



**ESTA NEWSLETTER**

2014



# PRESIDENT OF ESTA

## DAVID COLLETT

At the end of my first year term as President of ESTA, it gave me great pleasure to welcome a 'full house' at the Mövenpick Hotel in Amsterdam for the 11<sup>th</sup> annual ESTA Awards of Excellence dinner.

The ESTA office, in partnership with KHL publications which produce titles such as 'International Cranes' worked tirelessly to create a wonderful atmosphere and a successful networking evening for friends and colleagues alike. The whole event was a great success and I would like to thank all who attended and the organisers for their tremendous efforts.

We were once again proud to have the support of our industry's leading machinery manufacturers.

Our Gold standard sponsor was Terex Cranes from Germany

Followed by our Silver sponsors Liebherr Cranes of Germany, Manitowoc Cranes of France, Tadano Faun Cranes of Germany and TII group, specialist trailer and SPMT manufacturer, Scheuerle, Kamag and Nicolas

Furthermore we welcomed the following supporting sponsors Faymonville Trailers, Kohler Kran services, and Euro-rigging.

All of these sponsors are key suppliers to our industry and I thank them for the



support shown at our industries premier annual event.

ESTA has come a long way in its 38 years of existence. From its foundation in 1976 until now, in 2014, we can safely say that ESTA has become the recognized Trade association for abnormal load transport and mobile cranes in Europe.

This in turn, has led to the creation of working relationships on the world stage with some of our international sister organisations: CICA, SC&RA and FEM.

Furthermore, ESTA has brought value to our membership by sending our officers to attend meetings and events around the world, providing representation, experience and influence on important operational and technical matters on behalf of ESTA.

ESTA has also begun to invest in the future for our industry by committing finances to a number of working groups over the last couple of years, such as the SPMT best practice working group and the European Crane Operator License working group.

With the demanding new developments and challenges regarding transport and the erection of wind turbines we have also started a working group for Wind Energy Construction Sites [WECS], and hope to have 'Best practice' guidelines completed in the near future.

The members of these working groups are giving their time voluntarily, helping ESTA to achieve their goals, to improve working conditions and to create a safer working environment. I would like to thank them for their input.

Safety is clearly one of ESTA's key focal points and it is our commitment to drive an improved safety culture into our industry, at every opportunity.

But we need the help of our members to raise awareness and to champion safety issues at local levels. We know from experience that this is an important issue for everyone and ESTA will assist and advise wherever possible.

The safety campaign is only one feature of the new Five point strategy that ESTA developed last year and presented at the last General meeting in Belgium in October 2013.

In essence, the 5 points are;

- Create and foster **Networking** opportunities
- Act as a centre of **Expertise**, in safety, technical matters and best practice sharing
- Champion **Standardization** by harmonizing certification where possible and creating standards where none exist.
- Make positive **Representation** on behalf of our industry in Europe and on the world stage
- Become the **Information** & Knowledge portal for our industry

The European Union reached its current size of 28 member countries on 1 July 2013 when Croatia joined and together with our friends from Switzerland, Norway and Turkey we now represent 31

countries, which means a population of over 600 million people.

The fact that our industry is spread across so many borders makes it extremely difficult to do the work we are trying to do at ESTA, i.e. to lobby and represent our industry. Therefore we see the European Commission as the most productive way to achieve some of our goals and in the future we intend to direct some of our efforts in that direction.

Along with the fact that in certain parts of the EU we are starting to see some green shoots of recovery after the years of recession, I believe that ESTA will be able to play an important role in the development of the Heavy Transport and Mobile Crane industry in the future.

As regards the Awards ceremony: this is the premier event in the heavy transport and mobile crane industry calendar for Europe and it is THE place to showcase our industries expertise and know-how. So I was extremely pleased to announce that yet again we had a record number of entries to the competition to chase the prestigious titles that the Awards have to offer.

This really is a testament to the hard work, creative solutions and engineering ingenuity that our industry produces and the wide-ranging and varied categories means that the competition is open to all-comers - large or small. So well done

to everyone that entered the competition and I look forward to seeing even more exiting entries next year.





## FROM THE ESTA DIRECTOR SØREN JANSEN

Improvement in safety relating to abnormal load transport and mobile cranes remains high on the list of ESTA's priorities.

Many of the projects undertaken by ESTA in 2013 were very expensive because outside consultants and/or universities were involved. In this newsletter ESTA's secretary reports on the challenge of managing the finances. However, without the many hours of voluntary work by ESTA members and without valuable contributions from the crane manufacturers under the FEM umbrella, most of this important work could never have taken place. We would like to thank everyone for their contributions.

I will mention a few of the significant safety-related topics we have been working on during 2013.

I would like to start with the International Crane Stakeholder Assembly – ICSA. It's a forum where members of ESTA, SC&RA (United States) and CICA (Australia) meet once a year, together with crane manufacturers from Europe, United States etc. Safety matters dominated the agenda and as a result a new ICSA guideline "Leaving Mobile Cranes Unattended in (partially) Erected Mode" will soon be published. The advantage of working with this international forum is that the ICSA brings a broader 'global' perspective and experience to the safety issues concerning the activities in our industry.

2013 saw discussions on the subject of lifting persons in a man basket using mobile cranes. Following an ESTA survey

it became clear that some countries in Europe will not yet allow the use of man baskets with mobile cranes, but in most countries it is allowed, providing a number of precautions are taken and only when there is no other option available. During the ICSA meeting in March 2014 the CICA and SC&RA confirmed this. Therefore I think it's safe to conclude: using mobile cranes to lift persons is permitted in most parts of the world if it is the least hazardous way to get the job done, but certain conditions and restrictions are to be observed.

'Lifting with Multiple Cranes' happens every day throughout the world. Some associations like the Dutch VVT have published guidelines on the subject and the European mobile crane manufacturers under FEM are in the final stages of composing FEM guideline 5.021. As soon as FEM has completed the draft it will be sent to the ICSA members for comments and input.

Before concluding I would also like to draw our readers' attention to FEM document 5.020, a guideline on "Hydraulic Hoses on Mobile Cranes". It's a long-awaited guideline that is now available and already in its second edition.

We all remember the endless discussions amongst crane owners and operators regarding the new set-up of the Rated Capacity Limiter in accordance with EN 13000, the standard for all new cranes delivered after May 1st 2010. Despite all the concerns among owners/users it now seems that the implementation of the new set-up was an excellent move. A survey among the ESTA members who



attended the latest ESTA section cranes meeting revealed that no participants had experienced or heard of any accidents with mobile cranes relating to the new Rated Capacity Limiter set-up. If and when such an accident should take place, ESTA would like to hear about it.

Finally I want to express my gratitude to all ESTA members for their valuable contributions during 2013.

## FROM THE ESTA SECRETARY TON KLIJN

The secretariat of the first working group was managed externally but the other meetings were all organised and minuted by the ESTA office management.

The secretary and ESTA's director also attended the ICSA meetings (International Crane Stakeholders Assembly) in Munich in April. ESTA and FEM were jointly hosting these meetings for which preparations already started in January 2013.

The ECOL working group had a productive start and is well underway with establishing a generally accepted Competence Scheme for mobile Crane operators. We are also investigating the possibility of applying for a European subsidy for this ESTA project under the Erasmus+ scheme, which is currently being implemented in Europe. ESTA has been contacted by fellow European branch organisations that are keen to become involved in this project, which means tower crane operators will join ECOL. This topic is presently being discussed within the working group.

The fact that ESTA is making progress in achieving her goal of being *the* European knowledge centre for the Crane and Abnormal Transport industry and as such is invited to attend an increasing number of meetings addressing technical or regulatory issues is, of course, a wonderful development. However, it has its impact on the number of hours invested and affects ESTA's budget due to the costs incurred by travelling.

Up till now ESTA has to meet her objectives with a part-time director, a part-time office manager and many

hours put in by volunteers, such as the jurors for the awards, the jury coordinator, the section chairpersons, the communications officer and your secretary. It is to be expected that in future this situation cannot continue if ESTA wants to further strengthen her position in Europe. For a better representation of ESTA and the interests of her members, it will become necessary to lobby the European authorities in Brussels and unfortunately this will cost money.

We learned from our American and Australian colleague's that the yearly budget of ESTA amounts to 2.5% and 4% of their respective annual budgets, illustrating that the crane and abnormal transport branches in Europe do not spend nearly enough money to have their voices heard in Europe.

With this in mind the Board of Directors will discuss ways to raise ESTA's income in the years to come at their next Board Meeting in September 2014. The result of this discussion will be announced at the next General Assembly in Turkey in October of this year. We hope of course to see you all at that meeting, in good health.

In the meantime you can rely on the ongoing support of the ESTA office management and the ESTA Secretariat regarding any European regulations or issues you might need assistance with.



ESTA office manager Caroline van Geest.

# PRESIDENT CRANE SECTION

## SANDER SPLINTER

ESTA crane section president Sander Splinter opened the meeting and welcomed everybody present, including the new members. See also the new members section in this Newsletter for further details.

ESTA received a letter, dated 3 April 2014, from the Spanish Crane Rental Association ANAGRUAL. Due to the financial crisis in the Spanish economy which has also affected the Spanish crane rental sector, the Spanish Crane Rental Association ANAGRUAL has been compelled to discontinue its membership of ESTA for the time being.

HSE Topic: Sander Splinter gave a safety briefing regarding outrigger mats. Leon Schöpping of Shell informed the meeting about organisational changes concerning safety within Shell. Leon Schöpping is moving to Norway where he will be involved in a Shell project.

Report from technical workgroups by ESTA Director Søren Jansen:

Leaving mobile cranes unattended in (partially) erected mode. The original FEM document, FEM 5.017, has been checked by ESTA, SC&RA (United States) and CICA (Australia) to make sure that all the relevant information and experiences from crane users are included in the document. It will be released as an ICSA document (International Crane Stakeholder Assembly). A copy of the final draft of the document is available at the ESTA secretariat.

### Lifting with multiple cranes.

The FEM (Federation of European Manufacturers of Materials handling, storage and lifting equipment) has been working on document FEM 5.021 'Lifting with multiple cranes'. The document was introduced by the president of FEM, Klaus Meissner. A copy of Klaus

Meissner's presentation is available at the ESTA secretariat. Following FEM's completion of the document it will be sent to the ICSA members ESTA, SC&RA and CICA for comments/input.

### FEM document FEM 5.022, 'Working at Height'.

A draft has been sent by Klaus Meissner to the 'Working at Height' working group who will meet one last time during the summer to propose final comments/input for the document which is expected to be published during the second half of 2014. Klaus Meissner mentioned that the crane manufacturers under the FEM umbrella have composed a draft document regarding uniform safety decals on the upper structure of mobile cranes. These decals will be appraised by ESTA, SC&RA and CICA.

### Crane Capacity Number

Ton Klijn, ESTA secretary, explained the idea behind the thoughts concerning 'Crane Capacity Numbers'. There is no logical and/or consistent way to interpret the values on a crane. A 60-tonner is different for every brand and the number 60 does not clearly indicate what a crane can do. The subject was also discussed with SC&RA and CICA on Friday 7 March 2014 during the latest ICSA meeting in the United States. It was agreed that if such a system is to be developed it would only be applicable to smaller cranes, i.e. up to 100 tonnes lifting capacity. Cranes with a lifting capacity of over 100 tonnes are more complex and it will be more difficult to classify these cranes' capacity by a definite number. Their capacity may vary enormously, depending on the options installed on the crane. This idea/project should be explored further if it is going to be accepted worldwide. A vote during the meeting indicated that the present members of ESTA's cranes' section think it would be a good idea to investigate the topic further. A survey

via email will be conducted among the participants at this meeting to confirm the result.

During the aforementioned ICSA meeting it was agreed that an ad-hoc working group should determine how a draft document could be drawn up. Mr. Brandon Hitch of CICA was elected coordinator of this ICSA ad-hoc committee.

### Overload testing of mobile cranes.

France, Denmark, Italy and Greece are among the few European countries still requesting overload testing of mobile cranes. Statements on this subject have been published by Liebherr, Terex, Manitowoc and Tadano Faun. These statements are meant to aid crane owners/national crane associations in their negotiations with national lawmakers on the subject of discontinuing national overload tests in certain situations. Copies of the documents are also available through ESTA.

### Mobile Cranes / sustainability

Reduction of fuel consumption in private cars is an ongoing issue and a political hot topic. Modern cars have 'engine start/stop systems' and/or other concepts to reduce fuel consumption. Klaus Meissner mentioned that sustainability is high on the agenda of crane manufacturers. More information on the topic will be made available from the crane manufacturers to help crane owners if and when the topic comes up for discussion with customers/national authorities.

### EN 13000 amendment

Klaus Meissner gave an update on the impending amendments to the EN 13000. More information is to follow during ESTA's crane section's meeting in Istanbul on 16 October 2014.



Klaus Meissner mentioned that as far as the crane manufacturers are aware no crane accidents have taken place with new cranes delivered after 1 May 2010 that relate to the new set-up of the RCL, Rated Capacity Limiter. A survey amongst the participants in the ESTA crane section's meeting revealed that no one present knew of any accidents with mobile cranes in connection with the rated capacity limiter (disabling the safety system).

### Crane modification – adding fall restraint/fall arrest anchors on crane structures

Regulations in various parts of the world have been updated to prevent workers from being at risk of falling from height hazards. The risk of falling from height can be confronted in many ways, including work site practices, use of suitable personnel platforms and use of access systems on newer machines. Most newer cranes have access systems that permit workers to access most areas on the machine needing any other

Klaus Meissner

Dennis Nyberg

Leon Schöpping



equipment or devices. Older equipment may have access systems that are adequate for operating the machine but require additional equipment/devices to carry out maintenance. In some parts of the world older equipment is being modified by fitting fall arrest anchors to various parts of the machine. For cranes this practice can have a negative effect on the performance characteristics of the crane, especially when securing anchors to the boom or boom structure. Fall arrest anchors, even if secured by adhesives, epoxies or other bonding methods, can affect the stress distribution in the crane structure and this can lead to a reduction in the strength or life of the crane and can jeopardise the safe use of the crane. Because of the additional hazards that can occur it is not recommended that any fall restraint/fall arrest anchors should be attached to cranes without the written approval of the crane manufacturer and adding such systems will still be at the crane user's responsibility.

### Working Group European Crane Operator License (ECOL)

Ton Klijn reported on the progress made and gave an update on the European crane operator certification project. The workgroup will explore the possibility of qualifying for a European Subsidy under the Erasmus+ project for adult education. Presently the work concentrates on establishing a commonly accepted Competence Scheme for Crane operators. One of the questions raised is whether a crane operator should be taught about the rigging and slinging of loads as part of his operator training. A show of hands during the meeting indicated that the majority of those attending were in favour. A survey via email will be conducted among the participants at this meeting to confirm the result.

Leon Schöpping also asked some questions relating to ground bearing pressure. He was informed by Dieter Willim that this topic will be discussed in the next FEM static working group meeting.

Klaus Meissner mentioned that under ICSA a working group is investigating the possibility to harmonize safety icons. Currently many different icons are used to make people aware of the dangers while working with machinery. Standardized icons with a minimum of text would help to further improve common understanding of dangers.

Dennis Nyberg from the Swedish Crane Rental Association raised the question of using organic oil in the hydraulic system of mobile cranes. Background: In 2012, the Swedish Road Ministry 'Trafikverket' together with the largest cities (Stockholm, Gothenburg and Malmö) agreed on new environmental regulations in the procurement of construction projects. This environmental regulation should be implemented in the procurements taking place after 1 January 2014. According to 'Trafikverket' they will step up their inspections of the construction sites during 2015 to check that the regulations are being enforced. One of the requirements is to use biodegradable hydraulic oils in all types of heavy machinery. The Swedish Mobile Crane Association believes that the crane manufacturers' request that only biodegradable hydraulic oils bought from the crane manufacturers will be used in order to maintain the warranty. This is definitely not a cost-effective solution for the crane users. The Swedish Crane Rental Association would like FEM to specify a standard specification or to recommend a number of producers who supply biodegradable hydraulic oils that can be used in mobile cranes.



# PRESIDENT TRANSPORT SECTION

## ANDRÉ FRIDERICI

On Thursday 24 April 2014, the president of the transport section, André Friderici, opened the meeting and welcomed the representatives. He gave a special welcome to the representatives of the company Hyper-Trans of Spain. Hyper-Trans is considering special membership within ESTA and were attending as guests.

ESTA president David Collett updated the meeting about the Working group SPMT/ Modular trailers Stability & Training guidelines. He introduced André van der Steen from Euro-Rigging. Euro-Rigging, a firm of independent engineers and consultants, active in the field of heavy mechanical engineering, has conducted a stability study on SPMT's to support the ESTA Best Practice Guide for SPMT's.

The research entailed the following issues:

- Under what circumstances can the load and transporter considered to behave as one, therefore allowing engineering to base calculations on a combined centre of gravity of load and transport?
- Define a generally applicable framework of safety factors that need to be taken into account in the engineering process of transports with SPMTs, in order for an engineer to be able to decide if the stability angle and overload angle of the intended transporter configuration and suspension set-up are adequate to safely execute the transport.
- Define a generally applicable framework in order to be able to determine the maximum allowed deflection on any given transport.

André van der Steen updated the meeting on the latest developments.

The project consists of three different phases:

- *Phase 1:* Defining generally applicable constraints for load and transporter to behave as one.
- *Phase 2:* Framework of safety factors
- *Phase 3:* Framework on the basis of which maximum deflection in each transport can be defined.

The study has almost reached the conclusion of phase 2.

### HSE Topic

André Friderici has prepared a discussion paper on a HSE topic. After a general exchange of views the following conclusions can be made:

Much depends on the personal vision of the inspector. Safety rules are always open to change.

Although the meeting strongly advocates a safe working environment, the rules can cause problems on the job. It is therefore suggested that a list is drawn up of the regulations and any ensuing problems.

### Presentation RDW

Mr. Gerben Feddes of the RDW updates the meeting on the RDW project Numbers, registration and ITS.

Of special importance for ESTA members is the impending obligation in the Netherlands for non-Dutch registered vehicles to have a SERT document (trailers) and a permit certificate (motor vehicles).



### SERT|COC

Mr. Wim Richie explains that although the majority of the present countries is aware of the SERT, most are not able or willing to accept it. Furthermore the COC document is too limited to incorporate the SERT in it.

At the ESTA meeting in October 2013 in Belgium, the conclusion was that ESTA was advised to stick to the SERT document. Later it became apparent that mentioning the 'SERT' irritated some countries and therefore the suggestion was raised to rename the SERT to give it a more neutral sound.

### Delivery of Wind Turbine Components: Best practice document

David Collett addressed the meeting. The working group is trying to establish the following: creating a BPG (Best Practice Guide) for internal wind farm roads. A first draft of the BPG has been drawn up: As the generic design and performance of Wind Turbine Generators (WTG's) have increased over the past two decades, it is noticeable that infrastructure on the sites has not kept up, thus leaving many instances of poor site design which in turn has led to an increasing number of operational and safety issues while the site is being constructed.

In terms of the turbine design, it is becoming evident that due to the increased difference in size of the component parts, the loaded vehicle combination that are carrying components can be divided into three categories sorted by length, width & height and weight

### Category 1

- Trailers loaded up to 30m long
- Components up to 3m wide and 3m high
- Vehicles up to 50 tonnes Gross Vehicle Weight (GVW)

### Category 2

- Trailers loaded up to 45m long
- Components up to 4m wide and 4m high
- Vehicles up to 100 tonnes Gross Vehicle Weight (GVW)

### Category 3

- Trailers loaded up to 60m long
- Components up to 4.5m wide and 4.5m high
- Vehicles up to 150 tonnes Gross Vehicle Weight (GVW)

This topic will be continued/followed up during the next section meeting 16 October 2014, in Turkey

ESTA Autumn Meeting 2014  
October 16th and 17th, 2014, Istanbul, Turkey

Thursday October 16th, 2014  
14:00- 17:00 Section Cranes and Transport Meeting [for ESTA Ordinary, Special and Affiliated Companies]

Friday October 17th, 2014  
09:00- 12:30 General Assembly [for ESTA Ordinary, Special members only]

For some countries you need a VISA to travel into Turkey, since the rules have changed you have to apply for it electronically:  
<https://www.evisa.gov.tr/en/>



## AWARD WINNERS CRANES UNDER 120T NORDIC CRANE GROUP

**The project is nominated for ESTA awards as it is considered as the most demanding and complicated project performed by Nordic Crane Stangeland in 2013. The major challenges in this project making the job special is, but not limited to:**

- Complex mobilisation performed on short notice.
- Helping our client reaching the milestone with installation of living quarter with use of the Heavylift vessel Thialf. Missing the available window with the heavylift vessel would have involved a further 6-9 month delay with billion of euros loss for our client.
- Installation of mobile crane with limited crane access and maximum unit weights of 15 tonn
- The installation method required development of a special installation procedure and additional engineering activities to verify stability and safety during all phases of the installation.
- Convincing our client who is not familiar with Nordic Crane that our shut down system and compensating measured makes the crane safe in operation at a petroleum plant.
- Further development of our shut down system with an automatic fire extinguisher system.
- Transportation and handling of mobile crane parts to the offshore installation.

In order to verify the safety aspect with operation of a non-ex mobile crane on a live petroleum plant, several meetings with Shell technical safety advisors in order to verify compliance with relevant rules and regulations. A special one day risk assessment with 15 participants was performed prior to start of the installation.



Left Kato Øvestad, head of Engineering in Stavanger, right Søren Jansen, Director of ESTA.

## AWARD WINNERS CRANES OVER 120T MICHIELSENS



**With the expansion of the Sea Tank Terminal, quay 310, in the harbour of Antwerp. Our customer is building a number of storage tanks for mineral oils. One of the new tank terminal, on this quay, consists out of three tanks with a diameter of 47,1m and a storage capacity of 50.000m³.**

Each tank from steel get assembled on its base. The tanks are also provided with a metal roof. A general structure consisting out of 70 beams with metal panels on top. The roof construction get assembled on the bottom of the tank, to minimize the work at height. Once the roof is finished, in normal conditions, the tank get filled with water and air get blown under the sealed roof structure to get it float. With a controlled system, they bring it upwards. When the roof reaches its final height, it get welded on the tank shell. In this case, they test the tank for leakage and saves on an expensive lift system.

Because of a tight schedule, different works are taking place on the terminal at the same time. Due to vibrations caused by civil works around the tank and the weight of the finished roof, the temporary support of the roof collapsed at a few areas. This resulted in a local deformation of the roof. By those local

deformations, it was no longer possible to bring it upwards as planned. In order to maintain the deadline, our customer had to find another solution to lift the roof.

Michielsens NV solved the problem by lifting the roof with four mobile cranes, connected together on a safe way by multibeam. A construction with strand jacks was also analyzed but had a longer execution time and a higher financial cost.

After a site visit, the case was studied by our engineering department and an offer was made to the customer. Because the tight schedule, it was important that the job could be executed in less than one week after our first site visit (engineering and execution of the job). Because of the heavy weight of the tank roof and the height of the tank, four mobile cranes were needed to manage the job.

The job has to be also completed in a time window of two days. Because of the configuration of the cranes, each position of a crane was specifically chosen for being able to set up all cranes simultaneously. Avoiding extra costs by waiting hours and manage the job in the given time window.

**Day 1:** Mobilisation of the cranes and preparation of the rigging on the roof.

**Day 2:** Lifting and demobilisation of the mobile cranes.

For lifting the roof, 35 lugs were needed for dividing the forces in the structure and to avoid further deformations in the structure of the roof. This lugs were welded on the beams, at a given radius by our customer, and the welds were inspected before lifting for safety reasons.

The four mobile cranes were connected by three multibeam to spread the load equally and also to avoid a large weight fluctuation at one mobile crane. A safety factor was calculated in the lift capacity of the cranes to compensate the minor fluctuations. On the lower multibeam, a swivel was used to make the tank roof able to rotate. For safety and to adjust the roof to its final position. A wide body shackle (SWL 300ton) was used to connect the set of round slings to the 35 lugs welded on the roof.

The rigging consisted out of 147 parts. It was a big challenge to get these materials on a short time at the job and to find a way to connect the four mobile cranes on a safe way!

The four mobile cranes were guided by a lift supervisor who was standing on the top of the tank. Two other persons had to control the horizontally of the multibeam during the lifting and stood in close contact with the lift supervisor.

Once the tank roof was on its final place, it get welded on the tank shell. After welding all the 70 beams to the tank shell, the derigging could started.

Our customer was satisfied after a successful lift operation!



Johan Michielsens, left ESTA Director Søren Jansen.



## AWARD WINNERS LATTICE BOOM WAGENBORG

Here are some of the highlights of this award winning job by Wagenborg: Although special transports are part of the daily routine at Wagenborg, every single project is special in cargo, in destination, because of dimensions or special because of weights. And sometimes a project combines them all and is special in every single way. This is what happened when Wagenborg was awarded a huge project in the Botlek area. A total of 52 isolated storage tanks and 32 modules (pipe-racks) had to be transported from Willebroek (Belgium) to Vlaardingen (Netherlands) and also had to be installed on the tank foundations at the Vopak Terminal. A true challenge in heavy transport and lifting.

The largest tanks, with a capacity of almost 4,000 m<sup>3</sup> have a diameter of 13 meters and weighs 112Te. The smallest tanks, still good for 2.500 m<sup>3</sup>, have a diameter of 11,5 meters and weighs 90Te. The heights vary from 25 to 28 meters and are tuned to the maximum height allowed on the transport route from the manufacturer in Willebroek to Vlaardingen. All tanks together have a total capacity of 150 million liters, a total weight over 5,000 tons and cover an area the size of 30 tennis courts.

All water transport was performed with container vessels with the dimensions 135x17m. After securely lashing the storage tanks and a transport duration to Vlaardingen of two days, the tanks were unloaded at the Vopak Terminal Vlaardingen by a 500 tons CC2500-1 crawler crane in phase 1.

Due to the short installation time on site, foundations of the tanks were completed inclusive the thin oil-proof floor between the tank foundations. Outside the tank pit there was a small street, just big enough for a truck, so there was no room for the crawler crane. The crane had to be positioned inside the tank pit. The thin oil-proof floor couldn't bear any



pressure from our main crane LR1750. So the crane had to be supported by the tank foundations. To make this possible a detailed study was required to engineer a bridge from foundation to foundation that could support the LR1750 crawler crane. A 'detail' to keep in mind was the allowed maximum ground pressure onto the foundations during lifting operation. The concrete foundations were supposed to bear a ground pressure of 20 ton/m<sup>2</sup> maximum. With this limitation, it was necessary to choose a special configuration for the main crane LR1750. The crane was equipped with a combination of heavy and light boom sections, combined with less than normal counterweight. Positioned on a bridge of wood supports, wooden mats and heavy duty steel plates, ground pressure requirements could be met.

Once the SPMTs arrived in the tank pit on the bridge a mobile crane could be positioned behind. This assisting crane was required for attaching the slings to the tank. For unhooking it wasn't possible to place an assisting crane that could give enough radius to reach

to tanks. For this purpose, Wagenborg had to engineer an alternative solution. The Wagenborg engineers came up with an unique innovation: radio-controlled shackles with a capacity of 55Te each. For unhooking the slings, only a press on a button was enough to detach the slings from the tank. The new developed system was engineered, built, certified and tested in a short period of only 6 weeks and worked perfectly.



Jack Bienen, Project Manager at Wagenborg.

## AWARD WINNERS TRANSPORT UNDER 120T COLLETT & SONS

**Collett Transport recently completed the delivery of 2 Cyclone Vessels each 22m L x 6m Diameter x 40 Tonnes fabricated in Germany to Ferrybridge Power Station, Ferrybridge, UK via their heavy lift terminal in Goole.**

Twelve weeks before delivery, Collett Transport surveyed several route options to the job site before eventually settling on a high load route via Selby Town Centre and the A1M South.

This route included travelling through the centre of the historic town of Selby and was finally agreed upon after consultation and acceptance by the UK Highways Agency, North and West Yorkshire Police, motorway network managers and local authorities.

The route was chosen because access roads to the power station were restricted by a rail bridge of 5.2m height restriction to the East and a road bridge of 5.99m height restriction to the West.

However, the route did not take the loads to the site entrance because of these two low bridges, so the Collett Heavy Lift Division proposed and engineered a scheme to lift the vessels from the motorway utilizing a 1200t capacity mobile crane, positioned inside the Ferrybridge Power Station site.

Ten weeks prior to the transport from Goole, Collett Transport applied for a Temporary Prohibition of Traffic Order to



On the right: Eric Crosby, Heavy lift Projects Director receiving congratulations.



close a 14km section of the southbound carriageway of the A1M motorway in North Yorkshire, between 2000 Hours Saturday to 0700 Hours.

Residents en-route had been notified of the movement by letter drop and through local media.

Both loads departed from Collett Goole at 1800 Hrs on Saturday 10th August accompanied by police escorts and a wire lifting team, successfully completed the journey, without incident and were parked on the closed section of the A1M adjacent to the job site by 0100 Hrs on the 11th August.

Offloading commenced at 0200 Hrs.

After unloading Cyclone 1, the empty low loader proceeded onto the power station site, to reload the item and move it into position for unloading at a later date. The process was repeated with Cyclone 2.

Collett's scope of work included the traffic management scheme and lifting from the motorway.

The Project was completed on time, on budget and without incident.

We have entered this job for the **ESTA AWARDS OF EXCELLENCE 2014 TRANSPORT JOB OF THE YEAR ≤120T GVW** because we believe the length of motorway closure, the complex traffic management scheme, the number of authorities involved and the method for achieving final delivery onto the job site was unique.

The difficult aspects of this transport, other than the actual dimensions, was convincing the Police and Motorway Authorities of the viability and safety of the scheme, that it could be achieved within the hours of motorway closure approved and that a minimum of disruption would be caused to other road users and residents en-route.



## AWARD WINNERS TRANSPORT OVER 120T WAGENBORG

**Project: Transportation of the "Groene Verbinding A15" from NL-Flushing to NL-Rotterdam**

### Project summary

The "Groene Verbinding" is a pedestrian and bicycle bridge which is connecting the south of Rotterdam and the green area's outside the city. The bridge is almost 200 meters long, has a weight of over 600 tons and it crosses the Betuwe railway and the highway A15, one of the major Dutch highways. The bridge was transported in two parts of approx. 100 meters each from the production yard in Flushing to its foundation at highway A15 Rotterdam.

### Developing transport concepts

The steel bridge has been built by VDS Staal- en Machinebouw located in the port of Flushing. The original plan of the principal (the City of Rotterdam) was to prefabricate the bridge in Rotterdam between the A15 driving lanes near the bridge foundations. SPMT's were to be used for the final installation of the bridge. VDS however preferred to fabricate the bridge at their own premises at Flushing, where production circumstances were optimum. VDS asked Wagenborg if it would be possible to transport the bridge to Rotterdam in one piece. A short study (June 2012) showed that this was not feasible, however transportation of two 100 meter pieces could technically be realized. The plan was to load the 2 pieces at the VDS quays by a roll-on operation onto a pontoon, transport them to the port of Rotterdam, transship the bridges onto trailers and finally transport them to the final location by road.

### Final transport concept

In the end only one transport configuration was left; two dollies of 16 conventional axle lines each in a single configuration (2-file).



After two very complicated bridge crossings the 2 pieces were brought together and assembled in final position. By the end of 2013 VDS finalized welding both bridge parts together and the temporary support was removed. The bridge now spans almost 200 meter.



Søren Jansen and Ton Klijn.



**ALE was contracted to complete the skidding, assembly and float installation of two 2,700t bridge arches over the 500 meters wide river Wisła, in Toruń, Poland, which will become a traffic bridge and is a major investment in the region.**

### Overview of operation

- Jack-up of arch sections from building supports
- Skid 2 arch sections transversal towards lifting area
- Skid 2 arch sections longitudinal to connect the hinge used for lifting
- Lift 2 arch sections to create Arch #1
- Install Arch
  - o Load take-over by pontoon sets
  - o Install lattice boom between pontoon sets
  - o Float Arch towards end position
  - o Jack-up of Arch
  - o Lowering Arch onto abutments

### Execution

ALE began by jacking up the two sections of the first arch from the fabrication supports using eight 500te capacity climbing jacks which were placed on skid beams; the sections were then skidded towards each other and connected with two center hinges. A 55m high ALE gantry system was built up over the arch sections. The 1,350te capacity gantry utilized four 500te strand jacks connected with the anchor heads to the hinge point of the bridge. The



Søren Jansen and Markus Harris.

## AWARD WINNERS COMBINED TECHNIQUES ALE



gantry, consisting of tubular legs and two top beams weighing 44te each, was stabilized by means of four 100te strand jack mounted at each corner of the top beams.

Four barges were used for supporting the bridge in sets of two; each contained a support structure of approximately twelve meters in height. The stability of the support structure was realized by means of strand wires and bracing tubes.

On top of this support structure the ALE jacking towers were installed, with a capacity of 1,600te per barge set. The jacking system is self-stabilizing by means of the lifting island guided along the 30 meter long jacking masts. The gantry and skid system worked in unison to enable the transfer of the arch onto the barges.

Throughout the operation ALE had to ensure that careful monitoring was carried out. The river is well known for

unpredictable water height and high water speed. The water speed was between 2,0 and 3,0m per second during the float-in. Multiple hydraulic winches were used to rotate the bridge, and float it to its jacking position.

On the second day ALE jacked-up the arch 14 meters to its final installation height on the abutments. The jacking operation was executed simultaneously with the jacking towers and all bracing strand jacks. From here ALE followed an identical process to install the second bridge arch.





## AWARD WINNERS SAFETY LIEBHERR

**Liebherr-Werk Ehingen GmbH introduced in the year 2013 after a development period of three years the unique crane supporting program "VarioBase". The system will set new standards regarding safety of everyday crane jobs and reduce the risk of accidents caused by incorrect use considerably.**

During crane operation the extension position of each support beam as well as the support pressures are automatically captured. With this data

the crane control calculates exact load capacities and additionally the system now controls stability. Over the next months, "VarioBase" will be extended from presently four crane types to all machines, from 2-axle to 9-axle cranes.

Liebherr has developed a unique new system with each every individual crane support can be extended to any length and the crane operation is then made safe by the load moment limiter within the LICCON controller. By measuring the extension position of each support

beam with millimetre accuracy and by measuring the exact support pressure on the support plate, the precise maximum load capacity for every angle position of the superstructure is calculated by the crane control.

This means that for the first time it is possible to ensure safe working on any support base and prevent accidents caused by an incorrect setup by the crane driver or incorrect programming of the setup status.



Christoph Kleiner and Erwin Morath, leader of the VarioBase system development.

## AWARD WINNERS INNOVATION END-USER FAGIOLI

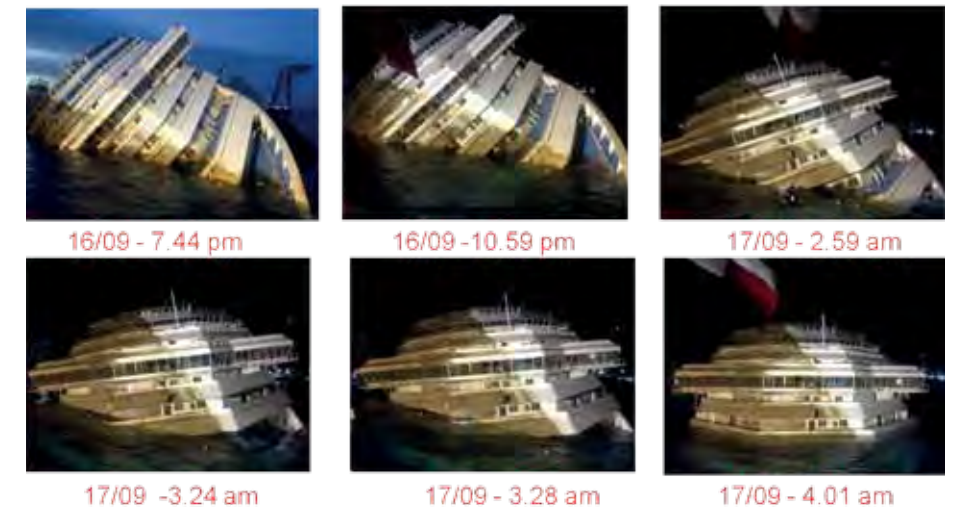
**After the accident occurred to the cruise ship COSTA CONCORDIA on 13th of January 2012, the main priorities for Costa Crociere was the removal of the wreck which came to rest on a rock ledge. Fagioli were awarded by Titan Salvage company in partnership with the Italian Micoperi consortium, a contract for the COSTA CONCORDIA WRECK REMOVAL PROJECT equipment and logistics support under the overall project coordination of COSTA CROCIERE.**

The operation started at 9.am. in the morning after a delay of a couple of hours due to bad weather condition during the night which removed some of the net barriers used to surround the operational area.

The wreck remained secured as a result of the Phase 1 Hold Back jacking system by means of 11no towers and 22no L600 strand jacks.

The total pulling force was up to 13.800 t. by means of N° 20 L450 strand jacks and N° 16 L300 strand jack (total qty=36).

Strand jacks load on parbuckling equipment were increased gradually in steps according to Salvage Master instructions, with continuous monitoring of movement deflections of the wreck. At the same time, continuous monitoring and set up of the loads in the strand jacks of the Hold Back Tower System were executed, to maintain the proper expected load distribution during the full operation. The wreck started rotating on itself with a consequent reduction of the angle between the keel of ship and the base of the lattice platform up to an equilibrium at 44° which represented the point of no return of the operation.



The pulling load was constantly controlled by the jacking systems.

During wreck rotation, the swinging platforms self-rotated and maintained horizontal position for proper functioning of the equipment on board. A particular control was paid to strand movement below and above the strand jacks, to verify proper movement and no interference, mainly through pipe guides. At 44° the strand was almost slack, and before strand jacks on lower sponsons entered in the sea water, the electrical / electronic equipment on the jacks were removed and power supply disconnected to avoid potential damages to Fagioli equipment by short circuit. From this point the control of the movement of the wreck and the completion of the parbuckling passed from Fagioli Strand jacks to the ballasting system of the sponsons.

At the final phase of operations, the wreck laid onto the base of the lattice platforms and controlled by means of the sponsons ballast system.

The parbuckling operation was safely completed at 4 a.m. of the 17th of September!



Fabio Belli.



## AWARD WINNERS INNOVATION MANUFACTURER MAMMOET EUROPE

After the major accident at the Chernobyl Nuclear Power Plant in Ukraine in 1986 a concrete sarcophagus was built over the reactor. As this is deteriorating our client Novarka is building the New Safe Confinement (NSC), an arch structure which will be placed over the plant to provide a controlled, weatherproof environment in which the reactor can safely be dismantled. The completed structure will be approximately 110 meters high and 165 meters long, with a span of 260 meters and a weight exceeding 35,000 tons. It is being assembled away from the reactor, in a decontaminated area where it is jacked up in stages, and will later be skidded across to the reactor.



Mammoet was commissioned to develop and operate a custom jacking and skidding system suitable for the harsh climate, repetitive operation and radioactive environment. Because of the radiation at higher levels above ground, even in the decontaminated area, the equipment has to be remotely controlled and extremely reliable.

### Strand jacks

The NSC arch is built in two sections, with three phases for each section. After each phase the newly added arch elements are raised by our strand jack system. More strand jacks are used for tie-backs, pretensioning and wind hold-down. The 56 jacks (capacity 300 - 900 tons each) are controlled by an enhanced version of our computer control system. The first part of the first arch section was initially jacked up to 53 meters, as more parts were added the structure grew to 85 meters and finally to 110 meters, with a weight of 14,500 tons.

### Skidding system

We developed and built a dedicated, fully remotely-controlled skidding system to reposition the arch sections during

construction and, in future, over the reactor. We have already installed 56 skid shoes with a capacity of 703 tons each. Once complete the 35,000-ton NSC will be skidded 300 meters across to the reactor, on 116 skid shoes.

There are two skid tracks on each side of the NSC. To optimize the load transfer to the foundations the T-shaped tracks are not installed horizontally, as with conventional skidding systems, but at an angle of approx. 45°. The tracks have pins on the bottom with engage with the foundations. After completion of the project the tracks will be removed. The computer control system ensures that all skid shoes are synchronized to avoid stressing the structure of the NSC. The skid shoes are relatively complex and offer several degrees of freedom, each skid shoe is equipped with:

- a lifting cylinder to lift the NSC off the foundations during skidding,
- a side shift cylinder to accommodate build tolerances and thermal movement of the structure
- a push/pull travel cylinder which moves the skid shoe along the skidding track and engages with the track using wedges.

To test the long-term reliability of the skidding equipment and the communication and control system we set up a special test rig in the Netherlands which is also used for operator training. Furthermore we used 28 of these skid shoes to transfer a 7,500-ton offshore jacket between two barges. This operation proved the effectiveness of the new skidding system.



Kees de Rijk (R) from Mammoet Europe.

## AWARD WINNERS SPMT SARENS NEDERLAND

Sarens Nederland executed the transport of a 360 tonnes wooden farmhouse called De Vechthoeve, publicly known as the "Pippi Longstocking house" in Muiden. The old farm house had to be moved 500 meters further down the river and back on land again with the use of 22-axle lines Kamag and a self-constructed sheetpile bridge.



John Patist (R).



The Dutch minister for Traffic assisted the transport.



# THE GINO KOSTER AWARD FOR PERSONALITY OF THE YEAR KARL GREINER

The 11<sup>th</sup> award for personality of the year, also known as the „Gino Koster award“ is for heavy haulage solutions inventor: Karl Greiner. Karl Greiner made a big contribution to the transportation material. Known for internal transport as well as road transport equipment in the heaviest class.



Karl Greiner passed away suddenly and unexpectedly on 3 August 2011, aged 71. The heavy haulage industry loses an important pioneer and forward thinker whose creativity and designs made such a significant and lasting contribution to technical progress in heavy and abnormal load haulage.

Karl had been in the best of health and fully active. Until the end he was totally dedicated to the heavy haulage sector, and was still full of ideas and plans.

Karl Greiner was born on 24 December 1939, and after his education he first worked in aircraft construction. In 1966 he moved into the heavy haulage industry, where he played a major part in developing hydraulic platform trailers and modular vehicles, and where his influence can still be seen to this day.

Greiner Fahrzeugtechnik was started up by Karl and Margot Greiner in 1980,

originally as a design office. At first the founders had no intention of manufacturing products themselves at their company, yet while they were still in their first year of existence a meeting took place which led to a contract that was to change everything.

August Alborn of Dortmund required a specially-designed industrial low-bed hydraulic platform trailer for his haulage company for abnormal loads, to be used for internal company relocations. The resulting heavy load trailer is still putting in good service today at Alborn, and over the years Greiner has supplied its "founding product" in many variants to countries all over the world and has constantly refined it.

Karl and his team went on to develop many other products, with the first loading platforms and self-propelled unloading bogies with payloads of up to 400 t soon in production.

Karl's pioneering spirit and technical nous were the creative forces behind many heavy haulage products. His most remarkable achievements include developing the first lifting system to European standards in 1999, the combination platform trailer with its incredibly low overall height of only 720 mm, a lifting-lever boiler deck, the biggest in Europe at the time, which was expanded in 2010 to take a payload of almost 600 t, and the innovative hydraulic-mechanical bridge crossing system for Airbus. Until his death, Karl was fully involved in the development of the SEFIRO self-propelled industrial trailer.

The company's production capacity and product portfolio had expanded steadily, and Karl was looking forward to an open day for business partners and friends to celebrate the opening of the new building planned for 2012.

As early as 2004 Karl ensured that the company would continue to run smoothly after he was gone by putting his son Michael in place as a chief executive. With his mother Margot and his sister Corinna, and backed by a highly motivated team of experts, Michael Greiner is continuing the life's work of his father, and upholding all the values which so characterised it.

Away from his work, Karl enjoyed spending time with his family and friends, and going shooting. He leaves his wife Margot, his two children Michael and Corinna, and four grandchildren.



Michael Greiner receives the Gino Koster Award on behalf of his father Karl.



**Cranes telescopic lifting capacity ≤ 120 t**  
Koninklijke Saan B.V. [Netherlands]  
Karen van Oorschoot Kranen [Netherlands]  
**Nordic Crane Stangeland AS [Norway]**  
Wagenborg Nedlift B.V. [Netherlands]

**Cranes telescopic lifting capacity > 120 t**  
Aertssen Kranen NV [Belgium]  
Fagioli SPA [Italy]  
**Michielsens NV [Belgium]**  
Sarens BV [Netherlands]

**Cranes Lattice Boom**  
ALE [United Kingdom]  
Sarens NV [Belgium]  
Sarens BV [Netherlands]  
**Wagenborg Nedlift B.V. [Netherlands]**

**Transport A. Trailer and load under 120t GCW [Gross weight]**  
**COLLETT & SONS LIMITED [United Kingdom]**  
Gaffert B.V. [Netherlands]  
Koninklijke Saan B.V. [Netherlands]  
Transport Company Ville Silvasti Ltd [Finland]

**B. Trailer and load over 120t GCW [Gross weight]**  
ALE [United Kingdom]  
Fagioli SPA [Italy]  
Sarens NV [Belgium]  
**Wagenborg Nedlift B.V. [Netherlands]**

**Combined Techniques**  
**ALE [United Kingdom]**  
Felbermayr [Austria]  
Mammoet B.V. [Netherlands]  
Sarens NV [Belgium]

**Safety**  
Aertssen Kranen NV [Belgium]  
ALE [United Kingdom]  
**Liebherr-Werk Ehingen GmbH [Germany]**  
Michielsens NV [Belgium]

**Innovation End User**  
**Fagioli SPA [Italy]**  
Gaffert B.V. [Netherlands]  
Mammoet B.V. [Netherlands]  
Sarens NV [Belgium]

# ESTA AWARDS 2014 SHORTLIST NOMINEES



**Innovation Manufacturer**  
Liebherr-Werk Ehingen [Germany]  
**Mammoet B.V. [Netherlands]**  
Peinemann Kranen B.V. [Netherlands]  
Terex Cranes [Germany]

**SPMT**  
Fagioli SPA [Italy]  
Hareket Heavy Lifting and Project transportation Co. [Turkey]  
Mammoet B.V. [Netherlands]  
**Sarens BV [Netherlands]**



Wim Richie, chairman of the award committee.

















#### The ESTA Autumn meeting 2014| Autumn 2015.

The following schedule will be maintained:  
*October 16th|17th, 2014, Istanbul, Turkey*  
*April 23rd|24th, 2015 INTERMAT PARIS*  
*October 15th|16th, 2015 Bergen, NORWAY*  
 The ESTA Office Management is in close contact with our Special member Hareket, our host for the meeting in Turkey. Also the ESTA Office Management is in close contact with our Ordinary member Kranutleirnes Landsforening our host for the meeting in Norway.

For the Autumn 2016 meeting the General Assembly is asking for suggestions. A final decision will be made at the ESTA Autumn meeting *October 17th, 2014, Turkey.*

## NEW MEMBERS

**Van Schaften Leasing B.V.** (Schiedam, The Netherlands) is a business unit of Van Schaften Trucks BV, established by Johan van Schaften Sr. in 1977. Van Schaften Leasing BV is a fully independent organisation which provides various types of leases for heavy commercial vehicles and cranes. They have a professional team of 20 staff members to advise potential customers on choosing the right type of lease.



The Van Schaften team.

#### Köhler Kran-Service GmbH

(Heppenheim, Germany) has been active in crane repairs for more than 40 years. The company is 100 % family owned and was started in 1970 by Köhler, who previously worked as a mechanic for Coles Cranes. His son Andreas Köhler joined the company in 1995 and is the managing director today. In 2000 the younger brother Jochen took over the spare part business. Köhler has some 55 employees.

**GE Wind Engery GmbH** (Germany) is a brand of GE Energy, a subsidiary of General Electric. The company manufactures and sells wind turbines to the international market.

**Euro-Rigging B.V.** (Utrecht, The Netherlands) are independent advisors and engineers specialized in the field of heavy mechanical engineering in the broadest sense and with specialist knowledge of lifting systems and heavy transport.

Over the years Eurorigging has acquired a great deal of expertise in the fields of: Advise for special lifting and haulage jobs. Design and engineering of heavy mechanical constructions. Carrying out complicated engineering calculations. Euro-Rigging's customers include manufacturers of heavy equipment, offshore and process industries, public contractors and piling companies. Examples of used techniques are: 3D/2D: Solid Works, Solid Edge, ProEngineer, Autocad Mechanical FEM Analysis: Patran-Nastran, Femap / NX Nastran, Pro-Mechanica Calculations: Mathcad, inhouse developed Euro Rigging software

#### 3 Examples from Euro Rigging:



**DOLL Fahrzeugbau AG** (Germany) a European manufacturer of special transport trailers. Their customers are mainly active in heavy haulage, the forest industry and the military. DOLL



Fahrzeugbau AG is a family-owned company in the fourth generation which has established itself in its markets as a high-tech specialist for transport solutions.

#### DAN-CZECH SPECIAL TRANSPORT s.r.o

(Czech Republic) is a 'special ESTA member' representing the Czech Republic. The business started in 1995 with branches in Pilsen and Ostrava. They are active in road transport, international forwarding and trading.



**McNally Crane Rental** (Ireland) is a family company started by Dan McNally in 1958.

Since the seventies they have been supplying general crane hire and contract lifting to ICPA/CPA conditions. Heavy cranes up to 1200t capacity and 100m mobile access platforms. Tower crane erection and dismantling with personnel, installation. Expert specialist available for site surveys and reports. Qualified engineers who can complete full Autocad lift studies. Haulage with heavy ballast trailers and extendable trailers. Wind industry applications. McNally is internationally active in the whole world.





## ESTA MEMBERSHIPLIST

### Ledensoort

Ordinary Members	Heavy Transport Association
Ordinary Members	International Transport Danmark
Ordinary Members	RAI(afdeling speciale voertuigen, sectie aanhangers en opleggers)
Ordinary Members	Transport Logistiek Nederland (TLN)
Ordinary Members	INFRA ry
Ordinary Members	Kranutleiernes Landsforening
Ordinary Members	Mobilkranföreningens Service AB
Ordinary Members	Construction Plant-Hire Association
Ordinary Members	Union Francaise du Levage
Ordinary Members	Vereniging Verticaal Transport
Ordinary Members	Dansk Kran Forening
Ordinary Members	Vereniging van Belgische Kraanverhuurders
Ordinary Members	Bundesfachgruppe schwertransport und kranarbeiten (BSK)
Ordinary Members	ASTAG Fachgruppe Krane
Ordinary Members	Associazione Nazionale Noleggi Autogrù e Trasporti Eccezionali [A.N.N.A.]
Special Members	Transport Company Ville Silvasti Ltd
Special Members	DAN-CZECH SPECIALTRANSPORT s.r.o.
Special Members	Spatharas Bros Co.
Special Members	Dan Mc Nally Ltd.
Special Members	Felbermayr Transport & Hebetechnik
Special Members	Hareket Heavy Lifting and Project Transportation Company
Affiliated Company	SCHEUERLE   NICOLAS   KAMAG [TII Group]
Affiliated Company	RDW Divisie Voertuigtechniek TET
Affiliated Company	Goldhofer Aktiengesellschaft
Affiliated Company	DOLL Fahrzeugbau AG
Affiliated Company	Faymonville AG
Affiliated Company	Broshuis International B.V.
Affiliated Company	Kässbohrer
Affiliated Company	Terex Cranes Germany GmbH
Affiliated Company	Palfinger Platforms GmbH
Affiliated Company	Sany Germany GmbH
Affiliated Company	Van Schaften Leasing B.V.
Affiliated Company	Manitowoc Crane Group SAS
Affiliated Company	Köhler Kran-Service GmbH
Affiliated Company	Sennebogen Maschinenfabrik GMBH
Affiliated Company	BMS A/S
Affiliated Company	WorldPower Erkin Ltd Co.
Affiliated Company	Spierings Kranen B.V.
Affiliated Company	Hovago Cranes B.V.
Affiliated Company	TADANO FAUN GmbH
Affiliated Company	Re-Move Leasing B.V.
Affiliated Company	Kobelco Cranes Europe
Affiliated Company	Aboma B.V.
Affiliated Company	VestKran
Affiliated Company	Liebherr-Werk Ehingen GMBH
Affiliated Company	Havator Group OY
Affiliated Company	RUD Ketten Rieger & Dietz GmbH u. Co. KG
Affiliated Company	RITCHIE Bros
Affiliated Company	SHELL Global Solutions International BV
Affiliated Company	Palfinger SANY International Mobile Cranes Sales GmbH
Affiliated Company	LGH Hjsmaterieel B.V.
Affiliated Company	Ahmet Yiğit Ağır Nakliyat [Ahmet Yiğit Ağır Nak.Harf.San.ve Tic.Ltd.Şti.
Affiliated Company	GE Wind Energy GmbH
Affiliated Company	Ko-Mats GmbH
Affiliated Company	EURO-Rigging B.V.
Affiliated Company	Siemens AG
Affiliated Company	Nordic Cranes Group AS

**Bedrijfsnaam**

Heavy Transport Associasion  
[International Transport Danmark](#)  
 RAI(afdeling speciale voertuigen, sectie aanhangers en opleggers)  
[Transport Logistiek Nederland \(TLN\)](#)  
 INFRA ry  
[Kranutleiertes Landsforening](#)  
 Mobilkranföreningens Service AB  
[Construction Plant-Hire Association](#)  
 Union Francaise du Levage  
[Vereniging Verticaal Transport](#)  
 Dansk Kran Forening  
[Vereniging van Belgische Kraanverhuurders](#)  
 Bundesfachgruppe schwertransport und kranarbeiten (BSK)  
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 Hareket Heavy Lifting and Project Transportation Company  
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[Ahmet Yiğit Ağır Nakliyat \[Ahmet Yiğit Ağır Nak.Harf.San.ve Tic.Ltd.Şti.](#)  
 GE Wind Energy GmbH  
[Ko-Mats GmbH](#)  
 EURO-Rigging B.V.  
[Siemens AG](#)  
 Nordic Cranes Group AS

## Land

UNITED KINGDOM  
DENMARK  
NETHERLANDS  
NETHERLANDS  
FINLAND  
NORWAY  
SWEDEN  
UNITED KINGDOM  
FRANCE  
NETHERLANDS  
DENMARK  
BELGIUM  
GERMANY  
SWITZERLAND  
ITALY  
FINLAND  
Czech Republic  
GREECE  
IRELAND  
AUSTRIA  
TURKEY  
GERMANY  
NETHERLANDS  
GERMANY  
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BELGIUM  
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NORWAY

## Werkgebiet

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## Internetadres

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