

## Iv-Consult

Contact ir. W.M. Visser  
 Address Vestiging Papendrecht  
 Postbus 1155  
 3350CD Papendrecht, Netherlands

Phone +31 786448555  
 Email w.m.visser@iv-bouw-industrie.nl  
 Website www.iv-groep.nl



Iv-Bouw & Industrie is renamed into Iv-Consult per the 30th of March 2009 and is a division of Iv-Groep, a group of professional engineering companies with approximately 700 employees. Iv-Groep was founded in 1949 as a design and drawing office for steel structures. Through the years the company has developed itself into a sparring partner for clients that need independent advice or a constructive solution.

Iv-Consult has engineers for design and Engineering of Concrete and Mechanical Structures. Iv-Consult employs about 120 persons. The company is specialised in providing an independent advice for large heavy, complex and moving structures in different markets. A brief description of the Iv-Consult main markets are:

- Transport, storage and transfer systems and equipment;
- Heavy and special steel and mechanical structures;
- Special constructions such as attractions for amusement parks;
- Design of harbour and airport terminals, including logistic advice;
- All the offices, silos and store sheds etc. included in the projects.

The available manpower in the other divisions of Iv-Groep enables Iv-Consult to deploy extra capacity and, if required, other disciplines such as systems engineering, maintenance concepts and 3D measurement and 3D laser scanning.

The disciplines within Iv-Consult consist of steel engineering, mechanical engineering, civil engineering, logistic engineering, connection design and management/staff services.

Iv-Consult offers its services all over the world. Besides the home market in the Netherlands and Belgium, Iv-Consult serves clients in China, Malaysia, Middle East, Pakistan, Australia and India. For these international services Iv-Consult also runs a fully equipped office in Kuala Lumpur, Malaysia.

Iv-Consult's main objectives are:

- To be a reliable partner for its clients
- To be the innovating and creative consulting engineer for special and large steel, mechanical and concrete structures from feasibility studies up to preparation of shop drawings
- To be the logistic advisor for: Storage and Transfer, Internal logistics, People Logistics, Construction Logistics

Iv-Consult strives to be the constructive partner.

Iv-Consult wants to be the best in steel concrete and mechanical projects, from first draft up to realization.

### Clients

- Iv-Consult has a wide variety of clients:
- Contractors (national and international);
  - Operators of terminals and factories;
  - Suppliers of installations and equipment;
  - Project developers;
  - Port authorities;
  - Government.

### Short Description

#### Mechanical ships lift dock, Goa

This project regards the design of a mechanical ship lift system located in Goa, India. Iv-Consult is the engineering company for the main steel and ship supporting structures. This kind of 'Mechanical Lift Dock' is used in a shipyard as an alternative to dry-docks, floating docks or slipways. Mainly it is a platform suspended by large number of winch systems. The ship is placed on movable trailers and transported over rails to a chosen maintenance area. The Goa lift system has a capacity of 6.000 tons and has a size of 120 by 27 meters, the size of a lock. Iv-Consult used Scia Engineer to design the main structure and the various substructures.

### Project Information

Owner: n/a  
 Client: Bosch Rexroth b.v.  
 General Contractor: Bosch Rexroth b.v.  
 Engineering Office: Iv-Consult b.v.

Construction Start: 01/06/2008  
 Construction End: 01/01/2010  
 Location: Goa, India



### Introduction

Iv-Consult and Bosch Rexroth Systems & Engineering are working together on the design of mechanical lift docks. Iv-Consult is responsible for the engineering of the entire steel and mechanical structures for the Mechanical Lift Dock projects. Bosch Rexroth as main contractor is responsible for the design of the hydraulic and electric installations and the control system.

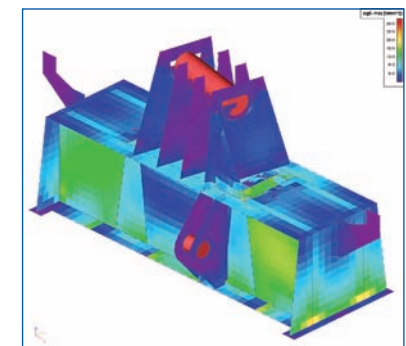
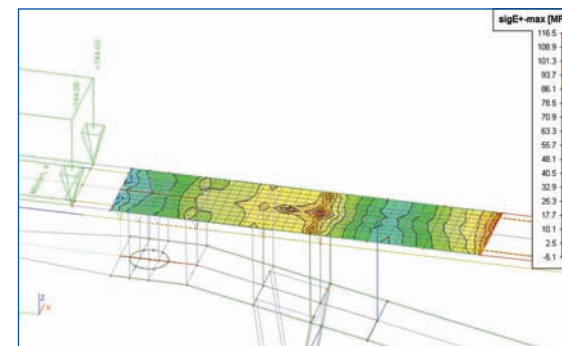
### Mechanical Lift Dock versus Ship lift

A Mechanical Lift Dock is often confused with a ship lift. It is therefore necessary to briefly explain the difference between the two systems.

A Mechanical Lift Dock is used in a shipyard as an alternative to dry-docks, floating docks or slipways. A Mechanical Lift Dock consists of a platform

suspended from a number of winch systems. The platform with trestles is lowered under water in the horizontal position, after which a ship takes up position above the platform and the platform is lifted up along with the ship. The ship can then be moved by means of a bogie system and parked on a specific area.

Since ships docked on a Mechanical Lift Dock can be moved by a transport system to other specific locations within the shipyard, a Mechanical Lift Dock can service a large number of parking places. In such cases, the costs per repair location are reduced greatly. In The Netherlands, six Mechanical Lift Docks are in operation, namely in Sliedrecht, Alblasserdam, Rotterdam, Den Helder, Amsterdam and Harlingen. A ship lift is a mechanical structure that can move in a water enclosure, approximately the size of a lock chamber. A ship can thereby be raised or lowered



within a channel, over a relatively large distance. This provides an alternative to locks. There are no ship lifts in The Netherlands, although they may be found in Belgium for example, in La Louvière and Strépy-Thieu, and in Germany, such as in Henrichenburg and Niederfinow, among others.

### Mechanical Lift Dock projects

Iv-Consult is currently working on the engineering for projects in Dubai, Goa, Sydney and Mega Yacht Lifting System projects. Most Mechanical Lift Dock systems are tailor-made and are capable of handling between 6.000 and 25.000 tons ship weight, with lengths

between 100 and 230 metres. Mega Yacht Lifting Systems – MYLS for short – are an exception to this.

For the GOA lift Dock Iv has used Scia Engineer to design the various parts of the structure, such as the trestles, trailer/boogie frames and the dock platform. The trestles are standard frames to carry the ship and are heavily loaded under various circumstances. The trestles can be lifted with the use of hydraulic trailer/boogie frames which uses a rails that is integrated in the dock platform. The various structures are build out of plates and therefore Iv Consult used the plate module to design the specific parts.

## Mechanical ships lift dock, Goa

