PLASA Rigging Conference 2010

On 13 and 14th September a rigging conference was held during the PLASA exhibition in Earls Court, London. In two day's time about 10 speakers from various companies and organizations gave interesting lectures about technical, insurance and legislation issues; and above all talked about 'an international rigging certificate'. Every lecture took about 45 minutes, and after that everybody had about 15 minutes chance to ask questions or to elaborate on the topic. A panel of 5 persons who had experience in the topic sat on stage too, to give more background to it.

Here's a summary of the program:

Monday 13 September

09:30 Welcome & introduction
- Matthew Griffiths, CEO, PLASA;

- Chris Higgs, Rigging Training Manager, Total Solutions Group
Well, this was as you would expect an opening to be

09:45 Opening presentation
- Alan Jacobi, CEO of Unusual Rigging
Unusual Rigging describe their work and the pivotal role Unusual has played in the development of rigging in the UK.
AJ described, with lots of humor - and lots of curses, like old school riggers tend to do - how rigging evolved from hanging a simple front truss with 20 par cans from two hemp sets in theatre, to the introduction of the chain hoist, and the fact that things were to be suspended from the roof for the first time. This actually meant someone had to go up there.. and the 'rigger' was born. Key of his speech was that we never say 'can't be done' and that it always comes down on the riggers shoulders, especially when shit hits the fan. The attitude towards doing the work that we do every day, is what makes us a special breed.
It was a very nice story, or speech, when you think of the message, in which all riggers could hear his or hers own story. A brilliant opening.

11:15 Rigging qualifications
- Nicky Greet, PLASA
Information from PLASA Qualifications on the progress of the National and International Rigging Certificate schemes.
Nicky told us the NRC (National Rigging Certificate) actually was brought about by the (rigging) industry itself: rigging, staging and other companies came to

PLASA with the question to host the process of setting up this certification scheme. It only took about three years from the moment of initiative that the first trial assessments where done in 2008/2009. The NRC is very much a practical certification; and during three days of work you are actually being assessed while doing your work. And part of the assessment is that you're pointed towards possible improvements of your skills.
The NRC knows 4 levels: entry, experienced rigger, head rigger, and head of a rigging company. Currently only level 2 and 3 can be assessed, level 4 is in development, and level 1 will come later. Soon the 'direct entry period' will expire in which you can directly be assessed in level 3; this is done to streamline the existing situation to the NRC levels. Later on you will need to step through lower levels first to get qualified for a higher level.

PLASA proposed to spread this scheme through Europe, to setup a committee in each country for it, containing 3 workgroups, and get started with it. In Sweden and Portugal this process had already started. There was some scepsis about this plan among non-UK based riggers, maybe because they have their own schemes running and the legislation in each European country is so different, maybe because it's all practical, and - as it seems - not very theoretical.

Totally theoretical was not commonly felt as the solution either. Bill Sapsis told us of the ETCP program that has a theatre and a arena rigging certification program: this is done with a computer, since it's only an examination, and 'a big country'. A lot of UK-guys thought little of it, but Bill explained that it would be virtually impossible to pass the exams, without extensive practical knowledge. Rinus Bakker (EU-citizen that passed the ETCP Arena-rigging in Nov 2005) could definitely corroborate this.
The reason for this lies in the fact that you need some verified credits from 3rd parties: you will only get these if your background knowledge and experience is sufficient. The ETCP program is supported by the major part of the entertainment industry and therefore stands much stronger than individual companies. Reason for this support and 'monopoly' lies in the risk of a single 'training company' possibly getting sued in case it would forget to tell a rigger about something that might lead to damage or even injury; and in most cases that could mean the end of the company, with the size of the US liability claims and the fees for lawyers in mind. So the individual companies don't certify, and on the other hand, the ETCP doesn't train. And thus it's basically not very much different from the 'NRC', that also recognizes training companies, and has a separate pool of assessors.

Anyway: during the conference the certification issue came back a few times, but there was no consensus on how to do it. And it was definitely a matter of interest

on how PLASA and ESTA would merge their different certifications schemes after these two organizations will have merged after January 2011.

12:15 Got it covered?
- Murray Torrible, ……..?……..

Insurance for rigging activities including exclusions and common pitfalls in arranging cover. What may not be covered when it comes to a claim?
Murray told us about these small lines in our insurance papers, and gave us many examples of things generally assumed as being covered but actually were *not*. And first of all: why insurance. The latter is easy, but not always clear to us: insurance is "transferring a risk you cannot afford". But mind you: insurance companies are profit driven, so they are actually keen on not paying your claims!
A few pitfalls:

- most policies contain a height limit: above this the insurance is not applicable.
- 'equipment being worked on' usually is not covered: so if you handle a chain hoist, and accidentally damage a piece of the building, the building is covered but the hoist not. Either so when you repair a hoist
- the term 'employee' can be wider than you think: it might actually be someone from an other company, accidentally passing by, who you ask to help lifting something, he then is "under your control / working for you" and his and/or your insurance might not cover any damage caused by him.

The message of Murray is simple: in case you're in any doubt whatsoever on the policy, ask your insurance company - and get it on paper!
One big question from the audience was: when a rigger gives a wrong judgement, and damage or injuries are a result from that judgement. The answer to that is a special insurance that covers risks due to the profession itself.

14:00 Venue rigging and the installation of mother-grids
- Roger Barrett, Star Hire / - John Jones, LTM

A session examining the materials and engineering used for mother-grids, the ethos behind their use in relation to working at height and safe lifting systems.
Question for many venues with frequent shows is how to reduce the working at height hours *(WAHH's)*. This can indeed be done by installing a mother grid, that can be lowered to working height for each new show. But many roofs are not able to support a mother grid in a simple way: after lifting the grid, together with the chain hoists for the coming show, extra dead hangs need to be put in place to divert the loads to the roof in a safe way.
Furthermore, there's the question of hoist running sync: if one hoist fails, what happens to the grid. Roger Barrett gave the example of a truss with some hoists each 5m, taking 3 tons each: in case the hoist fails, the question is weather the

truss can take up to 6 tons ("UDL") at a span of 10 meters. To cope with this risk you can install load cells and encoders at each hoist.
According to Roger steel can help in this case, compared to aluminium. With aluminium the limit is defined by deflection, with steel by the yield stress. Meaning: aluminium is too flexible and in the case above the truss can collapse easily, whereas with steel truss the load of the failing hoist will be redirected immediately towards the adjoining hoists. Since new techniques allow the use and welding of thin wall steel tubes, a grid of steel can be made the same weight as an aluminium grid, with the same 'strength', but with different 'strength behavior'.
But Roger's story was so flaky, that the audience could not make up the 'pro's' from his story, and engineers from well respected truss manufacturers were too astonished to even respond to his story. Some others surely made critical remarks on it.
Braces were left out in the steel grid, drastically changing the structural behavior welding centers of diagonals were put outside the main chords (misnodding!) and so forth. It didn't follow the basic truss design rules as we know it... It was a nice new view on the metal called steel, but sounded like a lot of 'wizardry', when not being able to specify which 'high strength' steel alloy was compared to what type of aluminium alloy.

We know about bike manufacturers using steel again, after an era that everyone got into aluminium and even carbon. That made bikes stiffer, and more lightweight; whereas steel (and titanium) give you more elasticity, will dampen the bumps in the road better and give you more comfort. Hell, in Amsterdam we even had the introduction of an aluminium light rail that gave all tram-drivers a bad back due to long and frequent exposure to extreme vibrations.
Well, it gave a lot of us the impression of "how to disguise being cheap" and was still good for a laugh on the 2nd day and even after the conference.

15:30 Secondary suspensions; making safety secondary?
- Cristiano Giavedoni, Colombus-McKinnon, Europe
Myths and legends surrounding what the law requires, the best methods of safely suspending loads and the potential effects of shock loads on materials and structures. Christiano is a comic artist in his spare time. He told us a story of the Italian rigger Mario, who took his 4 chain hoists and did a little tour through Europe. And with every country Mario visited Christiano made some very funny drawings of Mario in local clothing confronted with local rules and laws about the 'second suspension'.
In the Netherlands Mario was confronted with some very unclear text about 'lifting equipment designed for use with increased risk'. Luckily he could also simply derate the WLL by half.

In England he was confronted with the BS7606 confused him because he needed a type A or a type B hoist, and what type did he bring?
In France.. they have really gone nuts: you always do need a second suspension, but it shall not be of the same type as the primary. So you can secure a hoist by a fall arrester, or steel wire rope; but not by a second hoist...
And than Mario got to Germany.. Christiano had drawn a very nice picture of Mario hiding behind some flight cases, scared as Hell from the 'BGV-C1 monster'. Well, don't need to talk about that any further.

So, some streamlining between all countries would be nice. Christiano asked us how many of us actually had seen a brake fail, causing damage. Only Alan Jacobi had seen a serious brake failure, and that was only because of serious maintenance neglect. So, do we need double brakes? Can we not allow the clutch between the brake and the lift wheel? After about 50 years of rock-and-roll touring it appears that our (standard) equipment isn't that bad at all.

Christiano suggested that the EU document recently drawn up, the CWA 15902 should be paired with something like the National Rigging Certificate: that would give us far more guarantee for safety than all kind of bells an whistles mounted on our chain hoists.
When asked to put our hands up, almost everyone agreed that some kind of EU / worldwide riggers certificate is needed.

16:30 Q&A / summary session
I did not make notes on the discussion, but it surely was about the riggers certificate.

17:00 'At Breaking Point' Demonstration review

This was a demonstration of what a PAR 64 lamp can do to a fibre round sling: It can easily lead to melt down when you put the PAR near to the round sling, and a steel wire rope's talurit can hold it much longer. For the fabric round sling it's only minutes, the steel one can take up to 20 minutes, if I recall it correct. Of course it helps that steel can transfer the heat by itself, whereas polyester is not able to transfer the heat at all.
Funny that a demo like this would be a topic at all, as it is pretty much common knowledge throughout the international rigging industry for at least a decade.

Tuesday 14 September

09:15 Lifting accessories - definition, inspection and marking
- Kevin Crilly, Lifting Equipment Engineers Association (LEEA)
The session will consider the definition of rigging and if legislation written for lifting equipment is always applicable to entertainment industry rigging. The distinction between lifting and suspension and thus the requirements for inspection and marking 'lifting accessories' will also be discussed.
Kevin Crilly is an engineer at the LEEA, the Lifting Equipment Engineers Association. That started in 1944 as the Chain Testers Association, and has now 400 member companies in 32 countries. LEEA has a code of practice, the CPOSULE and was one of the main contributors to the UK LOLER set of regulations.
Kevin addressed two issues: the use of long link chain as length-adjustable lifting accesoiry and the question 'should a shackle be marked?'
Everyone knows long link chain like the stac-chain is a cheap and very handy accessory to put you rigging points at the right spot. And.. everyone knows they formally are prohibited to use in lifting applications by the Machine Directive. (Kevin only mentioned the BS guidelines though). His answer to the problem is to formally make it a 'standing rigging', instead of a lifting application. Yeah... what's the WLL of this 'semantic'?
So, should a shackle be marked with a serial number? According to the BS 7906-1 every piece of (lifting) equipment shall be marked. Sadly Mr Krilly did not put this in a European (or even worldwide) perspective, and his reference to the documentation of shackles aboard a Royal Navy warship was not very illustrative and helpful either. Furthermore in the Machine Directive there is a difference between 'machinery' and 'equipment' and 'accessory', also with regard to the marking requirements, this was not addressed very clear. And thus in Kevin's firm opinion every shackle should be marked. Even though he does not have the answer how that should be done with the smaller ones, and even though he does see the enormous task for rigging companies with several thousands of shackles in their shop. Nice...

10:00 You want to do what?
- Conrad Schwarz, ...
What information is, or should be, exchanged between clients, venues and contractors - and why.
Conrad Schwarz is technical director of a venue for 12 years now. He puts the finger on an open nerve that exists between venues (and their duty holders) and organizations that hire those venues considering responsibilities. We all know this sentence 'the show must go on' and the fact that in our business one cannot postpone a deadline: the audience simply will be gone home.. So the economic

relationship between both creates a tremendous drive to go through, even when things clearly are not going well, of when safety is at risk.
In his opinion we should draw up a scheme in which all responsibilities are laid out much clearer than they now are.

11:15 Load monitoring: 'It's only supposed to weigh a tonne!'
- Ilan Bahar, Eilon Engineering
A presentation about the unpredictability of load distribution on structures in rigging, why load monitoring is so important and how it can be achieved.
Ilan Bahar showed us some video's of a piece of truss, lifted by three hoists, as a statically indeterminate beam. With his load monitoring system he showed us how much the real weight can differ from the calculated weight by bumping the middle motor up or down a little, or even after lifting the rig a few meters up.
He also showed a scary animation of hoist failure that led from such a difference; and he showed us a calculation to explain. Unfortunately some 'vidiot' without much understanding of rigging principles made it for him, apparently, because he managed to give one of the outer hoists about 85% of the load. A bit too much of a difference to the well known UDL 19-62-19% load distribution scheme...
[Avatar was a beautifully animated movie too...]
Two serious comments can be however:
One, it is indeed a fact, that how much experience you might have as a rigger, these load discrepancies between actual an calculated load ***will*** occur. And thus, in case it really comes to it, you will need load monitoring.
Second, the experiment was held with comparatively stiff (52 cm GP) type of truss and very small (~ 3m) spans between the hoists. In real life we tend to use smaller (= more elastic) truss at longer spans. The latter means that small differences in lifting height will not make that much difference in the point loads.
But the heavy LED video screens certainly do require attention towards this phenomena!!

12:00 Fall arrest forces on hoists and trusses
- Marc Hendriks, Prolyte Products / - Bill Sapsis, Sapsis Rigging
Forces and how they relate to the structures to which people might attach themselves, in particular trusses.
Marc Hendriks is technical director at Prolyte, a Dutch trussing manufacturer. He gave us some insight in the use of horizontal fall arrest lines on truss constructions. He showed us two movies of a falling load (appr. 80 kg) that was pulled of a standing truss construction: one with and one without a shock absorber. The load was connected directly to the 30 cm triangle truss, a horizontal lifeline was not used. Guess what: without an absorber the truss immediately collapses. Marc's message was clear: since we do not really know

what happens when picking up the fall in terms of diverting the forces to the horizontal line, the connectors of that, the truss the connectors are attached to etc, you better not climb truss! (meaning, not fall from it ;-))
Problem is that all existing standards address permanent installations on buildings, and equipment is manufactured accordingly. Imagine an anchor point in the middle of a truss span of 10 meters: it should be able to hold about 2 ton, according to the standards!
Bill Sapsis had done a little questionnaire to three fall arrest line manufacturers: about their policy towards the use on truss constructions. Only one actually did get back with an answer: derate the truss capacity by half.

14:00 Rescue demonstration
- Harry Box, UK Rigging
Demonstration of rescue following a fall arrested by a lanyard.
This was a nice demo.. but the organization forgot about the fact that when someone addresses a 100+ audience in a very noisy exhibition venue, some kind of sound system should be installed to be able to hear the explanations on the things and methods in the demo. I got myself a nice cup of coffee, and so were a lot of other people.
PLASA later on apologized for the omission.

15:15 Automation - equipment, skills and future trends
- Mark Priestley, National Theatre.
A review of automation technology in theatre and its application to the wider entertainment industry with regard to short production design lead times, reliability and cost and the additional skills requiring to be mastered by the rigging industry.
Marc Priestley formerly worked at Charcoal Blue, an automation company, and now at the National Theatre, using Charcoal Blue equipment. He proclaimed that when you look at atomization in the event industry at this moment you will find lots of EU and non-EU standards, and it's ever increasing. What would be the best to follow, and how should it be interpreted. E.g. this BGV-C1 is not so much about the double brake hoist itself, but merely about the automatization around it, and that's what most people don't have straight. Perhaps it would be wise when organizations like ABTT and PLASA would take the initiative to get their hands together and streamline the whole lot about SIL, C1, CWA15902 etc.
But guidelines for manufacturing is not the only important thing to ensure safety: *you cannot separate operating skills and mechanical awareness:* a good operator is a rigger with some extra skills! Many of us agreed on that.
In the 15 minutes of 'panel time' some good comments were made:
- It would be nice to set up a wish list to get to a modular and universal system
- In Canada they have drawn up a code of practice for operators

- At the moment we use 3rd generation systems, key to the 4th generation is mating of components and product, and that would mean standardization in protocols. But in the latter manufacturers are very reluctant.

16:15 'Question time' – Alan Jacobi

Most of the things had passed, and everyone felt very happy about the past two days of conference. In fact, little over half of the attendants were not British, but from the US, Canada, Australia, NewZealand, Germany, Holland, Portugal, Isreal Belgium, Sweden...
So it was a very international crowd up there, with many common worries and day-to-day struggles.
It was greatly appreciated that PLASA had picked this up and set up the conference, many thanks were given to the organizers.
If all goes well we'll have a conference every two years, and to get it started PLASA will try to organize it next year also.

17:00 Closing summary [Chris Higgs] & drinks

And we had another few beers afterwards! (talking about rigging makes you thirsty, strange isn't it..?)

This document can be found at www.argh.nl, the website of the Association of Riggers and Grounders in Holland.
At our website you can find much info like information about equipment use, regulations, in Holland and in other countries.
In the future we will e.g. have an on-line vocabulary with languages like Dutch, English, German, French, Spanish, Russian, Portuguese etc.
If you would like to help out and give us information about things not mentioned on the site, or make comments, please don't hesitate and mail us at info@argh.nl