Smart tugs: the industry’s Tesla, or still on the test bed?
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Panellist & sponsor documents
Page 2: Ferhat Acuner, Navtek Naval Technologies
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THE WORLD’S FIRST
ALL ELECTRIC TUGBOAT
Navtek focus on delivering innovative unique designs and engineering solutions with the best available technologies and know-how.

Navtek priority is to realize its ambitious goals and strategies for continued growth and development with new products in existing and new market segments.

Among our projects, the most distinguished are:

- Two (2) 138 mt. and 7254 displacement tons LST’s (Landing Ship Tank): very versatile and capable platforms, capable to carry out wartime amphibious operations as well as peacetime maritime security and humanitarian aid ops.
- Powerships or floating power plants (the world’s first): capable of operating with LNG or fuel oil, supplying electricity power to 12 different countries around the world.
- Zero Emission, all-electric battery-powered tugboat, ZEETUG (the world’s first): Battery powered (no noise and no emission) ZEETUG can be custom-built for any kind of operation requirement from 5T BP up to 75T BP. www.zeetug.com
- Pakistan Navy’s (PN) first MILGEM class corvette based on Turkish Navy’s MILGEM class corvettes. PN MILGEM is a tailored design by NAVTEK according to operational requirements of PN.

Our extensive know-how is based on our experience, since 1977...
STEMS
Smart Tug Energy Management System

Designed and built up by Navtek Naval Technologies, with the objective of optimizing the electric power consumption, extending ZEETUG’s driving range and operation cycles.
The first application of STEMS is on GİSAŞ POWER (ZEETUG-30).

Which is the first tugboat of the ZEETUG® series.

GİSAŞ POWER is designed to accomplish five (5) different operational profiles in his lifecycle.
STEMS is both a browser-based and a mobile software, which has a lot of capabilities for fleet control center and tugboat operators. With its flexible structure, it can be adapted to a fleet.

STEMS collects all data coming from the devices and equipment in the tugboat and stores them in the Control Center’s server. It uses the related data to performance, to optimize the electric power...

- Tug speed,
- Motor speed,
- Power consumption,
- Battery motor temperature,
- Battery state of charge...
- Actual ambient condition’s data
- Weather data
ADVANTAGES

• STEMS can be used on more than one ZEETUG® (a whole fleet)
• Towage operations can be scheduled on considering the availability of the charged (ready to operate) ZEETUG®.
• The final charge of batteries can be estimated.
• Both the control center operator and the tugboat operator can change predefined route on chart.
• Any type of Android mobile tablet (personnel or industrial type) can be used.
• All data coming from the ZEETUG® are being stored in the control center servers.
• STEMS can prepare reports of all operational output.
• Due to the possible operational profile changes the software can be revised.
FEATURES

• A single platform to control the entire ZEETUG® fleet.
• Integration with Marine Traffic charts.
• Collecting data coming from all devices and equipment of the electric tugboats and storing them in the server.
• Displaying real-time wind data from ground stations
• Monitoring all relevant data related to performance of the tugboats and giving feedbacks.
• Charging time estimation by considering the battery state of health
• Reporting tools for operation and personnel performance
To extend the feature of the STEMS, development of the software continues...

LET US STUDY ‘SMART SOLUTIONS’ FOR YOUR MARINE BUSINESS

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Smart Tugs, or Smart( er ) ways to manage your tugs?

Tug Technology Webinar Week
Patrick Everts Optiport
Today’s Agenda

01 | Autonomy: is it myth or reality? Can Autonomy Levels 4, 5 and 6 be achieved?
02 | Business case for smart tugs: the true return on investment on sensors and software
03 | Is it possible to pre-empt all faults or failures or do smart tugs have an Achilles Heel?
04 | The challenge of autonomous and remote supervision and control of tugs
05 | Regulatory approval: what does IMO think? Are Flag States convinced?
06 | Intelligent ports – optimising tug fleet utilisation and future proofing operations with AI-based planning software
07 | Business continuity in times of COVID-19
Dispatch Optimization Solutions

Smart scheduling with AI

- Reduction of Opex
- Business Continuity
- Improvement of Utilisation
- Customer Satisfaction
- Decarbonisation
OptiPort

Port of Rotterdam fully operational in first half of 2020, COVID-19 pandemic depresses cargo throughput

The Port of Rotterdam achieved throughput of 218.9 million tonnes in the first six months of 2020, 9.1% less than in the first half of 2019, which was a threshold year at the time. Despite the disruptive impact of the COVID-19 crisis, the Port of Rotterdam has continued to maintain its position as one of the world's leading ports.

Lower first-quarter seaborne cargo throughput in the Port of Hamburg – repercussions of the corona crisis make their mark

- First-quarter seaborne cargo throughput was 7.9 percent lower this year at 31.9 million tons. Container handling reached 2.2 million TEU, down by 6.6 percent.
- Throughput on seaport hinterland services was less seriously hit by the downturn.

Singapore Encourages Investment Toward Decarbonizing Shipping

The Situation: Currently, around 90% of world trade is by sea. International shipping accounts for between 2% and 3% of global greenhouse gas emissions. But like aviation, the sector’s emissions are not covered by the 2015 Paris Agreement on climate change.

The Context: In 2018, the International Maritime Organization (“IMO”) set targets for greenhouse gas emissions from international shipping to peak as soon as possible and, to reduce by at least 50% by 2050 (compared to 2008 levels), with continuing efforts to phase them out entirely.

Looking Ahead: Through a proactive strategy incorporating research and development projects, feasibility studies, financial support and incentives, Singapore is leading the way toward decarbonizing the international shipping industry.

COVID-19 causes biggest TEU slump in a decade

By Beth Maundrell • 16 July 2020, 08:30 BST • Global Trade

Supply chain Stakeholders alert President von der Leyen about their disapproval of the Consortia BER extension

Brussels, 26th of March 2020 We, CLECAT, ETA, ESC, ETF and FEPORT; on behalf of thousands of European freight forwarders, tugowners, shippers and port companies and terminals and transport workers, have sent a letter to President von der Leyen. Read more...
COVID-19
Business Continuity
Unpredictable Markets
Competent employees
Emission Rules
Pressure on Bottom Line

Innovative Technologies
Artificial Intelligence
Business Continuity in Times of COVID 19
It’s Time to Deal with the Elephant In the Room
Or will you continue to sail inefficient and reduce your bottom line?
Or use an AI based scheduling application

and be ready for the Smart and Autonomous tug.
Some Food for Thought

- Smarter tugs or Smarter utilization?
- Do you know the real OPEX costs of your operation and how & where savings are possible?
- What is stopping you from applying AI in your daily dispatch?
- Who will be “telling” the autonomous tugs where to sail to?
- Will you rather buy new assets, or simply use your existing assets better?
- Which opportunities do you see to immediately reduce your CO2 emissions with your existing fleet?
SMART TUGS: THE INDUSTRY’S TESLA, OR STILL ON THE TEST BED?

JAN GLAS | WEBINAR | SEPTEMBER 1ST 2020
What makes a Tesla smart?

• Solutions
• Technological fundaments

What makes a tug boat different?

• Emotion vs. Economics
• Business impact
• Number of stakeholders
Data Acquisition, Processing & Handling = Smart?

Environment

Vessel data

Winch

Generator

Meta information

... operating hours
fuel consumption  fuel rate temperature RPM pressure
voltage set-point feedback GPS position heading
AIS echosounder RADAR volumetric flow rate fuel rate
acceleration turning rate vibration level
tank level valve settings ...

Engine

Thrusters
Smart Tug

Control, Monitor & Assist

Collect & Transfer

Store & Provide

Learn & Improve

Decide & Advice

Visualize & Evaluate

Closing the loop of information flow as an added value in optimizing fleet planning, operation and management
Fields of application

SCHOTTEL smart solutions

- 10 Years in commercial usage
- Data collection and processing on board
- Logging of historic data
- Standardised data post processing
- Benchmarking
- Analysis by certified experts
- Individual recommendation for action

+ PREDICTIVE
  early failure detection to keep downtimes to a minimum

+ INCREASED UPTIME
  due to condition-based equipment evaluation

+ QUICK RESPONSE
  shortened reaction time for solving problems
The industry’s Tesla, or still on the test bed?

- Smart components
- Smart network
- Powerful infrastructure

- A floating tesla?
- Still on the test bed?

Contact: jglas@schottel.de
Polling Questions

1. Where do you see the greatest potential thanks to data-driven technologies?
   a. Assisted or autonomic navigation
   b. Optimized vessel operation
   c. Remote monitoring and technical support
   d. Strategic maintenance planning
   e. Research and Development

2. There is a high economic benefit of smart solutions compared to the necessary investment?
   agree 1 – 2 – 3 – 4 – 5 disagree

3. In 5 years from now, the majority of new built tugs will be equipped with a significant number of „smart“ components.
   Yes / No
Innovation Journey

- Unmanned Tug
- Internet of Things
- Telemetry
  - Maintenance
- Safety
- AI
- Communication
Wilson Sons’ Operational Centre Where all started

- Started in 2012
- +60,000 maneuvers / 80 tugs
- Total Coverage: + 3,500 NM
- InHouse Solution: Hardware and Software
- Open System
- HSE
- Live Video Streaming
- Over 40 Antennas
AI Application

Planning in advance with data
Our Asset: More than 500,000 Maneuvers

Real time decision making with information
Our Product: A Safer, Greener and Cost Effective Operation
Learn, Unlearn and Relearn

01 Business Model
- Not a project, it's a PRODUCT.

02 Future
- The next step

03 Mindset
- A must have willing to do things different

04 Technology
- Startup team up.

05 Stakeholders
- Pilots, Navy, Clients, Terminals, Society
Thinking About The Future...

- Tugboats
- Shipowners
- Terminals
- Shippers
- Shipping Agency
- Port Authorities
- Pilots
- Real-time Monitoring
- Business Intelligence
- Operations Management
- Predictions & Forecast
- Data Sharing
- Assets Optimisation
- Line-Up
- Regulatory Difficulties
- Info Coordination
- Environmental Conditions
- Vessel Schedule
- Assets Inefficiency
- Channel Inefficiency
- Info Coordination
- Regulatory Difficulties
August 2020
wilsonsons.com.br

Learn more about Wilson Sons
OptiPort.
Dispatching Made Easy

Benefits of AI Powered Dispatching

- Improved use of your tug fleet
- Always the correct tug for the job
- Smarter planning leads to fuel reduction
- Reduction of harmful emissions
- Reduction of delayed vessels
- Reduction of loss generating charters
- Uniform way of best practice dispatching
- Supporting decision making for your planners
- Supports to centralise ports at one location
- Tracking and planning your competition
- Supporting business continuity
- Reduced Crew overtime and much more.

With OptiPort, PortX has created the first in its kind tug dispatching application. OptiPort is based on artificial intelligence and supports your dispatch & planning department with the best in class planning software currently available. Helping your planners to take the most cost-effective decisions for your fleet, without compromising on commercial contracts, nautical rules or labor regulations.

The application relies on your vessels AIS transmitters and the availability of that data for OptiPort. This data, together with the mathematical models as well as your job-related information will already be able to bring your scheduling a big leap forward. Adding tidal information, wind and other relevant data sources will only further improve the quality of the planning schedules.

With OptiPort there is no need for additional hardware on your vessels.
OptiPort.
Dispatching Made Easy

Business Continuity

Dispatching is one of your core (back bone) processes and therefore demand a business continuity guarantee. By using OptiPort, remote dispatching suddenly becomes reality, or dispatching with a smaller than normal team becomes possible. OptiPort is providing the ultimate decision tool to your dispatchers, ensuring that also in challenging and unpredicted situations, they do make the right decisions.

OptiPort has proven that significant savings are possible. Our experience so far is that one can save between 25 - 40% on cost for our clients, due to smarter planning alone.

When also using the speed tracker, which provides speed advice as well, the savings can go up to 55%. Only by looking at (de)mobilization of tugs to their jobs.

OptiPort is a tool that offers a broad variety of possibilities to drastically improve performances in dispatching. And we haven’t stopped developing. New features and new are developed on a daily basis.

If you are convinced of the capabilities of OptiPort, or if you like more information. Just let us know. We are happy to give a demo and show where the value of OptiPort will be for your organization.

OptiPort’s Features

- Forecasting the number of tugs required for a job
- Forecasting the duration of (de)mobilization and jobs
- Dynamic pickup/drop-off locations
- Dynamic start times of incoming jobs
- Reduced vessel delays
- Fully automated job start/stop identification
- Push notifications on speed, departure and arrival times
- Crew changes and labor rules incorporated
- Priority towage
- Tracking and virtual planning of competitors
- API available with Helm CONNECT
- Tidal effects included in the schedule

PORTX’ SERVICES

- Dispatch Optimization
- Port Activity Reporting
- Maritime Analytics
- Consultancy

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