

September 2016 Volume 61

NEWSLETTER

Presidents Message & What's New from our Members, Affiliates Article - Without Bearing Protection Motors Can Fail What's New What's New Continued Contentious Corner Affiliates Article - Fluke Industrial B.V. Business Article Business Article Continued & Dates for you Diary

EASA Convention & AGM 2016 Marseille,

EASA Convention & AGM 2016 Agenda

Training Schedule 2016

Training Schedule Course Description

FREE advertising

Prevent Costly Bearing Damage and Downtime

2

3

4

5

6

7

8

9

10

11

12

16

13 - 15





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Presidents Message

Think Globally, Act Locally! If you want to go fast, go alone, if you want to go far, go together!

A third very important Partnership for our Industry: EASA and BEMAS will work together to offer the best to our members



Dear EASA Members, Affiliates and Friends,

At a time we are meeting in Marseille, France for our annual EASA Region 9 convention and AGM. Following the partnerships we have recently signed with the associations of ELR (Sweden) and Repamotor (Denmark), I am very happy to announce a third partnership in Europe with BEMAS, the Belgian Maintenance Association.

EASA Region 9 and BEMAS have agreed to work together to offer more services and support to Belgian Members. BEMAS is going to represent EASA in Belgium and to offer EASA Membership, products and benefits in Belgium. EASA will also recommend to its Belgian Members to be also BEMAS Members and will work with BEMAS on various projects (Translation, Training, Webinars, Technical Supports, Accreditation, Events and in such important areas such as Reliability, Energy and Efficiency

With the support of EASA Region 9, BEMAS will establish in Belgium a group of companies/members fully involved in the Operational/Life cycle Performances of Electric Motors and wider Rotating Machine Systems through regular meetings, a dedicated committee, specific projects, training, and conferences

BEMAS, the Belgian Maintenance Association, is a non-profit organisation with over 400 Member companies in Belgium. Under the tagline "Bridge to world class maintenance & asset management", BEMAS brings together professionals from all industries, service providers, infrastructure asset owners and the academic world. More than 2.000 people participate in BEMAS events every year for information sessions, seminars, training, and events,

I want to congratulate Wim Vancauwenberghe, the Director of Bemas and his team for their active support in that development and our EASA Region 9 General Manager, Frederic Beghain and our Regional Director, Johan De Coster. We believe that "The Electro Mechanical Service industry should speak with one voice internationally to share best practice and contribute to the debates for improving reliability and energy efficiency of the drive system from power input to transmitted power included".

We also believe that associations working together is complimentary and can represent our industry globally to ensure best practice and to the benefit of all Members of associations. By working together and benefiting from the best of all of these associations, our Members will be the winners. EASA Region 9 continues to work hard on this direction. If you think you can help, please get involved

Last but not least, Sian Sparkes who has been assisting EASAR9 in administrative role has decided to move on in her career. I want to thank her again for the good support she gave to our association. Our very best wishes to her.

All the Best, Mathis Menzel, President EASA Europe and World Chapter

What's New From Our Members

Menzel Elektromotoren GmbH - Press Release

Resilient power house unfazed by thin air Motors for Bolivian cement mill at 4000 m above sea level

To View full article please visit: https://www.menzel-elektromotoren.com/en/news/

EMIR - Press Release

Elevated to the Cloud - Manchester based motor firm take on the Cloud

To View full article please visit: https://www.youtube.com/watch?v=pVoU8I62eQA





Without Bearing Protection Motors Can Fail

Article Provided By AEGIS® Bearing Protection

VFD-induced shaft voltages damage motor bearings and shorten motor life

If you're using variable frequency drives (VFDs) or inverters to control motors, the motors are at risk of electrical bearing damage that can dramatically shorten their lives. VFDs induce harmful voltages on motor shafts — voltages as 40 volts peak — that can destroy bearings in as little as 3 months!

Through electrical discharge machining, VFD-induced discharges can blast millions of pits in metal bearing surfaces. These discharges burn and contaminate bearing grease, drastically reducing its effectiveness. They also result in fluting, bearing failure, and costly unplanned downtime. And while most motor manufacturers offer "inverter-duty" or "inverter-ready" models, these motors have inverter-rated insulation to protect their windings, but nothing to protect their most vulnerable components — their bearings.





Test motors for shaft voltages

The only way to tell for certain whether a motor is at risk is to measure its shaft voltages with a shaft voltage tester oscilloscope. Using this equipment makes it easy to check in-service motors for damaging VFD-induced shaft voltages and prevent unplanned downtime. The 100 MHz oscilloscope – designed with a conductive microfiber tip is the best test equipment to use to take and capture high-accuracy voltage measurements from spinning motor shafts.

Protect VFD-driven motors by installing Shaft Grounding Rings

Shaft Grounding Rings will protect motors from electrical bearing damage by providing hundreds of thousands to millions of conductive microfiber contact points completely encircling the motor's shaft. The shaft grounding ring provides the least resistance path to divert damaging VFD-induced currents away from bearings and safely to ground.

Maintenance-free and last for the life of the motor bearings

The AEGIS® Shaft Grounding Ring's patented wear-to-fit design ensures that the fibers don't "wear out" during the bearing's life They exhibit minimal wear with the ability to flex without breaking. During the life of the ring the minimal wear characteristics ensure that the fibers only wear to the exact diameter of the motor's shaft and no further, maintaining the nanogap contact which allows the Shaft Grounding Rings to continue to operate effectively and protect the motor's bearings. In testing, they were proven to withstand 2 million direction reversals (to 1800 RPM) with no fiber fatigue or breakage.

Shaft Grounding Rings for Low-Voltage Motors

The general recommendations for motors up to 100 HP is to install one AEGIS® Shaft Grounding Ring on either the drive end or the non-drive end of the motor. Motors over 100 HP should also have an insulated bearing installed on the non-drive end opposite the shaft grounding ring which prevents circulating currents that may be present in addition to capacitive induced shaft voltage.

Shaft Grounding Rings for Medium-Voltage Motors, Large DC Motors, Generators and Turbines



The high current capable AEGIS® PRO Series Shaft Grounding Ring design provides reliable shaft grounding for medium voltage applications, large DC motors, generators and turbines to divert harmful shaft voltages to ground and extend bearing life. This ring should likewise be installed on the drive end (DE) and insulation on the opposite end (NDE) for best results. Large motors and generators often have much higher induced shaft voltages and bearing currents. The six circumferential rows of conductive

microfiber provide the extra protection for these high current applications. Generators may experience current surges which can cause electrical arcing in their bearings and equipment so adding the AEGIS® PRO will discharge these currents.

Thanks for this months Article go to:-

AEGIS ELECTRO STATIC martin.deiss@est-aegis.com





EASA 4 | European & World Chapter Limited

What's New



IHS Markit update on the global low-voltage motor market

Since the third quarter of 2014, the low-voltage motor market (i.e., integral horsepower motors rated at or below 690 volts) has struggled amid the numerous economic and political headwinds. In fact, according to the latest IHS Markit information, the global low-voltage motor market will decline nearly 13 percent, from \$11.8 billion in sales in 2015 to \$10.3 billion in 2017.

Despite this challenging environment, there are opportunities for motor suppliers that can adapt to the impending technological trends suppliers require. For example, motor end-users are increasingly interested in energy-efficient motors that will live longer and reduce full lifecycle costs. As the industrial internet of things (IIOT) continues to grow in customer recognition and adoption, motor manufacturers are also starting to find ways to leverage this trend to offset weak sales.

While there are reasons to be optimistic, the current political turmoil certainly harms growth prospects for the entire industrial automation equipment market throughout the next two-to-three years. As the global economy adjusts and recovers from shocking events, such as the British exit of the European Union and stalling oil prices, the low-voltage motor market revenue will decline very slightly, at a compound annual growth rate (CAGR) of negative 0.2 percent from 2015 to 2020. However, a strong recovery is expected to begin in 2018.

While heavy industries exposed to oil and gas investment levels are not currently good areas for motor growth, there are still several industry sectors that have outperformed – or that will outperform -- the market average in the short-term. For example, the U.S. housing market is expected to experience strong growth, as is non-residential construction spending, which bodes well for motors sold into construction, infrastructure, and HVAC applications.

A fast-growing population and rapid urbanization is also expected to cause motor shipments for food and beverage, water and wastewater, and power sectors to outperform the market average. In general the discrete manufacturing (machine builder) sectors are forecast to perform better than the process manufacturing (end-user) sectors.

After accounting for more than 26 percent of revenues in 2015, IE1 (standard efficiency) motors are forecast to comprise 25 percent of global low-voltage motor market revenue in 2016, and 16 percent by 2020. These products are sold mainly in the emerging markets that have yet to adopt any type of efficiency regulations; however, many leading suppliers are still successfully selling these motors in the United States, Germany and other developed countries.

As emerging and developed regions continue to push for more efficient motors, IE2 (high efficiency), IE3 (premium efficiency), and IE4 (super-premium efficiency) motors will continue to experience growth with revenue CAGRs of 1.6 percent, 4.8 percent, and 11.3 percent, respectively. It is worth noting, however, that IE4 motors accounted for slightly more than 1 percent of total motor market revenues. Therefore, it will take a long time for this technology to be considered a dominant customer trend.

Despite the ominous forecast for low-voltage motors through 2020, there are still ample opportunities for manufacturers to maintain -- and even grow -- their existing client base, through the adoption of the technological advancements end-users are beginning to require more frequently. Acquisitions and strategic partnerships, in conjunction with increased research and development investments, have allowed the leading motor manufacturers to better position themselves for the future. Even though the low-voltage motor market is not currently thriving, today's technological developments could be the norm for motor users in the near future -- but only the companies that can adapt will be prepared for such rapid changes.

Read more at: https://technology.ihs.com/582753/ihs-markit-update-on-the-global-low-voltage-motor-market

What's New Continued

Drone Operations In Hazardous Areas

A recent report by consultancy group PwC estimates that the use of drones could lead to disruption in \$125bn worth of traditional industries. Drones are expected to replace those humans who have previously climbed ladders or dangled from ropes to assess everything from industrial inspection to insurance assessment. Now, a French company is offering ATEX-certified drones for use in potentially explosive environments. LE 4-8X Dual ATEX drone - Image: Xamen Technologies The LE 4-8X Dual ATEX drone from Xamen Technologies, a company based in south western France, is ATEX Zone 2 approved for use where hazardous gas or vapours are present on an occasional basis. It is an octocopter drone with a wingspan of 104cm, 16 m/s max speed and a maximum payload of 2 kg.



It took 18 months collaboration with French Ex design consultancy CentrExpert to upgrade one of the company's existing drones and make it ATEX compliant. Changes included replacing carbonfibre propellers with wooden ones to reduce static risk, adapting all electrical and electronic systems and making modifications to the wiring.

The machine and its systems are also highly portable and fit in a medium-sized canvas case. Xamen says it is the first UAV to be ATEX-certified, and is able as a result to carry out close investigations where there is a risk of explosion due to the presence of gas or vapours. The drone can carry cameras and sensors such as gas detectors to areas that were previously off-limits within a plant or rig. The main advantage of drone operations at these sites is that staff no longer need be exposed to hazardous situations, often at height, bringing significant occupational safety benefits.

Another is the speed with which inspections can be carried out, which will usually reduce the overall cost of the operation by a substantial margin. The company says the main focus has been on safety, with all aircraft featuring GPS-assisted flight, failsafe return to base and parachute deployment after impact. Training and maintenance are also high priorities to ensure maximum operational security in highly-sensitive locations, with all operators highly experienced UAV operators but also competent to operate in Ex environments.

This should add a new dimension to the use of drones in high hazard industries such as oil and gas and petrochemicals, where drones have revolutionised engineering inspection and assessment over the last few years. Xamen has undertaken projects for RETIA, Total Group's decommissioning and environmental rehabilitation subsidiary (see below), and Elengy/ ENGIE, formerly GdF Suez. The company also recently carried out a world first, flying a test resupply mission out to a Maersk tanker in the North Sea.

Xamen intends to reinforce its presence in the sector. Following the completion of a fundraising operation last year, the company is working on a drone that would be certified to operate in ATEX Zone 1, where hazardous gas or vapours are present on a regular basis.

Yannick Charlot. Oil & Gas Site Remediation Manager at RETIA, gives his account of a recent operation using Xamen's LE 4-8X Dual ATEX drone.

"At Total's Lacq site (in south western France), we needed to empty the contents of a 13,000 litre capacity tank containing products for disposal as waste. These products were in liquid, solid and gas form and could not be removed through the usual valves. We needed to check the upper structure of the tank to ascertain its physical condition for a mechanical intervention to sample its contents.

"We thought that inspection with a drone would best meet our needs, as we did not want to send technicians onto the roof of the tank if we could avoid it because of the possible presence of vapours, which would have required our technicians to wear respiratory protective equipment.

"The actual inspection was carried out in just two hours. In total, with the time required for risk assessment and emergency procedure planning, the operation took a single day.

"If we had had to carry out an inspection the classic way, it would have required a platform or scaffolding and would have taken several days. I estimate the cost of the drone operation to be around 40% of the cost of an intervention carried out using classic methods.

"We had already used drones to inspect structures such as chimneys but this was the first time we used an ATEX-certified machine, and we would definitely consider using one again if similar circumstances arose in the future."

Contentious Corner

The Industry 4.0 race—Time to accelerate.



What's Electric motor efficiency and reliability: New testing approach matches real world conditions

Electric motors are the key component in many industrial processes, and can account for up to 70 % of the total energy consumed in an industrial plant, and consume up to 46 % of all generated electricity worldwide. Given their critical nature for industrial processes, the cost of downtime associated with failed motors can be tens of thousands of dollars per hour. Ensuring that motors are efficient and operate reliably is one of the most important tasks that maintenance technicians and engineers face on a daily basis.

The efficient use of electricity is not just a "nice to have." In many circumstances, energy efficiency can mean the difference between profitability and financial losses. And, since motors consume such a significant portion of energy in industry, they have become prime target for generating savings and maintaining profitability. Addintionally, the desire to identify savings through efficiency improvements and reduce dependency on natural resources is driving many companies to adopt industry standards such as ISO 50001. The ISO 50001 standard provides a framework and requirements for establishing, implementing and maintaining an energy management system for the purpose of delivering sustainable savings.



Traditional motor testing methods

The traditional method for measuring electric motor performance and efficiency is well defined, but the process can be costly to setup and dif-ficult to apply in working processes. In fact, in many cases motor performance checks even require a complete system shutdown, which can result in costly downtime. To measure electric motor efficiency both the electric input power and mechanical output power must be ascertained over a wide range of dynamic operating condi-tions. The traditional method of measuring motor performance first requires technicians to install the motor into a motor test bed. Some systems also include electrical power measurement capability to enable the efficiency to be calculated.

Efficiency is calculated by: n (efficiency) = (Mechanical power)/(Electrical power)

A new approach

The Fluke 438-II Power Quality and Motor Analyzer provides a streamlined and cost effec¬tive method for testing motor efficiency, while eliminating the need for external mechanical sensors and costly downtime. The Fluke 438-II, has the full capability to measure power quality while also measuring mechanical parameters for direct-on-line electric motors. Using data from the motor name plate (either NEMA or IEC data) coupled with three-phase power measurements, the 438-II calculates the real time motor performance data including speed, torque, mechanical power and efficiency without the need for additional torque and speed sensors. The 438-II also directly calculates the motor derating factor in operating mode.

Thanks for this months Article go to:-

Fluke Industrial b.v. Gerard Grashof gerard.grashof@fluke.com



Business Article

Electric Motors and Drives Service Business Driven by End-users Preference to Listen to their Assets

Sivakumar Narayanaswamy, Principal Analyst, Industrial Automation & Process Control

Electric motors, the work horses of industrial processes, are used in various industrial applications such as fans, pumps, compressors, mixers, grinding mills, metal rolling, mine hoists, cranes, and refiners. They are designed for efficient operation in challenging and severe environments. Reliability and ease of maintenance are some of the critical parameters that determine the selection of the motors. Electric drives or power converter circuits are used with motor drives, and provide either direct current (d.c) or alternating current (a.c) output and are powered from either a d.c. or a.c. mains supply. The primary purpose of this equipment is to control the speed of electric motors during different working conditions to save energy.

Electric motors and drives are used in a wide range of industries including but not limited to oil and gas, marine, power and energy, mining, cement, metals, pulp and paper, water and wastewater. As the demand for electric motors is increasing, end users are facing the challenge of maintaining a continuous, reliable operation while keeping cost under control. However, reliability of motors has gained prominence over maintaining lower operation costs. Regular servicing of these assets is critical for increased uptime and extended life cycle.

Frost & Sullivan's research scope of the electric motors and drives services market includes installation and commissioning, training, engineering, and consulting, maintenance, spare parts and consumables, repairs, extensions and upgrades (retrofits), replacements, end-of-life and advanced services. Research has revealed that services companies focus on repeat business, as trust and business rapport are the key factors in securing services orders.



Over the past few years, end users have started opting for an effective motor and drive maintenance plan which is rigorous and have started to prefer service packages that ensure higher uptime of the rotating assets. The maintenance plan includes condition monitoring of assets, including remote assets, enabling predictive and preventive maintenance which facilitates planned maintenance and higher uptime as against the age old practice of breakdown maintenance. The trend to adopt life-extension service programs gained prominence during the economic turndown in 2009, the recovery years after that as well as during more recent periods of economic uncertainty, as companies no longer are governed by the rule to minimize operational costs but rather by the principle to minimize capital expenditure.

Frost & Sullivan's (F&S) research on the European and Asia Pacific Electric Motors and Electric Drives Services Market highlights that differentiation through technology innovation is limited compared to the service business innovation. The convergence of information technology (IT) and operational technology (OT) has enabled digitization of the industrial world and is now known as Internet of Industrial Things (IoIT). However, its adoption is still at an early stage.

The convergence is creating a visible shift in the way servicing of motors and drives are handled. The adoption of loIT has resulted in a notable transformation in the advanced services segment which comprises value added services such as asset optimization, process safety, environmental compliance, system performance, energy efficiency, maintenance management, and cyber security.

The use of big data analytics and cloud services is likely to bolster the quality of service. New service offering including alerting services for equipment maintenance using IoIT technologies that involve diagnostic software being hosted from cloud with Software as a Service (SaaS) model, and motor control through mobile device and related services are likely to see high uptake.

The research also highlights that adoption of advanced services is expected to witness a robust growth led by end users' requirement to reduce energy expenditure and equipment related capital expenditure. service providers, who constitute the tier 2 segment, are more likely to tap into this segment of servicing, as they are better positioned to offer packaged services and multi-vendor product service support.

For example, the drives market report highlights that the market is dominated by the external service revenues, which is nearly 73% of the total market revenues, estimated to be \$2.0 billion in 2014. This is expected to grow at a CAGR of 6.4% for the period 2014-2019. This research also highlights that advanced services segment is expected to grow at a CAGR of CAGR of 7.3%, while the maintenance service segment is likely to grow at a CAGR of 7.9%.

Business Article Continued

Analysis of the supply chain in the market shows that while motors and drives manufacturers have a vantage position in this market due to their technical know-how and global network of repair facilities and field engineering; they face stiff competition in the developing regions such as Asia-Pacific. The pure play service providers who do not manufacture the equipment, remain competitive through their value proposition of multi vendor make service capability. So, over the years, value proposition has gone beyond the technical domain. In the recent past, some of the motor and drives manufacturers have also ventured into expanding the service capabilities by accommodating servicing of other manufacturers' products either by developing the capability or acquiring suitable companies. Moreover, recently, the electric motor and drives servicing landscape has been witnessing a trend of end users preferring a single service source. This reduces administrative costs and operational inconsistencies allowing them to concentrate on production.



Hence, the manufacturers in the electric motors and drives market who have decided to evolve their business model for the digital age have to consider the option of expanding their business organically or inorganically. They have to decide if they want to partner with other companies or do it themselves by collaborating with their customers. Frost & Sullivan's analysis highlights that end users are more inclined to outsource servicing of their electric motors and drives assets, as they want to focus on their core manufacturing business. This is likely to provide unlimited opportunities to the manufacturers and service providers in this market in the next five years.

For more about electric motors and drives market: <u>www.frost.com</u> <u>anna.zanchi@frost.com</u>

Dates for your Diary

EASA European & World Chapter AGM & Convention - 29th of September - 1st October 2016, Marseille, France
Ex 3 year Refresher - 18th & 19th of October 2016, Birmingham, England
Motor Root Cause Failure Analysis 25th & 26th of October, Newcastle, England - Houghton International
Fundamentals of DC Operation & Repair Tips - 27th & 28th of October 2016, Newcastle, England - Houghton International
Fundamentals of Pump Repair - 15th and 16th of November of 2016 Antwerpen, Belgium
Explosive Equipment 1 Day Awareness – To be agreed with potential participants - Birmingham, England
3 days EX Equipment Users and Commercial & Sales Management - To be agreed with potential participants Birmingham UK
Explosive Equipment FULL course – To be agreed with potential participants - Birmingham, England

Please contact EASA at secretary@easa9.org for any further information.



Go Direct to the



EASA European & World Website



EASA European & World Chapter Convention Marseille, France



"Prepare the Service Future"

EASA European & World Chapter's AGM and Convention for 2016 will be at the Golden Tulip Euromed Marseille, France For registration forms visit our webpage http://www.easa9.org/conventions/

With a rich history (Marseille is France's oldest city discovered 2600 years ago), 300 days of sunshine a year, sandy beaches, coastal roads, a thriving old port guarded by two fortresses, and French-Mediterranean cuisine, Marseille is perfect for all types of travellers -- from the sun catcher to the history buff, the foodie to the modern art enthusiast.



Marseille France has many interesting tourist attractions, museums and famous city landmarks. Located on France's Mediterranean coast, Marseille is the country's largest port and one of its oldest cities. The Vieux Port area has many historical buildings and places of interest.

Popular tourist destinations to the east of Marseille include St-Tropez, Cannes and Nice France.

The Port of Marseille is a port-of-call for many Mediterranean cruises. The Marseille train station is the departure point for rail service to cities in France. High-speed TGV trains travel between Paris and Marseille in just three hours. The Aéroport de Marseille Provence, located in Marignane France, is a major airline hub for flights to African and European destinations.



EASA Agenda 2016 - Marseille, France

"Prepare the Service Future"

EASA European & World Chapter's AGM and Convention for 2016 will be at the Golden Tulip Euromed Marseille, France



Business Agenda

Thursday the 29th of September 2016 :

- 14h00 to 18h30 : Directors/Executive Officers & Council Meeting
- 19h30 : Pre- Dinner Drinks followed by President's Reception Dinner

Friday the 30th of September 2016 :

- 8h00 : Introduction of our convention and All participants
- Short 3mn Introduction for the ones who will not do the 10mn Presentation
- Table Top Display
- 9h30 : Conference : Prepare the Service Future (First Part)
- 10h30 : Coffee Break
- 10h45 : Conference : Prepare the Service Future (Second Part)
- 12h45 : Members Presentations (3*10 mn presentation)
- 13h15 : Buffet Lunch
- 14h45 : Face to Face Meetings & Table Top Display
- 16h45 : Adjourn

Saturday the 1st of October 2016:

- 8h30 : Members Presentations (3 presentations of 10mn each)
- 9h00 Annual General Meeting, Installation of new Officers, Annual Karsten Moholt Award
- 10h30 : Coffee Break
- 10h45 : Members Presentations (3 * 10mn presentation)
- 11h15 : Important News for our Members from EASA
- 11h45 : Technical Presentations
- 12h30 : Brains Trust Questions from the Floor
- 13h15 : Adjourn, Free Afternoon
- Possible Business Visits + Presentations
- 19h30 : Evening Dinner

Sunday the 2nd of October 2016 :

• Depart

LAST CHANCE TO REGISTER

Please Contact Frederic Beghain at fbeghain@easa9.org, Or go to EASA Region 9 Website: www.easa9.org

AFFILIATE MEMBERS contact the secretary@easa9.org to book your Table Top Please contact us for any questions at secretary@easa9.org



Training Schedule 2016

EASA Ex Training for the Repairs and Overhaul of Ex Equipment to IEC 60079-19 + related Energy Efficiency Requirements

Туре	Training Duration (days)	Training Dates	Trainer	Venue	Available places	EASA Member Price (*)	Non- Member Price (*)
Ex 3 year Refresher	2	18th & 19th October 2016	John Allen	Birmingham, England	9	£650.00	£728.00
Motor Root Cause Failure Analysis Training.	2	25th & 26th October 2016	John Allen	Newcastle, England	9	£630.00	£800.00
Fundamentals of DC Operation & Repair Tips	2	27th & 28th of October 2016	John Allen	Newcastle, England	9	£630.00	£800.00
Fundamentals of Pump Repair	2	15th & 16th of November 2016	Gene Vogel	Antwerpen, Belgium	9	£630.00	£800.00
Explosive Atmosphere Equipment Training - 1 Day Awareness of Ex. Atmosphere Equip.	1	To be agreed with potential participants	John Allen	Birmingham, England	9	£215.00	£240.00
Explosive Atmosphere Equipment Training - 3 days EX Equipment Users and Commercial & Sales Management	3	To be agreed with potential participants	John Allen	Birmingham, England	9	£837.00	£937.00
Explosive Atmosphere Equipment Training - Full Course Operatives & RPs Repair and Overhaul Ex. Atmosphere Equip.	5	To be agreed with potential participants	John Allen	Birmingham, England	9	£1,395.00	£1,562.00

(*): Prices guaranteed if more then 6 participants. All Training registrations have to be finalized 3 weeks before each trainings NOTE. WHERE THERE IS SPECIFIC SUFFICIENT DEMAND ADDITIONAL DATES & LOCATIONS CAN BE PROVIDED FOR ALL COURSES.

Training Schedule 2016

Explosive Atmosphere Equipment Training - 3 Year Refresher: Trainer: John Allen - Course length: Two days

Date, Location & Prices: 18th and 19th of October of 2016 Sulzer Dowding & Mills UK, 193 Camp Hill, Birmingham, B12 OJJ, £650 GBP (EASA Members) £728 GBP (Non Members) Prices Guaranteed if Enough Participants Register Discounts available on 3 or more staff if registered 6 weeks in advance of the course date!

Trainer: The very well known, John Allen. After graduating from UMIST with a BSC in Electrical Engineering & Electronics, John started his working life in 1970 as an electrical design engineer later Chief Engineer for a rotating machine manufacturer. From 1988 to 1996, John was the Regional Director for BERL and from 1996 to 2014, the Technical Director of Dowding & Mills and then Sulzer. John has a very long experience in service facility management, repairing and maintaining rotating machines and Ex equipment. John is an authority in our industry, he is also representing EASA in IEC Ex committees and working as an independent engineer and Trainer.

Follow on from the Initial 5 Day Training Senior Managers, Authorised Persons, Supervisors/Team Leaders 2 day refresher course every three years which will assess knowledge and understanding, practical skills will be verified by demonstration of practical skills.

Skill | Knowledge | Attitude | Training | Experience

Registration forms available at: <u>http://www.easa9.org/training-2/training-registration-forms/</u>

EASA Electric Motor Root Cause Failure Analysis Training 25th & 26th of October 2016 Newcastle, England

One of the most important factors to consider when repairing motors is to understand why they failed. This seminar will focus on common as well as unusual types of failures broken down by components. This seminar is intended for anyone interested in understanding motor failures, and those who want to serve customers by addressing the cause of failure rather than the symptom. An extensive resource manual includes hundreds of photos of a wide range of failures, with the likely causes listed, and a clear methodology for confirming the probable cause of each failure. Each student will also receive a CD-ROM containing a PDF version of the manual with almost all photographs in color.

Seminar Highlights: Root cause methodology - Bearing failures - Winding failures Rotor failures - Shaft failures - Mechanical failures DC motor failures - Accessory failures - Case studies



Click below link to read more about the valuable book provided with this seminar! <u>http://www.easa.com/resources/book/root-cause-failure-analysis</u>

Date, Location & Prices: 25th and 26th of October of 2016 Houghton International , Ambrose Place, Riverside Court, Fisher Street NE6 4LT, £630 GBP (EASA Members) £800 GBP (Non Members) Prices Guaranteed if Enough Participants Register Discounts available on 3 or more staff if registered 6 weeks in advance of the course date!

Trainer: The very well known, John Allen. After graduating from UMIST with a BSC in Electrical Engineering & Electronics, John started his working life in 1970 as an electrical design engineer later Chief Engineer for a rotating machine manufacturer. From 1988 to 1996, John was the Regional Director for BERL and from 1996 to 2014, the Technical Director of Dowding & Mills and then Sulzer. John has a very long experience in service facility management, repairing and maintaining rotating machines and Ex equipment. John is an authority in our industry, he is also representing EASA in IEC Ex committees and working as an independent engineer and Trainer.

Full Registration and Payment: Before the 25th of September of 2016 (No cancellation after that date)

Who should attend? Motor Repair Specialists, Electrical maintenance technicians, supervisors, condition monitoring specialists, maintenance engineers and reliability engineers that are responsible for a fleet of electrical motors and want to learn how to diagnose and correctly find the root cause of an electrical motor failure. Please note all delegates are to book their own hotel accommodation

Registration forms available at: <u>http://www.easa9.org/training-2/training-registration-forms/</u>

Training Schedule 2016

Fundamentals of DC Operation & Repair Tips Training

Trainer: John Allen - Course length: Two days - Topic(s): DC - Repair tips/procedures - Theory & design Date, Location & Prices: 27th & 28th of October 2016, £630 GBP (EASA Members) £800 GBP (Non Members) Houghton International Ambrose Place, Riverside Court, Fisher Street Newcastle, NE6 4LT. Prices Guaranteed if Enough Participants Register Discounts available on 3 or more staff if registered 6 weeks in advance of the course date!

Trainer: The very well known, John Allen. After graduating from UMIST with a BSC in Electrical Engineering & Electronics, John started his working life in 1970 as an electrical design engineer later Chief Engineer for a rotating machine manufacturer. From 1988 to 1996, John was the Regional Director for BERL and from 1996 to 2014, the Technical Director of Dowding & Mills and then Sulzer. John has a very long experience in service facility management, repairing and maintaining rotating machines and Ex equipment. John is an authority in our industry, he is also representing EASA in IEC Ex committees and working as an independent engineer and Trainer.

Course Description

The seminar will cover DC machine theory and operation, as well as repair tips. Topics will include testing and winding of armatures, fields, interpoles and compensating windings, machine work, balancing, assembly and final testing. The theory portion is structured so that it can be grasped by entry-level personnel, while the overall material is WDSXZ-in-depth enough that those with 30 years of experience or more will benefit.

Partial List Of Topics

- •DC machine operation explained pictorially •Importance of symmetry to proper performance
- Disassembly, test & inspection tips Comparison and explanation of electrical test methods
- •Data-taking tips, with emphasis on critical information •Commutation and commutation difficulties
- •Armature and field winding tips •Field compounding •Assembly tips & test methods
- •Accessories, including tachometers •Troubleshooting techniques

Full Registration and Payment: Before the 27th of September of 2016 (No cancellation after that date)

Registration forms available at: <u>http://www.easa9.org/training-2/training-registration-forms/</u>

Fundamentals of Pump Repair, Training

Date, Location & Prices: Antwerpen, Belgium, Date: 15th and 16th of November of 2016 £630 GBP (EASA Members) £800 GBP (Non Members) Prices Guaranteed if Enough Participants Register Discounts available on 3 or more staff if registered 6 weeks in advance of the course date! Course length: Two days - Topic(s): Mechanical - Pumps - Repair tips/ procedures Theory & design

Course Description - Seminar Content: The seminar will cover the common repair procedures for centrifugal pumps, including submersible pumps, vertical turbine pumps, single stage end suction pumps and split case pumps. The procedures are also applicable to other style pumps. For each type of pump, the inspection, disassembly, evaluation, repair and reassembly functions are presented. General pump test procedures will also be discussed.



Seminar Highlight

The importance of initial pump inspection - Documentation - How to evaluate pump condition and specify repair Disassembly procedures - Repair tips for specific style pumps - Common machine repairs - Mechanical seal installation Pump final testing

READ MORE ABOUT THE VALUABLE BOOK PROVIDED WITH THIS SEMINAR!

Note: Many specific mechanical repair procedures are common to electric motor repair and are covered in detail in the EASA Mechanical Repair Fundamentals seminar.

Trainer : Gene Vogel EASA Pump & Vibration Specialist - Before joining EASA as Pump and Vibration Specialist, Gene Vogel operated his own business, General Maintenance Equipment/Engineering, Inc. (GME), a marketing, service and training organization for industrial maintenance and related technologies. Among other courses, he taught a "Pumps and Pump Systems" seminar for American Trainco. He also has an extensive background in vibration and dynamic balancing, and chaired the St. Louis Chapter of the Vibration Institute from 1993-2000.

Registration forms available at: <u>http://www.easa9.org/training-2/training-registration-forms/</u>



Training Schedule 2016 Continued

Explosive Atmosphere Equipment Training - 1 Day Awareness:

Designed for organisations considering registering for the IECEx/EASA Scheme

Trainer: The very well known, John Allen. After graduating from UMIST with a BSC in Electrical Engineering & Electronics, John started his working life in 1970 as an electrical design engineer later Chief Engineer for a rotating machine manufacturer. From 1988 to 1996, John was the Regional Director for BERL and from 1996 to 2014, the Technical Director of Dowding & Mills and then Sulzer. John has a very long experience in service facility management, repairing and maintaining rotating machines and Ex equipment. John is an authority in our industry, he is also representing EASA in IEC Ex committees and working as an independent engineer and Trainer.

Available to anybody who wanted awareness training in Ex Equipment and Overhaul, this is to enable Ex Equipment Users and Commercial & Sales Management & personnel to attend. There will be no pre-requirement of experience in equipment repair. A Certificate of attendance will be provided

Skill | Knowledge | Attitude | Training | Experience

Explosive Atmosphere Equipment Training 3 days EX Equipment Users and Commercial & Sales Management:

For organisations requiring greater knowledge for using, managing EX Equipment Overhaul & Repair or selling the IECEx/ EASA Scheme

Trainer: The very well known, John Allen. After graduating from UMIST with a BSC in Electrical Engineering & Electronics, John started his working life in 1970 as an electrical design engineer later Chief Engineer for a rotating machine manufacturer. From 1988 to 1996, John was the Regional Director for BERL and from 1996 to 2014, the Technical Director of Dowding & Mills and then Sulzer. John has a very long experience in service facility management, repairing and maintaining rotating machines and Ex equipment. John is an authority in our industry, he is also representing EASA in IEC Ex committees and working as an independent engineer and Trainer.

Available to anybody who wanted awareness training in Ex Equipment Overhaul & Repair, to enable Ex Equipment Users and Commercial Managers who require greater knowledge of Ex Equipment Overhaul & Repair to attend. There will be no pre-requirement of experience in equipment repair but the number attending will be limited to 9. A certificate of attendance will be provided.

Skill | Knowledge | Attitude | Training | Experience

Explosive Atmosphere Equipment Training - Full Course:

Requirement for Competent Craftsmen Engineers and Authorised Persons

The full 5 day training and assessment program will be available to personnel with experience in equipment repair. Certificates of Assessed Training will be awarded by EASA for personnel who have demonstrated the skill, knowledge and understanding to the standard defined for Operatives and Responsible Person.

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Skill | Knowledge | Attitude | Training | Experience

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