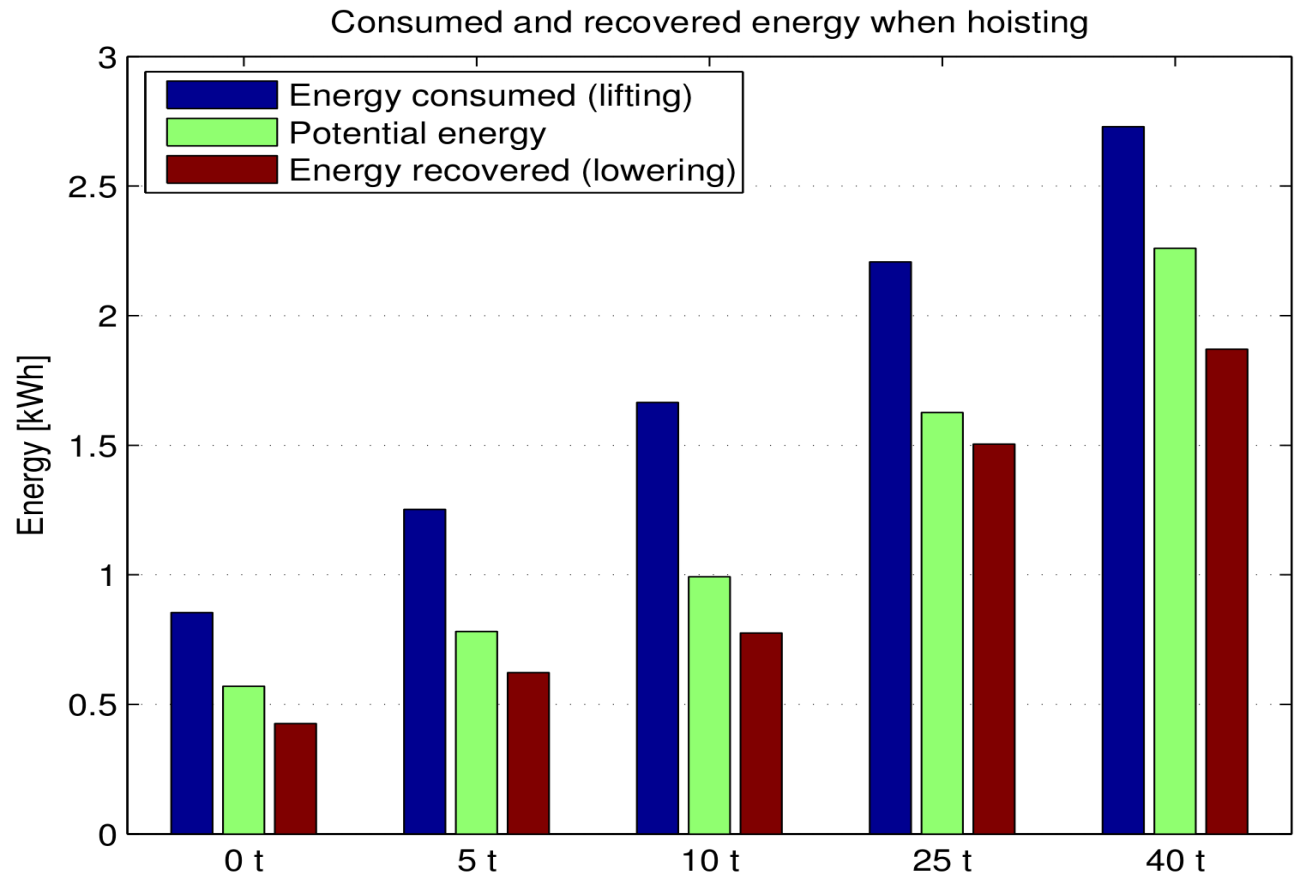
Electrification will be more profitable in terminals with higher number of container moves by meter

ENERGY EFFICIENCY IN PORTS : ENERGY STORAGE

We assess how much energy can be saved in terminal operations and reused

Between 50% to 65% of Energy can potentially be recovered in Gantry Cranes

Example of Energy Storage Potential in Gantry Cranes



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*The Innovation and Knowledge Center of the cluster of the
Leading Port in the Mediterranean*

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