Green Cranes

Co-financed by the European Union

Trans-European Transport Network (TEN-T)

NOATUM PILOTS

GREENCRANES

GREEN Technologies and Eco-Efficient Alternatives for CRANES and Operations at Port Container Terminals

Project code: *2011-EU-92151-S*

TEN-T Annual Call 2011

VALENCIA MAY 2012

Consortium:

FUNDACIÓN valenciaport

valenciaport Autoridad Portuaria de Valencia

MIT

LUKA KOPER Port of Koper

noatum

Scuola Superiore Sant'Anna di Studi Universitari e di Perfezionamento

RINA

Global Service Srl

ABB

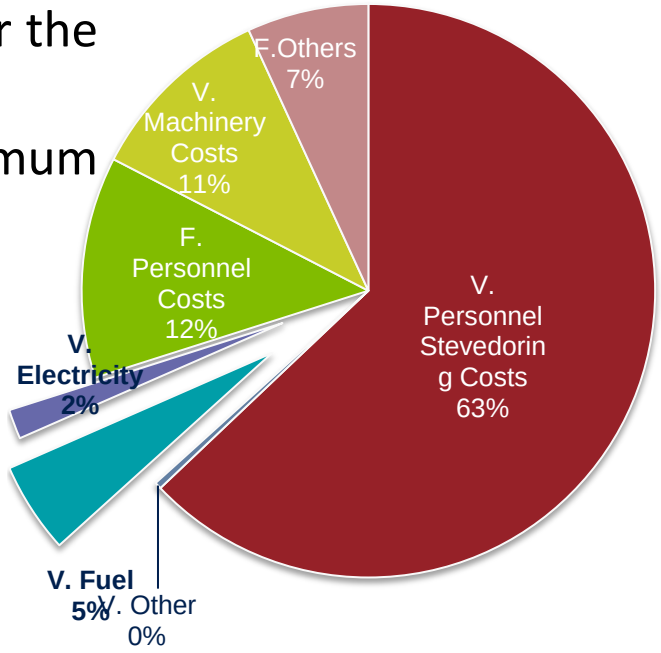
KONECRANES

CONTENTS

Why we make pilots?

- Energy is necessary to carry out port operations, but its economic consideration in the port sector is relatively low.
- Technological changes are risky and can put in danger the whole operation if they affect a complete fleet.
- Nobody would put in risk their business just for minimum savings.

PRODUCTION COSTS



¿Solution? = TEN-T* Project !

1. We study the theoretical optimal solution*
2. We test that solution with one single unit*
3. A small fleet is implemented > critical mass < mortal mass
4. Implementation on a big scale

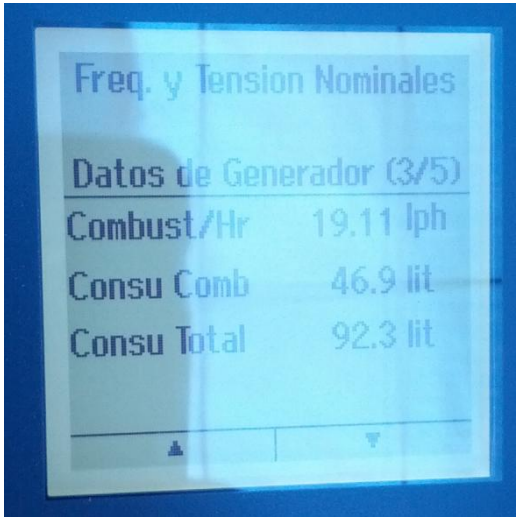
CONTENTS

Pilots:

Option A: Minimum RTG modifications: 500 KVA 15L

Pros:
Easy = cheap
It does not affect productivity

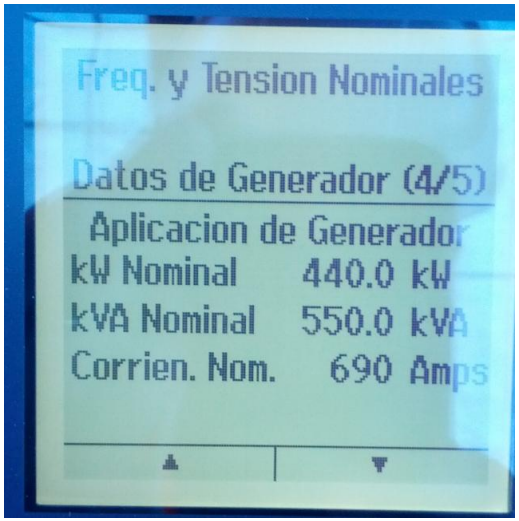
Cons:
Only 18 l/h



Option B: relevant RTG modifications: 400 KVA 13L

Pros:
14 l/h
Electrical room reposition
Variable rpm

Cons:
Power < demand
Less productivity?
More expensive



RTG Pilot: Resize GenSet

Pilots:

Option A: Minimum RTG modifications: 500 KVA 15L

State: running

Option B: relevant RTG modifications: 400 KVA 13L

State: In study

CONTENTS

Test of New Technologies and Alternative Fuels (LNG and Diesel Euro V / Tier 4) for PCT Yard Equipment

The pilot will test an LNG tanker in Noatum Container Terminal Valencia. This tanker will provide LNG to a yard truck prototype adapted to be powered with LNG. The LNG prototype will be compared with another yard truck prototype powered with Diesel EURO V/ TIER 4 fuel. Both yard machines will develop the same operations in order to compare results on energy savings and reduction of GHG emissions.

TT Pilot: LNG Terminal Tractors

Barriers to Overcome:

1. Administrative process of the pilot (Competent Authorities: Ministry of Industry and Port Authority)
2. Administrative process of the LNG station (Competent Authorities: Ministry of Industry and Port Authority)
3. Authorization for supplying LNG to external trucks (this guarantees feasibility of the project)
4. LNG Supply to the pilot test: mobile LNG station
5. Design of the fix LNG station: compatibility with port installations.
6. Design of a terminal tractor prototype (several technical issues)
7. Prototype manufacturing (in 2013)
8. Field test: performance and consumption measurements
9. Data analysis

RESOURCES:

1. **CONTRACT FOR THE DEVELOPMENT AND TEST OF THE LNG TERMINAL TRACTOR PROTOTYPE**

2. **CONTRACT FOR THE LNG SUPPLY OF THE PILOT AND ADMINISTRATIVE AUTHORIZATION**

THANKS FOR YOUR ATTENTION!

GREENCRANES, AN ACTION DEVELOPED THANKS TO:

Co-financed by the European Union

Trans-European Transport Network (TEN-T)

TEN-T EA
Trans-European Transport Network Executive Agency

European Commission
Mobility & Transport

Consortium:

FUNDACIÓN valenciaport

valenciaport
Autoridad Portuaria de Valencia

MIT

LUKA KOPER
Port of Koper

noatum

Scuola Superiore Sant'Anna
di Studi Universitari e di Perfezionamento

RINA

Global Service Srl

ABB

KONECRANES