

Safety and Savings Through Simulation

LiSIM[®]



Muttalip Gürses

Sales Engineer, Maritime Cranes, Liebherr Turkey

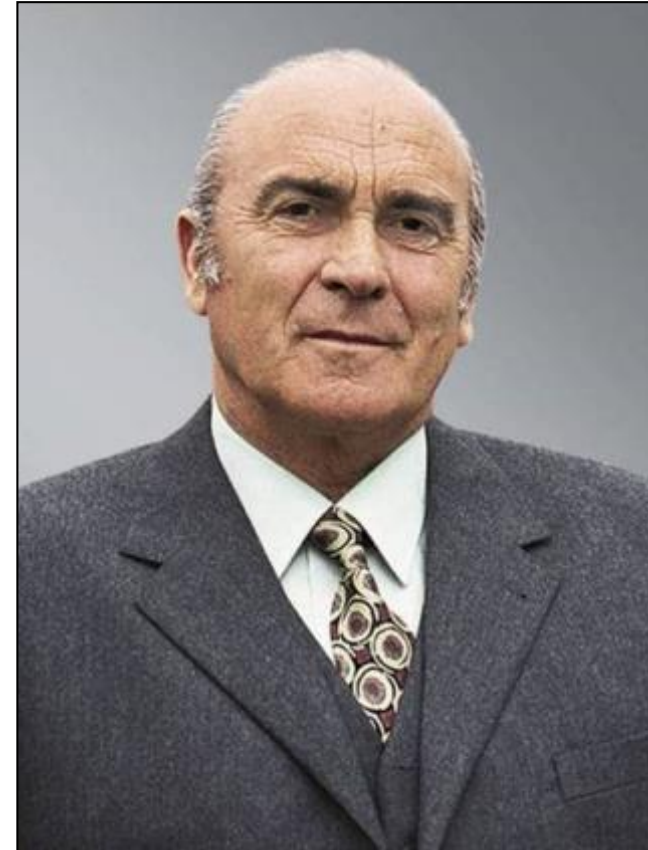
LIEBHERR

Agenda

1. **Liebherr - a Family Business**
2. **Multifaceted Product Range**
3. **Maritime Cranes**
4. **LiSIM® - the New Liebherr Simulator**
5. **LiSIM® - Safety / Production Rates / Cost Savings / Equipment Damages**
6. **LiSIM® - Goals**
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Liebherr – a Family Business

- Company founded in 1949 by **Dr.-Ing.E.h. Hans Liebherr**
- The Liebherr Group today:
over 140 companies worldwide,
more than 39,000 employees and
€ 9.15 billion turnover (2013)
- Decentralised structure with
straightforward, autonomous
corporate units – divisional structure
- Holding company:
Liebherr-International AG, Bulle,
Switzerland



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Liebherr – 2nd & 3rd Generation Family

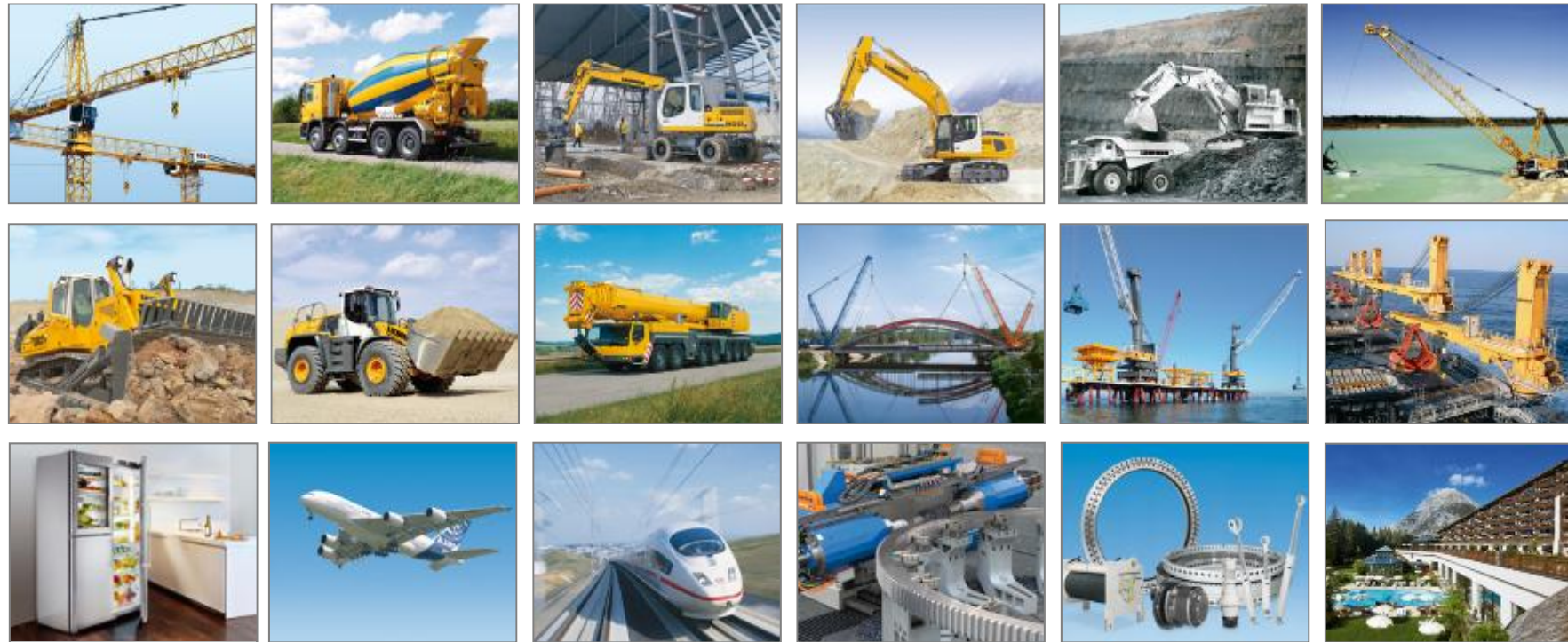
- **Dr. h.c. Dipl.-Ing. (ETH) Willi Liebherr**
President of the Administrative Board
- **Dr. h.c. Dipl.-Kfm. Isolde Liebherr**
Vice-President of the Administrative Board
- **Patricia Rüt**
(Maritime Cranes / Machine Tools and
Automation Systems)
- **Stéfanie Wohlfarth**
(Domestic Appliances)
- **Sophie Albrecht**
(Mining)
- **Jan Liebherr**
(Earthmoving / Components)



Left to right: Patricia Rüt, Willi Liebherr, Isolde Liebherr,
Stéfanie Wohlfarth, Sophie Albrecht and Jan Liebherr

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Multifaceted Product Range



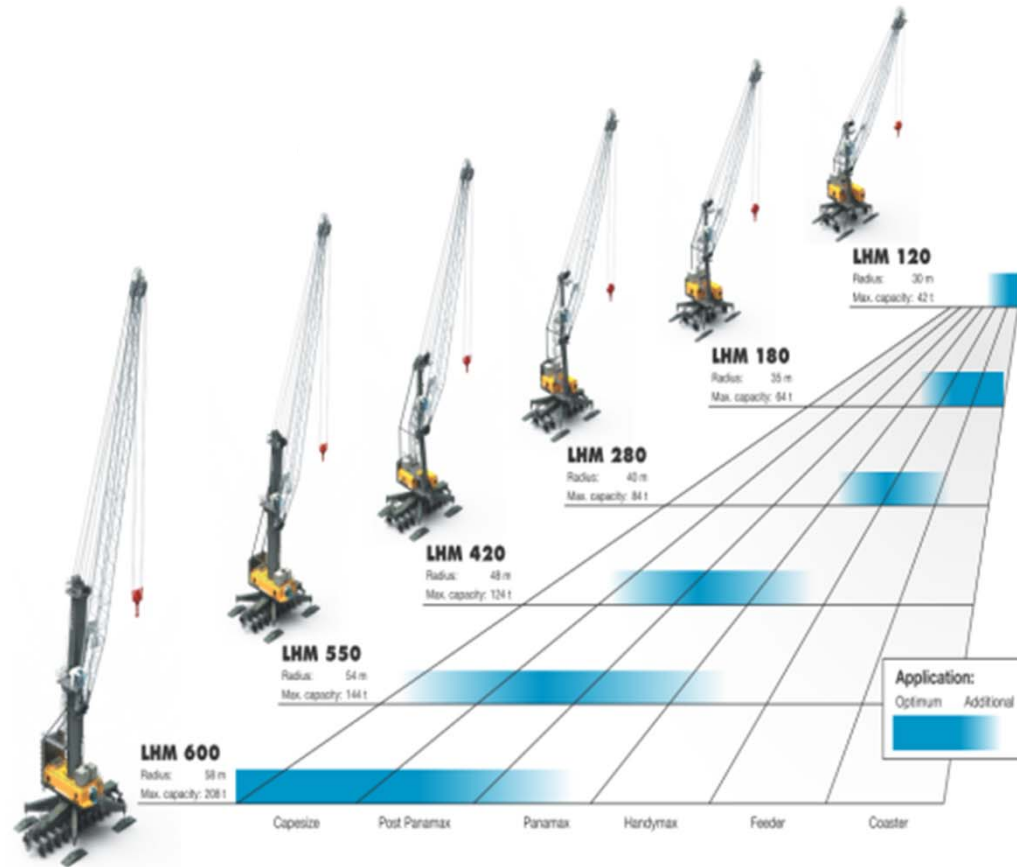
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Maritime Cranes – Port Equipment



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Maritime Cranes - LHM



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Maritime Cranes – LRS



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Maritime Cranes – Floating Solutions



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Maritime Cranes - Offshore



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LiSIM[®] – The New Liebherr Simulator

- Ship to Shore Cranes
- Rubber Tyred Gantries
- Offshore Cranes
- Mobile Harbour Cranes



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LiSIM[®] – Safety

- Allow operation in all weather and wind conditions – includes snow, fog, rain, night, etc.
- Practice loading/unloading with vessel movements due to swell and wind
- Practice emergency procedures for stoppages, fire, twistlock failure, door opening/goods discharge, etc.
- Allow extended working to show the effect of tiredness

LiSIM[®] – Production Rates

- Progress through a series of initially simple exercises, function by function, until all 3 basic crane movements are mastered and combined
- ‘Practice makes perfect’ – repetition of exercises until they are conditioned
- Ability to limit crane to operation – bulks, containers, break-bulk, etc.

LiSIM[®] – Cost Savings

- Training on a MHC for an hour will cost about 30 liters of fuel.

5 days x 8 hours x 30 = 1200 liters!

- Machines need periodic servicing – MHC is 500 hours.

- No reduction in component and steelwork lifetimes.

- No wear on sacrificial parts – wipers, tyres, etc.

LiSIM[®] – Equipment Damage

- Using the machine can also lead to damage. With the simulator, no damage.
- Not only the machine can be damaged, but also the vessel, cell guides, containers, vehicles, etc.
- Learning to work faster can cause more impacts – no problem with a simulator!

LiSIM[®] – Goals

- To add realism to the simulation, we use real Liebherr components – seat, controls, key boards, joysticks, etc.
- We make the ‘virtual crane’ perform just as the ‘real crane’ performs using our own electronic modelling
- To progress the student through a series of increasingly testing exercises
- Simulation of all weather conditions and sea states
- Operation in all methods of crane employment
- To be able to simulate emergencies not normally possible with a live machine

Enclosed Cabin Version



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Classroom Version



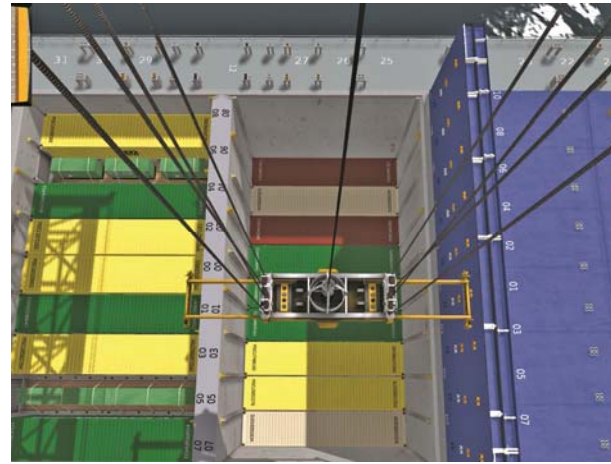
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Containerized Version



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Impressions



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Reference Letter



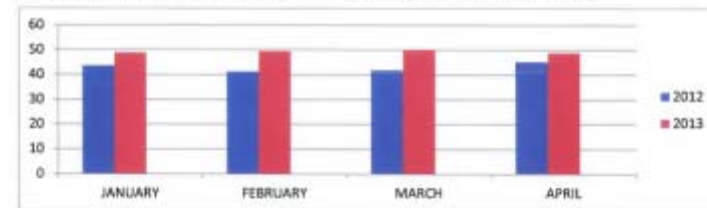
Santos, april 25th 2013.

To whom it may concern:

With this letter, TECONDI Terminal para Containers da Margem Direita S/A is pleased to provide a reference for LIEBHERR for the outstanding support they have been giving us during the training programs for our mobile cranes' operators, with The Liebherr Crane Simulator.

The overall productivity in our Terminal, after the one-week training course for each group of operators and ship planners, has been increased from 43.52 mph in 2012 for 49,34 mph in 2013 so far, 13%.

The numbers of the first four months of 2013 show the improvement in our efficiency:



The increasing in the productivity was also followed by a reduction of damages of cargo and it is due to change in TECONDI's management processes and the cranes' operators training course developed at the LIEBHERR Training Center in Guaratinguetá which we highly recommend.

Sincerely

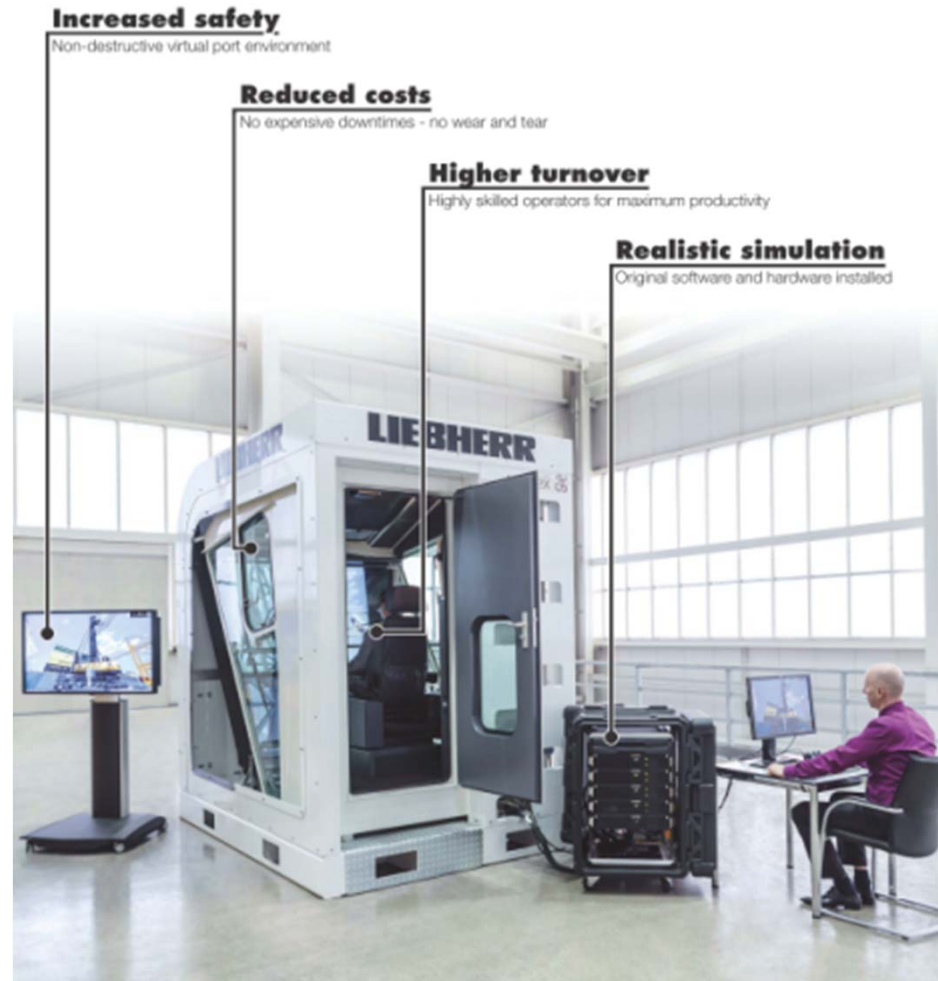
Querginaldo Alves de Camargo
Operations Director

Terminal para Containers da Margem Direita S/A
Rua Augusto Severo - 13 - 1^o, 2^o e 3^o andar - Centro
CEP: 11010-020 - Santos - SP - Brasil
Tel/Fone: (+55) (13) 3213.0000
www.tecondi.com.br

Tecondi: after one week training

- Increased turnover: +13%
- Reduced cargo damage

Summary



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**Thank You For
Your Attention!**