

Ron StageMaster Load Monitoring System For Convention Centers

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www.ronloadcells.com



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Weighing Systems Ltd.



This presentation includes:

- 1. Safety - The Challenge of Complex Rigging**
- 2. Safety – Examples of Rigging Collaps**
- 3. Safety – New European Standard Requires Load Monitoring on Stage**
- 4. Other Advantages from Load Monitoring**
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Safety - The Challenge of Complex Rigging

Today's show and tours are experiencing an ever increasing level of complexity. Riggers are required to fly heavier and more numerous pieces of equipment commonly over the heads of exhibitors, visitors, spectators and performers.

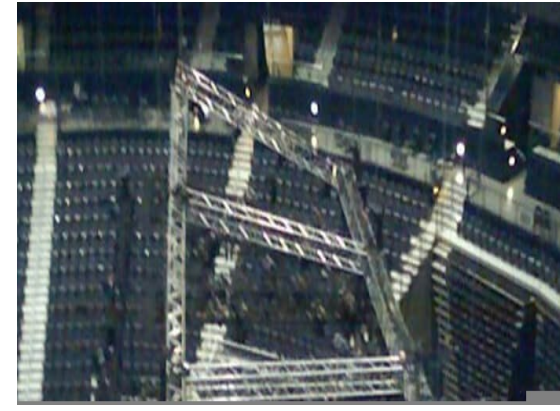
Due to a phenomena in physics called indeterminate structures, the load distribution of a suspended structure with more that 2 hanging points is effectively unknown and incalculable. Consequently, there is potential for dangerous overloads even on structures that appear visually balanced as some points carry greater loads than others.

Due to the incalculable nature of the load distribution on an indetereminate structure instuments must be used to measure actual loads and ensure even distribution.



Safety – Examples of Rigging Collapse

<https://www.eilon-engineering.com/about-us/preventable-accidents/>



Safety - New European Standard Requires Load Monitoring on Stage

EN 17206 Entertainment technology – Machinery for stages and other production areas – Safety requirements and inspections

Requirements:

- Protection Against Overload
- Protection Against Underload
- Protection Against Load Variation
- Slack Chain Detection

In the spring of 2020, the long-awaited European standard for safety requirements of stage machinery based on CWA 15902-1 was approved by Technical Committee CEN/TC 433. Within a few months EN 17206:2020 was adopted by several European countries that voted for the approval and implementation of this new standard that will bring a common level of safety for stage machinery and control systems across Europe: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Lithuania, Luxembourg, Netherlands, Poland, Serbia, Slovenia, Spain, Sweden and the United Kingdom.

Other countries are expected to adopt this standard in the near future.



Other Advantages of Load Monitoring

- Safely host **larger and heavier shows**
- Safely make use of **older buildings with load limitations**
- **Shorten the time** between one show to the other (load-in/load-out)
- **Increase revenue** through rental fees for load monitored hanging points
- Eliminate the need for **excess lifting equipment** for risk mitigation
- **Reduce insurance premiums** through quantifiable risk reduction
- Protect **exhibitors, performers and audiences**
- Protect the **rigging infrastructure**
- Protect **expensive equipment**
- Protect from accidents and potential **litigation, damages, risk to reputation and venue shut down**
- Keep your venue on the cutting edge of **technological advancement**



Other Advantages of Load Monitoring

Accurate load measurement instead of estimates:

“Apart from greater safety, this also provides certainty as to the forces that can be applied to the roof constructions and to the possibly existing reserves. Thus, new fair stands can be achieved, the likes of which have never been known before”

- Udo Oerther – Head of the SAG at Nürnberg Messe Exhibition Center



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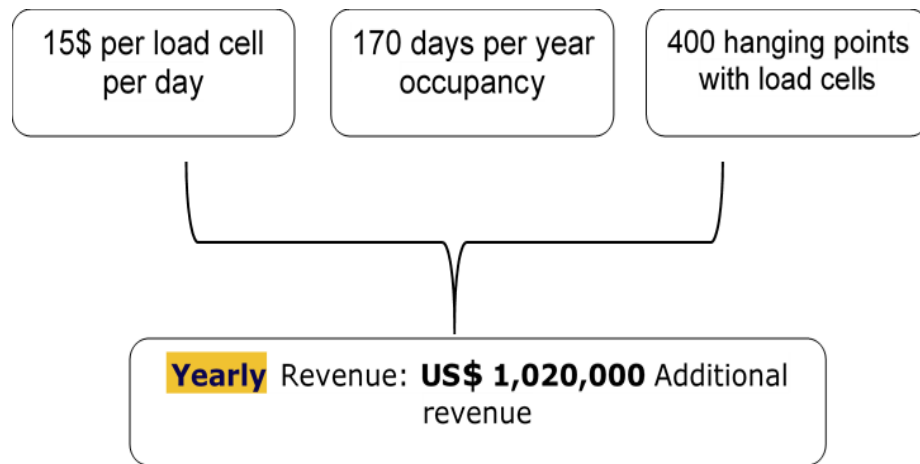


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Additional Revenue Calculation

Example of yearly revenue from a load monitored venue:



Cost estimate for system described above

Approximately 400 load cells x \$1,600 per load cell cost (need to add receivers, carrying cases etc)

One-time Cost: US\$ 640,000. Fast ROI

Examples of Projects

Case study # 1: Nuremberg Messe 2015 - Ron StageMaster load monitoring system with **400 load cells**

"Prior to the installation of the Ron StageMaster system, since 2011, SAG has been verifying the load monitoring systems of various manufacturers, has determined further developments, and finally has tested and continually adjusted for an entire year a system that should fit exactly the requirement of the Nuremberg Fair Trade. The load measuring system made by Eilon Engineering, came closest to meeting the requirement profile." Udo Oerther – Head of the SAG at NürnbergMesse Exhibition Center

Case study # 2: Malaysia International Trade and Exhibition Centre 2020

- A Ron StageMaster load monitoring system with **400 load cells** was purchased.

Case study # 3: Hong Kong Leisure and Cultural Services Department 2017

- Ron StageMaster load monitoring systems for **all theaters in Hong Kong**



Examples of Projects

Other venues we work with:

Orange County Convention Center – USA

Las Vegas Convention Center – USA

Malaysia International Trade and Exhibition Centre - Malaysia

Messe Gratz - Austria

Munich Olympia Park - Germany

Messe Dusseldorf - Germany

Finnish National Opera - Finland

Royal Shakespeare - UK

Seattle Opera - USA

Nuremberg Messe - Germany

Chicago Shakespeare Theater -USA

Casa da Musica - Portugal

Esplanade Theater on the Bay - Singapore

Hong Kong Cultural Center - Hong Kong

Sächsische Staatsoper Dresden - Germany

Boston Symphony Orchestra - USA

Theaterhaus Stuttgart – Germany

Here is a link to [more projects](#)

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Ron StageMaster Customers in the US

3-B Productions	Eldorado Resorts	Minuteman HS	Timms Centre For The Arts
Alford Media Services	Entertainment Project Services	Mountain productions	Toucan Productions
Arts & Venues Denver	Ford Audio Video	MSU DENVER	Tuacahn
ARTS BROOKFIELD	Govision	Murphy Arts District	UIW
AT&T Performance Arts Center	Hall Associates Flying Effects	NASA	United Staging
AZZ Galvanizing Services	Hands On Rigging	NBC UNIVERSAL	Universal City Development - By
BF Productions	HKPA	New Victory Production	R&M
Blue man Group Productions	Katy Independent School	North Point Ministries	University of Texas at Austin PLA
BNW Rigging	KB Entertainment Inc.	Olympus Painting Contractors	Vegas Rigg LLC
Boston Symphony Orchestra	KDH PRECISION	Orange County Convention Center	Venetian Resort Hotel
Brigham Young University	KISH RIGGING Inc.	Pacific West Sound	VIRGIN ORBIT
Buddy Holly Hall	Las Vegas Convention And Visitors Authority	Partech Lighting Systems	WATERFRONT CONCERTS
Buena Vista Theatrical	Liberty University	Passion City Church	YALE SCHOOL OF DRAMA
Charleston Gaillard Mng. Corp.	Liberty University	PRG Lighting Las Vegas	ZACHRY INDUSTRIAL
Chicago Flyhouse	Life Church	PRG SCENIC TECHNOLOGIES	
Chicago Shakespeare Theater	Lincoln Center	Production Rigging	
Cirque Du Soleil -	Lincoln Center For The Performing Arts	Production Services Of Maine	
Cory's Audio Visual	LMG	PSAV	
Disney Dream Entertainment	Lockheed Martin	SB Productions	
DMM SYSTEMS	LVH Entertainment Systems	Sea Koehler	
Dynamic Event Group	Man Up Rigging	Seattle Opera - Upgrade	
Dynamic Productions	Mayo Performing Arts Center	StagePro Inc.	
Earl Girls Inc.	Minneapolis Armory	Tait Towers, Inc.	

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Safety and Other Competitive Advantages of Our Systems

Safety:

- Market leading **5 Year Warranty**: High quality and reliability.
- **Fatigue rated**: All Eilon Engineering load cells are Fatigue Rated. (Unlimited Number of Load Cycles, provided capacity is not exceeded)
- **Meets industry standards**: All Eilon Engineering systems meet the requirements of international standards
- **Reliable transmission technology**: Based on decades of experience with the harsh transmission environments of NASA launch sites.
- **0.1% Accuracy: For early detection of overloads.**
- **Aerospace steel**: Manufactured using only high grade steel for load cell bodies.
- **Shackle holes offset 90 degrees**: Reduces bending for increased safety and accuracy.
- **Proven wireless technology since 1976** with repeat customers such as [NASA](#), Boeing, Cirque du Soleil, Disney, NBC Universal



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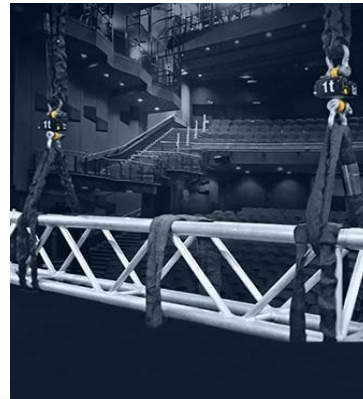
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Safety and Other Competitive Advantages of Our Systems

Unmatched performance:

- Battery life of **up to 5000 hours** on common disposable batteries.
- Transmission range: **Up to 3 km / 2 miles** (upon request). Standard: 150 m/yds.
- **Lightweight and portable. Minimal headroom loss:** Short length ensures minimal headroom loss. No need for additional lifting accessories
- **Heavy duty designs with shock absorbing mechanisms.**
- **Advanced software:** Enables real-time load map for quick detection of overload, as well as reports of months of measurements for study & analysis.
- Multiple load cells: **200 load cells per monitoring station.**
- Large capacities: From **500 kg. and up to 300 tons!** - 5:1 and 10:1 safety factors.
- Environmental: **IP 67/NEMA 4-Weatherproof** standard for the wireless load cells, optional for all other models.



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A Win-Win Situation for all Parties

For the exhibition center:

Increased safety: Significantly reduces the chance for an accident

Addition of significant revenue: Approximately US\$1,000,000 per year

Increased efficiency: Shortens the time between one show to the other

Cost reduction: Reduced insurance premium

Safe guard Human lives, expensive equipment, venue infrastructure

Protection from: Litigation, damages, reputation risk, venue shut down

Business opportunities: Safely host larger and heavier shows

Business opportunities: Safely use old buildings for shows

Business opportunities: Host complex concerts in sports/convention center venues

Image and reputation: Technologically advanced and a leading venue



A Win-Win Situation for all Parties

For the exhibitors:

Increased safety: Significantly reduces the chance for an accident

Efficiency: Saves excess lifting equipment while trying to mitigate the risk

Efficiency: Shortens installation time

Reduces insurance premium: thanks to reduction in risk

Protection of: Human lives, expensive equipment

Protection from: Litigation, damages, reputation risk



A Win-Win Situation for all Parties

Testimonial of Mr. Udo Oerther, Nuremberg Messe / SAG (In 2015 bought 400 of our load cells):

"Accurate load monitoring instead of estimations: Apart from greater safety, this also provides certainty as to the forces that can be applied to the roof constructions and to the possibly existing reserves. Thus, new fair stands can be achieved, the likes of which have never been known before."

"With the new load monitoring system, we developed further, and we improved our service on the fair premises. Numerous customers are glad to be offered the possibility of load monitoring and thus to be able to coordinate work runs in a better, simpler and first and foremost safer manner."

"We are using the system not only for the daily routine at trade shows but also for touring and theatre work have been simplified in many respects."

"With the new load monitoring system, we have taken an important step into the future, so as to simplify service work and to advance even further the site of the Nuremberg Fair Trade."

