CHESSCON

REFERENCES

ABOUT US

In October 2010 **AKQUINET PORT CONSULTING** (at that time named ISL Applications GmbH) was founded as the commercial part of the internationally recognised Institute for Shipping Economics and Logistics -ISL. For more than 25 years, ISL's experts have been specialising in optimisation and simulation. Their systems have been utilised worldwide for optimising container terminals, harbour planning and analysing transportation networks.

Since 2018 AKQUINET PORT CONSULTING expands its field of business. Besides marketing the CHESSCON simulation products nowadays we offer all related services to the maritime industry.

REFERENCES WORLDWIDE

Our CHESSCON products are proven within more than 80 projects worldwide. Terminal operators use them for strategic and tactical planning as well as for the start-up of new terminal components. They optimise terminal's day-to-day operations by fine-tuning TOS parameters and training the control staff to become „grandmasters" in terminal operation.

THE MANAGING TEAM

MANAGING DIRECTOR

Prof. Dr.-Ing. Holger Schütt

Expert in

- Operations research methods
- Warehouse management systems and processes
- Container handling in ports
- IT project management
- Theory and application of simulation technique

Special Business Experience

- Consultancy for container terminals
- Development of complex simulation systems
- Process optimisation

MANAGING DIRECTOR

Norbert Klettner

Expert in

- Ports and container terminal systems
- Operational processes (PCS, TOS and simulation)
- Analysing and optimizing of business processes
- Process innovation and digitization
- Organization of new Structures and Procedures

Special Business Experience

- Consultancy for container terminals
- Analysing and optimizing of business processes
- Training and coaching

SCOPE OF SUPPLY

The system „container terminal“ is relatively complex. It is characterised by numerous parameters and interactions between technical, operational and economical components. Furthermore, some of the influencing factors have random characteristics e.g. arrival times, daily number of boxes, loading and discharging times of vessels, container movement time of a crane etc.

With the aid of simulation technology, it is possible to reproduce the ‘physical’ container terminal as a ‘virtual’ container terminal in order to analyse an existing or planned terminal in detail. As a simulation model is computer-based, the ‘physical’ container terminal has to be represented in such a way that an equivalent mathematical model can be constructed that then reproduces the processes - including unforeseen events - in a realistic way.

Thus a simulation system is a powerful tool, with which the user can ‘play through’ and subsequently analyse the processes of a terminal in order to get a clear understanding ready for any decision-making process. Special simulation models have been developed for each planning level because there are different problems requiring different solutions.

AKQUINET PORT CONSULTING’s experts provide all services around these products and are part of a huge network, which includes expertise from terminal operators, software engineers, terminal planners etc.

CHESSCON PRODUCTS

AKQUINET PORT CONSULTING provides simulation- and emulation-based products and services to secure and optimise the operation of container terminals worldwide. AKQUINET PORT CONSULTING'S flagship the **CHESSCON Family** consists of six modules.

CHESSCON DESIGN KIT: PLANNING OF NEW TERMINALS OR REORGANISATION OF EXISTING ONES

Static 3D visualisation of your terminal

CHESSCON
TERMINAL VIEW

The **CHESSCON Terminal View** allows you to create your own 3D container terminal in a fast and easy way. This is an extremely valuable tool for planning, presenting and marketing. Based on a 2D editor, the layout of a terminal can be drawn in a short time and then be converted to a 3D model with one simple click. Once created, your 3D container terminal can be viewed from all angles.

Determining and planning your terminal capacity

CHESSCON
CAPACITY

CHESSCON Capacity is recognised worldwide as an excellent tool for evaluating quaysides capacity, calculating the optimal number of cranes needed as well as the number of slots per container type and the resulting throughput distribution at the landside interfaces. Users of this software include terminal operators, port authorities and terminal planners. AKQUINET PORT CONSULTING's experts use the product internally and externally for consultancy projects all over the world.

Planning and optimization of terminal's layout and processes

CHESSCON
SIMULATION

CHESSCON Simulation has been approved in container terminals worldwide and allows terminal operators and consultants to accomplish their strategic and tactical planning in a fast and easy way to find the best solution. Terminal operators can run through many options (manual, semi-automated, automated) to find the winning strategy in a complex market.

CHESSCON OPTIMIZATION KIT: TESTING AND OPTIMISATION OF TERMINAL OPERATING SYSTEMS (TOS)

In contrast to the previous described tools, which are mainly used for strategic planning tasks, the following products are solutions to optimise your terminal operating system (TOS). Such an emulator is directly coupled to a terminal operating system (TOS). Emulation is defined as “a model that accepts the same inputs and produces the same outputs as a given system.”

Testing and tuning your TOS without disturbing the real operation

CHESSCON
VIRTUAL TERMINAL

CHESSCON Virtual Terminal is based on CHESSCON Simulation and uses various modules (e.g. layout editor, result database, output module). In this way the results from the planning phase will be used in the emulation system. CHESSCON Virtual Terminal provides a 3D model of a complete container terminal with all of its equipment and reacts like a real terminal.

Emulation is used for

- Evaluation and optimisation of strategies used in the TOS
- Test-bed for the actual TOS
- Stress tests
- Test-bed for acceptance testing of external equipment
- Training of terminal’s control staff

The software‘s open architecture allows you to easily connect to any existing Terminal Operating System (TOS). This is the most up-and-coming way to test TOS functionality without disturbing the real operation, which improves your terminal‘s productivity, availability and stability.

Make more moves without burning fuel and making noise or emissions. An advantage like this can only be achieved through the utilization of a virtual terminal. For the testing of new TOS releases, look no further. CHESSCON Virtual Terminal speeds the start-up phase of a new terminal and brings the control staff to an expert level of operational understanding.

Planning, optimisation and strategy review on your container terminal

CHESSCON Yard View is providing a 3D model of the terminal and thus shows the current container inventory. Furthermore, it provides unlimited filtering options to show only containers fitting to the attribute set defined (i.e. all export containers for a specific vessel).

Fast forecasting and optimisation of the coming operation

CHESSCON Shift Preview is the newest development of AKQUINET PORT CONSULTING. Similar to the Virtual Terminal, it uses interfaces to TOS to import all needed information about current planning state of the work to be done in the next hours (e.g. the next shift). These data are among others:

SUPPORTING TERMINAL PLANNER WITHIN DAY-TO-DAY OPERATION

- Container inventory on the yard
- Expected vessels arriving including their stowage information (BAPLIE)
- Planned quay crane allocation within the next shift
- Work queues of each quay crane
- Planned equipment and the allocations to the points of work

CHESSCON Shift Preview will read this information, will additionally generate truck arrivals and will simulate the operation of the period given by the user (e.g. shift).

Whilst the Virtual Terminal –due to the coupling with the TOS- is not able to generate results faster than 5 times real-time, the Shift Preview module will be able to run shift within seconds (max. 1-2 minutes). This is caused by using event driven simulation instead of time driven simulation (to stay synchronised with the TOS). The simulation speed as well as the evaluation functionality is comparable to CHESSCON Simulation already used by many users for some years.

Using CHESSCON Shift Preview the user (i.e. the shift planner, yard planner, etc.) will be able to get a very fast evaluation of his planning status. He will be able to discover bottle necks as well as over utilization of equipment, before they occur in reality. Thus he will become pro-active instead of re-active (as he's working today).

CHESSCON MODULE LIST

	Modules					
	TERMINAL VIEW	CAPACITY	SIMULATION	VIRTUAL TERMINAL	YARD VIEW	SHIFT PREVIEW
Projekt Manager	✓	✓	✓	✓	✓	✓
Terminal Editor	✓	✓	✓	✓	✓	✓
3D Terminal Viewer	✓	✓	✓	✓	✓	✓
Capacity Calculation		✓				
Input module			✓	✓		✓
Terminal Simulation			✓			(✓)
KPI - Evaluation			✓	✓		✓
Emulation Manager (incl. >10 emulators)				✓		(✓)
Applications						
3D Visualization	✓ (static)	✓ (animated)	✓ (3D static, 2D animated)	✓ (live view)	✓ (live, static)	✓
Quayside Capacity Evaluation		✓				
Layout Evaluation			✓	(✓)		✓
Calculation No. of Equipment needed			✓	(✓)		✓
Fast Simulation of Operation			✓			✓
Terminal Expansion Planning[1]				(✓)		
TOS Functionality Test				✓		
Secure TOS Start up				✓		
Control Staff Training				✓		✓
Fine-Tune TOS Parameter				✓		
Cost Comparison of Alternatives			✓	✓		✓

(*) Due to TOS coupling very detailed, but with low speed

[1] e.g. number of equipment needed, layout changes, areas excluded from traffic due to construction works, rerouting for internal and external trucks, scenarios to compensate above

NORTH SEA TERMINAL BREMERHAVEN

Client

North Sea Terminal Bremerhaven

Complete address

North Sea Terminal Bremerhaven GmbH & Co. KG
Senator-Borttscheller-Strasse 14
27568 Bremerhaven
Germany

Date from/to

16/12/2013 - 15/10/2014

Point of contact

Marc Dieterich (NTB)
Address see above
+49 471 944 64 150
m.dieterich@ntb.eu

Project volume

≤ 100,000 US$

location for work

Bremerhaven, Germany

Development, installation and training of CHESSCON Shift Preview

North Sea Terminal Bremerhaven (NTB) is already using akquinet port consulting's emulation system CHESSCON Virtual Terminal for testing the TOS, training their staff and testing various strategies within their TOS.

Congratulations to a very smooth upgrade from Navis Sparcs 3.7 to N4 in spring 2018. The expert team (NTB and Navis) prepared the change in an excellent way – using CHESSCON Virtual Terminal for stress testing under laboratory conditions before going live.

NTB and akquinet port consulting developed the idea of a next step in using simulation in container terminals. This approach uses the following steps:

1. Using the Interfacing between the TOS and CHESSCON Virtual Terminal the current state of the shift planning is automatically imported to the new module CHESSCON Shift Preview.

2. CHESSCON Shift Preview provides a fast simulation of the next shift using the imported data. Base of this simulation is a modelled (Light-) TOS, that simulates the shift within some minutes.

3. After finishing the simulation, a new evaluation tool based on the OEE (Overall Equipment Effectiveness) approach is presented and the planner may find future bottlenecks very fast. He may change the planning parameters (e.g. equipment allocation to work-queues) and rerun the simulation. In this way the terminal planner changes his work style from re-acting to being pro-active.

NTB NORTH SEA TERMINAL BREMERHAVEN

„Why do we use Shift Preview? Terminals, which today are not in the position to analyse their operation predictively are living yesterday"

MARC DIETERICH

MARPORT TERMINAL OPERATORS S.A.

Client

Marport Terminal Operators S.A

Complete address

Marmara Mahallesi Limanlar Yolu Caddesi No:53
34526 Beylikdüzü
Istanbul
Turkey

Date from/to

09/05/2016 - today

Point of contact

Mesut Sen
Address see above
Tel (+56 32) 227 5898
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Project volume

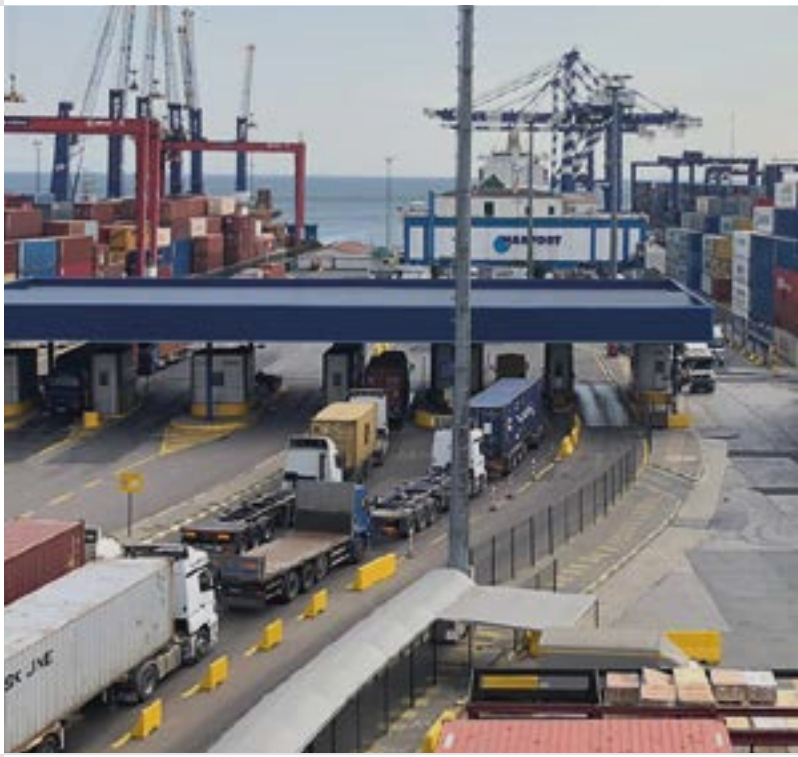
≤ 100,000 US$

location for work

Istanbul, Turkey

Supply of Simulation based CHESSCON Capacity and Simulation incl. training and maintenance services

AKQUINET PORT CONSULTING provided the modules CHESSCON Capacity and CHESSCON Simulation to Marport for in-house use. Furthermore, akquinet port consulting built the first model of Marport's terminal together with Marport within the training session. We validated the model, and trained the planners to use both modules for terminal planning purposes. Additionally, evaluations were requested, which have been developed together using the result-database connected to the KPI system developed by Marport.



After 6 months a maintenance contract started, which is still processing.

TPS is using the software to analyse the plans of terminal expansions as well as for analysing future business opportunities. Some additional functionality (i.e. priorities for berths by vessel types, shift plans) has been requested and delivered in the service period.

„We - as Marport - have been using CHESSCON Capacity & Simulation tools since 2016. We are extremely satisfied with CHESSCON results which let us compare our future construction and extension plans. From the kick off meeting, AKQUINET PORT CONSULTING team always has positive approach to our various requests which were in connection with our terminal's design and circumstances. AKQUINET PORT CONSULTING´s team is not only in a positive manner to our requests but also they are really flexible, prompt and solution oriented“

MESUT SEN

TRANSNET PORT TERMINALS

Client

Transnet Limited operating as Transnet Port Terminals

Complete address

Kingsmead Office Park
Stalwart Simelane St
Durban 4001
Republic of South Africa

Date from/to

01/12/2010 - 14/09/2011

Point of contact

Previn Govender
Address see upon
Tel + 27 (031) 308 8111
previn.govender@transnet.net

Project volume

≤ 250,000 US$

location for work

Durban, South Africa

Supply of Simulation based CHESSCON tools incl. training and maintenance services

Supply of simulation tools and ancillary services for the capacity modelling of container terminals for Transnet Port Terminals -TPT. AKQUINET PORT CONSULTING provided the simulation modules CHESSCON Capacity and CHESSCON Simulation to TPT for in-house use. Furthermore we built the first model (Capacity and Simulation) for the Durban Pier 1 terminal. We validated the model and presented it to TPT. This was done, because TPT asked for a 2 phase approach in purchasing the software:

- First phase developing Pier 1 terminal model, validate it and present the results

- Second phase providing the software licenses of CHESSCON Simulation and Capacity for TPT including the training of their staff to use it in-house for modelling the other terminals. After one year a maintenance contract started, which is still processing. Further enhancements have been made to fulfil TPT new demands, thus the tandem quay crane operation has been developed and provided to TPT.

In 2015 TPT also decided to use the Virtual Terminal module additionally to test the Navis TOS N4 and to fine-tune it by finding the optimal parameter settings.

TRANSNET

„The AKQUINET PORT CONSULTING and TPT journey began with TPT purchasing the simulation and capacity tool from apc after an intensive procurement process. AKQUINET PORT CONSULTING successfully implemented the Tandem lift functionality in the tool to meet our equipment requirements. Today we utilise the tool to provide capacity analysis and equipment needs for all our container terminals that provides assurance that we are suitably resourced and have the capacity to service our clients.“

PREVIN GOVENDER

TERMINAL INVESTMENT LIMITED

Client

Terminal Investment Limited (TIL – Switzerland)

Complete address

Terminal Investment Limited
Chemin Rieu 12-14
1208 Geneva
Switzerland

Date from/to

04/2012 - 10/2014

05/2017 - 06/2017

Point of contact

Kenneth Peire
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kpeire@tilgroup.com

Project volume

Simulation Study ≤ 100,000 US$

location for work

Bremerhaven/Germany and
Bergen op Zoom/The Netherlands

Terminal Simulation Study for Ashdod container terminal - Israel

This study included a yard simulation study for the semi-automated Ashdod container terminal project in Israel operated by TIL. Part of this study was a design review, a terminal capacity analysis as well as an overall terminal simulation for each of the three planning phases of the Ashdod terminal. The simulation model and all experiments were performed with the CHESSCON modules Capacity, Simulation and Virtual Terminal. The akquinet port consulting GmbH has consulted the operator TIL successfully in the following topics concerning the terminal:

AKQUINET PORT CONSULTING reviewed the planning provided by the client for the three phases (some 15 years). We recommended some changes on the layout due to their expert's experience as well as caused by simulation studies (dimension of blocks, number of equipment).

HSN UNIVERSITY COLLEGE OF SOUTHEAST NORWAY

Client

HSN University College of Southeast Norway

Complete address

Campus Vestfold
Raveien 215
3184 Borre
Norway

Date from/to

30/05/2014 - recernt

Point of contact

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Clemet.T.Bjorbak@usn.no

Project volume

≤ 50,000 US$

location for work

Borre, Norway

Academic licenses of Chesscon Capacity and Simulation for teaching

CHESSCON Simulation as well as Capacity are used more and more for training issues to learn about the base processes of terminal operation and optimising the productivity. HSN is using the CHESSCON Capacity and Simulation module. This hold for trainings as well as using the product within Bachelor and Master thesis. With one license you may model various alternatives of terminals without additional license costs. Thus the Simulation as well as the Capacity module may be used for several projects, the limitation is only done with a hardlock.

„My colleague starts using Chesscon in a new academic course connected to port operations. I myself use Chesscon as part of a Bachelor report scheduled started in May 2017, I also do some research regarding some future port developments in the Oslo fjord area.“

CLEMET THÆRIE BJORBÆK

TERMINAL PACIFICO SUR VALPARAISO S.A.

Client

TERMINAL PACIFICO SUR VALPARAISO S.A.

Complete address

Antonio Varas Nº 2
Piso 3
Valparaíso
Chile

Date from/to

09/08/2016 - today

Point of contact

Tomás Serrano
Address see upon
Tel (+56 32) 227 5905
tserrano@tpsv.cl

Project volume

Medium terminal (>1MM TEU/year Throughput)

location for work

Valparaiso, Chile

Supply of Simulation based CHESSCON Shift Preview incl. training and maintenance services

AKQUINET PORT CONSULTING provided the simulation module CHESSCON Shift Preview to TPS for in-house use. Furthermore, AKQUINET PORT CONSULTING built the first model of TPS' Valparaiso terminal. We validated the model, presented it to TPS and installed it during the training session.

After 6 months a maintenance contract started, which is still processing.

TPS is using the software to optimise the operation on the terminal by finding the best parameter settings for the Navis N4 TOS. As TPS is running the operation on restricted terminal area, the setting of especially the yard planning parameters has to be analysed in detail. CHESSCON Shift Preview provides the download of all planning parameters together with the scenario data directly from N4 and runs fast simulations to evaluate the settings. In this way different settings may be tested and the best one may be set in the real N4 environment.

TPS VALPARAÍSO

„The Chesscon simulator has given us a strong support in operational planning and has been highlighted as a powerful support tool in making strategic decisions not only in terms of investment but also in our terminal performance for different scenarios."

TOMAS SERRANO

CHESSCON

OUR PARTNERS

DSP data and system planning

envision empowering enterprises

Global Ports Consultation

HPC

ISL

Kat Logics efficiency redefined

PORTEK

RBS

SimPort

TATA TATA CONSULTANCY SERVICES

TOTAL SOFT BANK LTD.

WSP

AKQUINET PORT CONSULTING IS NAVIS BUSINESS PARTNER

navis BUSINESS PARTNER

AKQUINET PORT CONSULTING IS MEMBER OF

maritimes cluster norddeutschland

CHESSCON

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