

Sharing good practice 2017/18

WAYS TO MAKE YOUR WORKPLACE HEALTHIER AND SAFER



**ENTRIES FROM THE
MPA HEALTH AND SAFETY AWARDS**





Service Information

Mobile On-Site Chest X-Ray Service for Employees Exposed to Respirable Crystalline Silica

Industrial Diagnostics Company Ltd offer a **mobile, on-site chest X-ray (CXR) Health Surveillance service.**

The service **fully aligns** employers with the recent updated guidance from the Health and Safety Executive (HSE) thus enabling them to demonstrate **best practice.**

The service delivers **state of the art mobile digital radiography (DR)** which generates the high resolution images necessary, capable of detecting the very earliest signs of lung disease.

All chest X-rays are viewed and reported from high resolution diagnostic monitors and are reported against the ILO pneumoconiosis classification scale.

By including exposed employees in a chest X-ray program, early cases of Silicosis will be identified and referred to an Occupational Lung Disease specialist for ongoing medical advice. **This will improve an employee's prognosis and enable effective management of the employee's future exposure to RCS as early as possible.**

Furthermore, all and any other abnormalities identified from the chest X-ray will be referred on to an appropriate medical professional for advice. Early diagnosis of conditions identified by chest X-ray will provide clear **benefits to the health and life expectancy** of employees.

Industry groups such as the **Mineral Products Association (MPA)** recommend entry into a chest X-ray program for employees exposed to 75% or above the Workplace Exposure Limit (WEL).

Service Features:

- **An on-site service delivered from client premises. Up to 30 employees can be seen per day**
- **Brand new digital imaging technology**
- **Extremely low dose of radiation (equivalent to less than one short flight)**
- **10-minute appointment times reduces lost production costs by minimising time away from work**
- **Consent obtained from employees willing to allow their chest X-rays to be fully anonymised and used for research into Occupational Lung Disease**
- **Logistics allow small sites to share the service**

For further information or to discuss service requirements, please contact us on imaging@industrial-diagnostics.com or via the contact details shown below:

v1-1



Building the connections that build the world

Avetta delivers a SaaS-based platform that mitigates the unseen risks of outsourcing, fostering sustainable growth throughout the supply chain. Through a proven vetting and evaluation process, Avetta is able to create dependable connections between clients, suppliers and contractors. For we believe industry and commerce are built on trust. When you believe in the people you work with, amazing things transpire. Industries grow. New technologies are born. And progress becomes inevitable.

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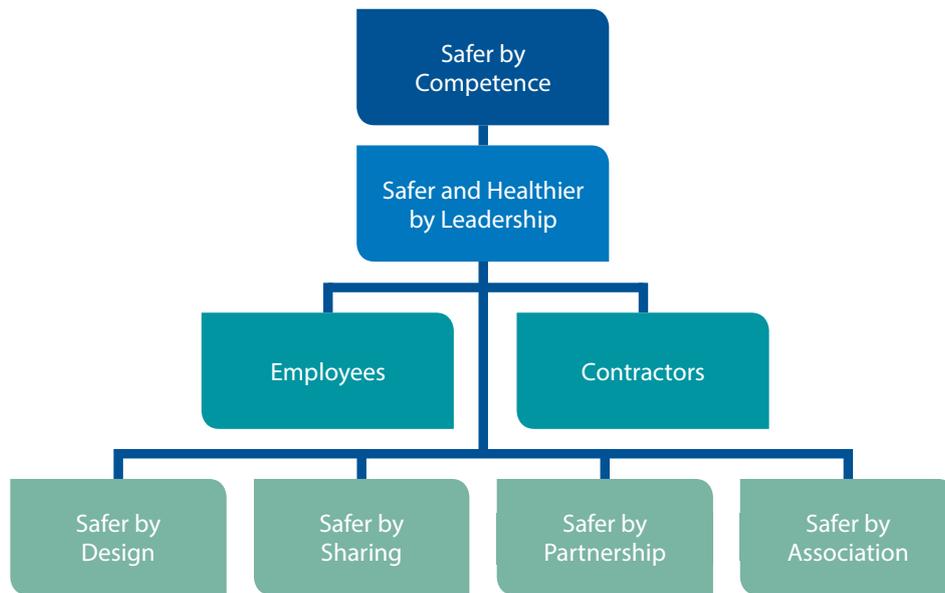
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Achieving Zero Harm

Working with MPA to improve Health and Safety in 2018

Zero Harm will only be achieved when everyone in the industry is working with safety as their top priority. MPA facilitates a number of initiatives and services to help its members achieve this.

MPA's Safer by initiatives



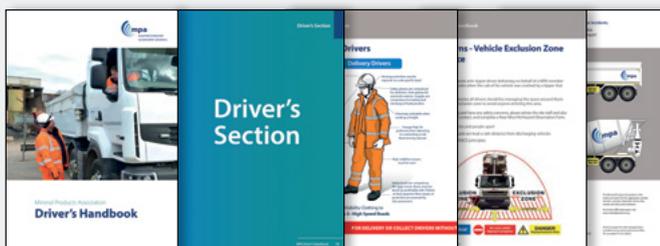
Please review the list below and consider how you would like to utilise or support these services in 2018.

Safer by Competence

- Work with MPQC to enhance skills in the sector



- Utilise the driver's/contractors passport system
- Share the MPA Driver's Handbook within your company



Safer and Healthier by Leadership

- Work with MPA to support the 'Helping Great Britain work well' Strategy



- Sign up to the 'MPA Pledge' and commit your organisation to achieving Zero Harm
- Attend MPA Safer and Healthier Leadership courses
- Submit your safety statistics in a timely and accurate manner
- Champion the use of 'Mates in Mind' www.matesinmind.org
- Champion RCS initiatives and MPA's health surveillance programmes
- Submit your Nepsi data
- Champion Vulnerable Road User and Driver Training initiatives



Supporting MPA Health and Safety Initiatives

Safer by Partnership – Contractors

- Support the MPA Contractor's Charter
- Utilise MPA's Contractor Safety Forums
- Embed MPA (Avetta's) contractor's database

www.avetta.com



- Incorporate the MPQC-SPA Competence Map to enhance contractor skills
- Utilise MPQC's Contractor Safety Passports

Safer by Association

- For smaller members and organisations without specialist personnel, trial the H&S site evaluation and improvement tools

Safer by Sharing

- Sign up to Safequarry.com or Safeprecast.com and share the safety alerts

www.safequarry.com

www.safeprecast.com

- Sign up to the Safequarry or Safeprecast Apps
- Support and attend MPA's Safer by Sharing Days



- Submit entries to the MPA Health and Safety Awards, then share the resulting Best Practice Guide
- Send your incident alerts, toolbox talks and other info to MPA
- Utilise QNJAC H&S guidelines



Safer by Design

- Ensure new mobile plant complies with Safer by Design guidance

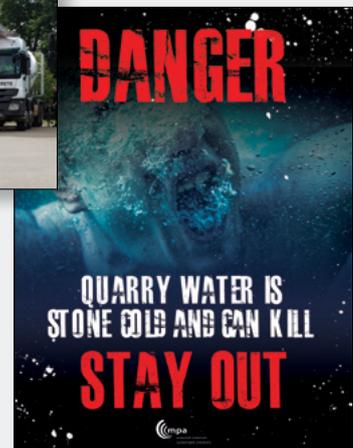
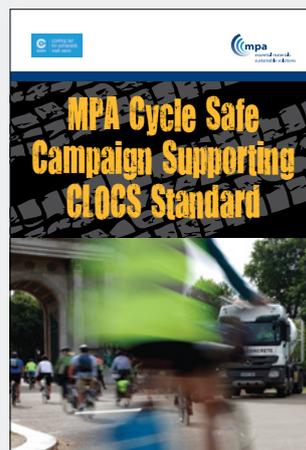
www.safequarry.com/Safer_by_design.aspx



- Review how existing plant compares with Safer by Design guidance

Public Safety

- Support MPA's Stay Safe 2018 campaign and review your public safety risk assessments for active and disused sites
- MPA Cycle Safe – support or host a cycle safety event
- Support the CLOCs and FORs initiatives



Foreword



Our goal to achieve Zero Harm was bought sharply into focus by the disturbing decline in the industry's safety performance in 2017. Building a shared understanding of the reasons behind this was the main theme of MPA's 2017 Health and Safety Conference. Providing strong leadership and sharing of information were recognised as two of the vital elements necessary to reverse the downward trend and achieve the goal. There was a consensus that we need to 'change the conversation and reset the agenda'.

The purpose of this publication is to help you share within your organisation ideas and initiatives that could help make the work place healthier and safer. The entries enclosed are the best submissions made to the 2017 MPA Health and Safety Awards. I believe that they can be adapted or applied to a wide range of other organisations and will make a material difference to the safety, health and wellbeing of everyone working within the mineral products industry.

An increasing number of entries demonstrate how mobile technology is being used to enhance reporting and communications across a range of issues. Initiatives focussed on improving the health and wellbeing of employees have also helped to bring people together and have been enthusiastically received by those involved.

The majority of the winning submissions were initiated by operatives or cross-functional teams working together to address specific issues in their workplace. The results are ingenious engineering solutions or new ways of working that have helped to change people's behaviour. Part of a leader's role is to facilitate and encourage an open and trusting environment in which these types of initiatives and behaviours flourish, encouraging a culture of continuous improvement

Please share this publication with your colleagues at all levels and discuss how they could be applied to your organisation. Do not miss the opportunity to view the associated videos on YouTube, via the Safequarry and SafePrecast Apps or their related websites. A digital copy of this guide is also accessible via the Apps or websites.

No single organisation can enable the industry to achieve Zero Harm but just one could prevent it. This singular target really does have the power to bind all companies together with a common aim, the most precious of all, the elimination of harm.

Nigel Jackson, Chief Executive

Sponsors

MPA would like to thank the suppliers to the industry who have sponsored both our awards ceremony and this publication. The main sponsor was the Industrial Diagnostics Company (IDC). Individual sections show the companies which have sponsored them.



Lead sponsor



John Crabbe Memorial Trophy for overall 'outstanding excellence in health and safety':

Winner – FM Conway

Trophy sponsored by Avetta



*The Sir Frank Davies Trophy for companies with less than 1000 employees: **Winner – Singleton Birch***

Trophy sponsored by EPC Europe



Entries from 25 companies – MPA members, contractors and suppliers:

Aggregate Industries	EPC-UK plc	Hills Quarry Products Ltd	Sibelco
Beresford Flooring Ltd	Finning UK & Ireland Ltd	Interfuse Ltd	Stanton Bonna Concrete Ltd
Brett Group	FM Conway Ltd	Lagan Cement	Tarmac Ltd
CEMEX UK	Forterra plc	Leiths Scotland Ltd	TJ Transport
Chepstow Plant International	Francis Flower (Northern)	Longley Concrete	
Colas Ltd	Grundon Sand & Gravel	Mentor Training Solutions	
CPI Mortars Ltd	Hanson UK	Myers Group	

Introduction

This Guide summarises the best ideas and innovations from the MPA's Health and Safety Awards 2017.

Some of the entries are flagged to show that there is a video available – the videos can be viewed via the Safequarry and Safeprecast websites or their Apps (see back cover for more information). In addition to this year's entries, awards from previous years can also be accessed. The websites feature a database of incident alerts, toolbox talks and the latest on the industry's hot topics. By registering on the site, you will receive email alerts when new items are added and an 'information basket' where you can store those that most interest you.

The resources are ideal for training purposes and for Continuing Professional Development (CPD). We hope that organisations of all sizes working within the mineral products industry will find them useful and accessible. To ensure that your browsing on the websites is recorded for CPD purposes, you need to log in every time that you access the websites.

Download the Safequarry or Safeprecast Apps to your mobile device to have instant access wherever you are to industry guidance and other key health and safety information.

How to use this Guide



This Guide is a compilation of solutions that MPA companies, contractors and suppliers have applied to minimise and, where possible, eliminate health and safety risks arising from their daily operations in the mineral products industry. The ideas and innovative approaches are often very simple and inexpensive, they can often be applied to a range of common industry problems.

It is hoped that by reviewing this Guide, particularly those sections relating to your main area of work, you will recognise solutions that could either be implemented within your own workplace or will generate an idea for an alternative solution.

The Guide has been divided into eight sections to reflect the categories used in the MPA Awards. They focus on those areas that have the most impact on improving health and safety in the workplace. We have indicated which entries were prize winners, and which have video clips available. To help you locate entries relating to a certain subject, we have provided a keyword index. If you would like more information on an entry than is available via Safequarry and Safeprecast websites, please send an email to info@safequarry.com or info@safeprecast.com. Please quote the entry number, which is located immediately to the left of the entry title.

The sharing of best practice is crucial in helping the industry to achieve Zero Harm.

Contents

 Contractors' Safety 6 Sponsored by Mentor Training	 Occupational Health and Well Being 28 Sponsored by Mates in MInd
 Engineering Initiatives 10 Sponsored by Hycontrol	 Worker Involvement 33 Sponsored by Hycontrol
 Behavioural Safety, Safety Culture & Leadership 17 Sponsored by Mineral Products Qualification Council (MPQC)	 Bitumen, Asphalt & Contract Surfacing 37 Sponsored by Eurobitume UK
 Reducing Occupational Road Risk 22 Sponsored by Industrial Diagnostics	
 Transport Initiatives 25 Sponsored by Wincanton	
	Index 47
	Health and Safety Working Groups 48



995 **Autonomous impact protection vehicles (IPVs)**

Colas Ltd > Project Engineering



DESCRIPTION

In the five year period to 2011, 149 collisions were reported with IPVs on the Highways England network alone. Considerable advances have been made in recent years to lower the risk to road workers with initiatives such as dual vehicle working and 360° camera systems. However, removing the driver from the cab of the IPV would significantly reduce the risk of a driver sustaining a serious injury or psychological damage.

Colas, having experienced eight such incidents between 2013 and 2016, entered into a partnership with two US companies, Royal Truck and Equipment and Kratos, a defence company, to build and trial the first Autonomous IPV in the UK.

It is fitted with an electro-mechanical system and fully integrated sensor suite, the Autonomous IPV also has a leader/follower capability. This allows it to follow a lead vehicle's GPS position data which is transmitted to it. The follower vehicle uses the data to copy the exact path and speed of the lead vehicle at each point along a route.

The sensor technology within the vehicle includes high precision GPS, a vision based lane keeping system – LIDAR/Optical, forward and rear collision radar and impact sensor.

Colas has undertaken successful trials with the system. At present, legislation requires a test driver to be present during autonomous operations. Once the law has changed, the driver will be removed from the vehicle thereby eliminating the risk to employees and contractors alike. The system is already operational in the US.

BENEFITS

- The system can be retrofitted to any vehicle with appropriate modifications
- Will help meet Highways England aim to remove workers from live lanes
- The follower vehicle, once in position, can be electronically detached and act as a taper whilst the lead vehicle places the cones
- The Autonomous IPV can follow the lead vehicle, providing constant protection, without risk to the operatives
- Significant reduction in potential risk to drivers of IPVs.





1024 Contractor management during shutdown

CEMEX UK > Rugby Cement Works



DESCRIPTION

Rugby Cement Work's major maintenance outage involved nearly 800 contractors and, at its peak, over 400 contractors in any one day.

The CEMEX site team paid special attention to improving contractor management by adopting a series of initiatives to improve their engagement, involvement and recognition.



- During the shutdown there were daily and nightly contractor review meetings where health and safety issues were addressed
- Regular 'stand downs' of the whole site to present toolbox talks and to drive the highest possible site working conditions
- 'Visible Felt Leadership tours' increased the presence of managers on-site.

BENEFITS

- The 2017 maintenance outage was the safest yet for the site
- Achieved a 55% reduction of First Aid Treatments (FAT's) and no LTI's
- A massive improvement in contractors' attitude and commitment to health and safety
- Contractors shared many ideas and best practices from other industries
- Better understanding between the different contractors and CEMEX employees of their respective tasks and roles
- Honest, open and productive discussions on all health and safety issues
- Recognition of safety as key priority for CEMEX.

CEMEX'S initiative included:

- Refresher training for CEMEX supervisors on contractor management
- Training contractors on CEMEX standards at the pre-construction phase
- Selecting critical contractors for meetings with planning and area supervisors to enable their involvement at the planning stage where techniques such as SMED were adopted
- Pre-kitting, tooling and organising the construction area to address any safety issues
- All contractor companies attended a two day forum where CEMEX's safety initiatives and polices were discussed, including:
 - 'Step in' – 'Stop and Think'– the 12 Safety Essentials, drug and alcohol testing requirements, near miss hazard alert (NMHA) reporting
 - The critical path was presented and the necessary interactions required between contractors and work zones highlighted
 - Contractors visited site with supervisors to discuss issues
- The Avetta employee GUARD competency system was adopted. A contractor's competency for each task could be checked on the spot using identity cards and online checks via mobile phone



1010 Contract haulier selection and management

CEMEX UK > UK Logistics



DESCRIPTION

Contract hauliers are key partners in CEMEX's operations, over 75% of CEMEX's materials were delivered by them in 2016. It was recognised that a robust system for the selection, management and engagement of contract hauliers was essential. CEMEX focused on the following four initiatives to help achieve this.

FORS

Existing contract hauliers were supported to become a minimum FORS Bronze accredited. Newly appointed hauliers were required to hold a minimum of a FORS Bronze accreditation.



Haulier H&S Compliance Checks

CEMEX carried out 59 audits with its hauliers, assessing all parts of their operation including fleet and maintenance management, driver training and transport operations. An action plan was produced at the end of each audit which identified where gaps existed, the best way to close them and over what timescale. CEMEX stopped using hauliers that were unable to meet its minimum standards.

Haulier H&S Awards

CEMEX Haulier H&S Awards were launched to recognise the achievements of its hauliers in fleet safety and driver health. This was a quarterly recognition program that helped to share best practice with all the hauliers. The winning drivers received a 'Red Letter Day' gift voucher.

Haulier H&S Leadership Days

Eight Haulier H&S Leadership days were held. The purpose was for hauliers to share best practice, to raise any concerns directly with the CEMEX Logistics Management team, to participate in discussions about the latest fleet safety technology, recent safety alerts, and the latest industry developments and priorities.

BENEFITS

- In 2016, over 85% of subcontractor volume was delivered by FORS accredited hauliers
- By the end of 2017, 100% of our subcontractor volume will be delivered by FORS accredited hauliers
- All the CEMEX haulier fleet meets the minimum H&S standards
- Hauliers place fleet H&S and driver training at the centre of what they do
- Hauliers, covering circa 60% of the subcontractor volume, attended leadership days
- Improved understanding and sharing of best practice
- Safer and better trained hauliers delivering products for CEMEX.





1049 Site inductions using drone technology

Tarmac Ltd > Thrislington Works



DESCRIPTION

At Thrislington Quarry, contractors had provided feedback that when visiting for the first time, they had found it extremely difficult to navigate around the site even after receiving a full induction.

It was decided to see whether the induction process could be improved by utilising drone technology that had originally been introduced to help track quarry development. The drone company was asked to produce a video that identified the different areas of the quarry, clarified the site safety rules and procedures, and flagged up some of the potential hazards on the site. This video was then incorporated into the induction process.

BENEFITS

- Feedback from contractors was very positive
- Format helped them stay engaged during induction process
- Contractors found it easier to navigate around the quarry having seen the video
- Greater clarity on safety rules and procedures
- Process has now been repeated on two other large Tarmac sites
- Will be introduced at other larger Tarmac sites in North & Scotland

- Contractors and visitors safer due to more effective induction process
- Drone surveys in both 2D & 3D mapping being trialled to visually map development through different extraction methods.



1025 Contractor safety . . . changing the mind-set

EPC-UK > Alfreton

DESCRIPTION

After several near misses involving our main contractors on-site, EPC UK decided that radical action was required to facilitate a change in the contractor's mind-set and align them with EPC's approach to behavioural safety.

A briefing was set up which emphasised at the outset that the purpose was to create a relaxed and open environment with the intent of improving and moving safety forward. It was made clear that the purpose was not to reprimand. The contractors watched EPC's site rules video as a basis for a discussion around the various tasks on the site.

Examples of near misses were discussed and how contractors could report them. It was stressed that near misses reported by contractors are treated as a positive in EPC's contractor scoring system.

One of EPC's safety ambassadors presented the master model to the contractors on behavioural safety. They discussed perceptions and awareness levels, how they are influenced and the effects they can have on one's behaviours. The contractors were asked to write down why safety was important to them and the answers were discussed.

BENEFITS

- The briefing was well received by contractors
- Additional briefings subsequently held with other contractors
- A noticeable change in the contractor's behaviour and attitude to safety
- Contractors beginning to buy-in to behavioural safety concept for all on-site
- An increase in near miss reporting
- Working towards achievement of a 'One Team Vision'.





1020 Robotic arm wrecking machine

CEMEX UK > Rugby Cement Works



DESCRIPTION

At Rugby Cement Works the initial access and then wrecking of refractory in the pre-heater tower is a hazardous operation with operators potentially exposed to a range of risks. During previous overhauls, the risk from these hazards had been mitigated by safe systems of work (SSOW), detailed rope access cleaning, manual tap testing, netting and air bag solutions. However, further improvements were required.

CEMEX site engineers collaborated with an Irish company to design and manufacture a robotic wrecking arm. The robotic wrecking arm can be installed and remotely operated from outside the vessels, removing build-up and tap testing before any individual gains access.

BENEFITS

- Task more efficiently carried out saving time and resource
- Eliminates risk of being struck by falling objects
- Eliminates potential falls from height
- No confined space working in dusty conditions
- No manual jack hammers reducing HAVS exposure
- Complex scaffolding no longer required
- Workforce directly involved in finding the solution.

1087 Mixer wash system

Forterra Building Products > Newbury



DESCRIPTION

The main mixer at the Thermalite Newbury factory requires regular cleaning. During production, manual mixer washes are carried out by the production operative once a shift by opening a hatch and hosing down. Every Friday, during the factory weekly shutdown, an operator is required to enter the mixer and manually clean it. This is a two man job and can take circa three hours. It is an unpleasant task which involves working in a confined space, exposure to HAVS, risk of being hit by falling material and manual handling when removing debris. Two weigh bins that hold the slurry feed for the mixer also require manual cleaning every four weeks.



To mitigate these risks a new mixer wash system has been introduced. The mixer has been fitted with four rotating spray heads, each spray head delivers 50 litres of water every minute and operates at a pressure of 110bar. When activated one spray

head will operate for 2.5 minutes, once the spray head has finished the next spray head will operate, again for 2.5 minutes, and then the third and fourth head. In total, 1,000 litres of water will be dispersed over a period of 10 minutes. The system is run twice a day with the water being collected and recycled. The two weigh bins have been fitted with one spray head each.

BENEFITS

- A 90% reduction in the following:
 - Entry into a confined space
 - Hand and arm vibration (HAVS)
 - Manual handling
 - Exposure to RCS and general dust
- Workings in hot and dirty conditions have decreased
- Increased production as shutdowns for cleaning no longer required
- Improvement in staff morale
- Improved conservation and recycling of water.

visit www.safequarry.com for more details or email: info@safequarry.com



1085 The hole system

Beresford Flooring Ltd > New House Farm



DESCRIPTION



There is often a need to drill holes into the underside of concrete floors to allow false ceiling, pipework and services to be hung. Frequently precast hollow core floor beams need to be drilled to release water trapped in the cores.

To drill these holes usually requires the operative to set up a tower scaffold, climb up it and drill the holes above their head.

This process exposes the operator to potential falls,

manual handling of scaffolding and the drilling is an arduous and repetitive task placing a strain on the shoulder. The operator is exposed to respirable crystalline silica fractions falling onto his face and clothes. Whilst drilling the holes, the operative is exposed to HAVS from the vibration of the drill and possibility of electric shock from the water coming out of the cores.

The water in the cores mixes with the concrete dust forming a very high alkaline liquid. When weep hole drilling takes place this liquid sprays out over the drilling operative, often causing chemical burns and skin irritation.

To overcome these issues, Beresford Flooring developed and patented 'The Hole System'. This system consists of a lightweight

telescopic pole with a foot pedal cam and interchangeable heads for marking, drilling, raw plugging and filling holes, all from ground level.

A hole can be drilled by placing a standard drill into the holder with in-built vacuum cup. The drill speed is controlled by a handle further down the pole. To drill a hole the operator lines the drill up to the pre-made pen mark, accelerates the drill by squeezing the handle located at waist height. The drill is raised upwards when the operative places his foot on the foot pedal cam. Any dust created by the drilling process is captured at source and directed into a vacuum cleaner. The pole can be adapted to enable an operator to mark up where holes need to be drilled or to insert raw plugs whilst working at ground level.

BENEFITS

- Eliminates the need to work at height
- Reduces the operative's exposure to HAVS
- Reduces exposure to noise, electric shocks and corrosive substances
- Greatly reduces manual handling, no scaffold towers
- Reduces operative's exposure to silica dust
- Removes the risk of repetitive strain injuries
- The light weight pole is easily transported around the site
- Eliminates working at height
- Can be used in tight, hard to get places including stairs.

1083 Wire dispenser improvement

Longley Concrete Ltd



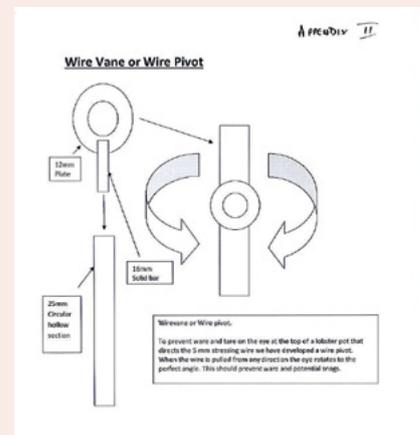
DESCRIPTION

At the Dewsberry Works where T-beams are manufactured, it was observed that the 5mm reinforcing wire dispensed from the 'lobster pot' holders was not flowing as expected. An inspection revealed that many of the eyelets through which the wire ran had developed grooves which was creating friction and at times, caused snagging. The wire would then need to be freed. With circa 2900 metres of the wire being used each day, these delays were impacting the efficiency of the operation.

Further research showed that there was no regular inspection of the eyelets or scheduled maintenance programme for them. There was no agreed design and a variety of different eyelets were being used. An in-house eyelet was designed that could be easily changed and could rotate. A stock of eyelets were kept in store for future use.

BENEFITS

- More efficient operation
- Reduced wear on eyelets
- Reduced manual handling risk for operators handling wire.





968 Device to reduce media displacement during cement mill discharge

Lagan Cement Group > Killaskillen



DESCRIPTION

Over previous annual shutdowns at Lagan Cement, emptying the media, six inch diameter steel balls, from the mill had proved difficult. As the mill rotated the steel balls would fall through the open hatch into the containment area, which was constructed with concrete blocks and plywood. Initially this temporary construction would contain the balls. However, as the mill continued to rotate, the repeated impact on the plywood from the balls reduced its effectiveness. Some balls would escape potentially damaging the hydraulic and water pumps located in the vicinity or their associated pipework.

To address this issue, a deflector plate was manufactured and

attached to the mill hatch. The deflector ensured that the balls would be guided safely into the containment area and minimised the impact on the plywood wall. The idea proved successful and reduced the spillage normally associated with re charge operations.

BENEFITS

- Reduction in manual handling of escaped steel media
- Downtime reduced by four hours for a six person crew
- Reduced damage to ancillary equipment
- A safer environment for all.



992 Safe removal of meal chutes – Caudon Cement

Aggregate Industries > Caudon Cement Plant



DESCRIPTION

During the major shutdown periods at Caudon Cement works maintenance is carried out to the cyclones, chutes, pipes and flaps within the pre-heater tower. The maintenance work can produce large amounts of demolished refractory materials, cyclone clean down material and also new refractory materials (known as rebounds). The material is caught by blanks inserted into the pipework before the demolition process starts. Once the process is complete, the blanks are removed and any blockages and waste material removed from the meal chutes and flaps prior to restarting the plant. This could require the meal chutes and flaps to be removed which required the use of lifting equipment, slinging and rigging. This was identified by the shutdown team as a high risk activity.

Following a brainstorming session, it was decided to create a new hinge system that would enable a section of the feedpipe to be removed. A trolley that utilised a hydraulic ram and pumps was used to lift the flap sections and allow them to be rolled out of the way of the cyclones and any material dropping down from the cyclones. Once the chutes and flaps were moved, a purpose built hopper was installed at the bottom of the meal chutes. The hopper directed material into a wheeled skip which was used to catch and then remove the waste.



BENEFITS

- Hinges and flaps can be removed with relative ease
- Safer without the requirement for slinging and rigging
- Reduced manual handling
- Reduced risk of operators being hit by falling material
- Shut down activities can be started earlier as hinge system easily operated
- Cleaner operation as material directed into skips
- Minimal delays in start-up as waste material removed without need to clear blockages.

visit www.safequarry.com for more details or email: info@safequarry.com



1022 Winch operated loading platform

CEMEX UK > Railway Solutions



DESCRIPTION

Loading railway sleepers onto train wagons was undertaken using a 25 ton crane and grab at CEMEX UK's Washwood Heath plant. Operators were required to stand at each end of the wagon to guide the crane and ensure the stacked sleepers were correctly lowered into position. The operators had to stand on the buffers due to restricted length of the of the wagon bed. This exposed them to potential risk of slips, trips and falls, particularly as the loading is undertaken at all times of the day and night and during all weathers. A fall could result in a four foot drop onto the railway line or part of the wagon.

To overcome this issue, a standing platform was designed. Once the train is shunted into position, a winch is used to lower a raised platform down to a horizontal position over both ends of the wagon. The operators can stand on the platform and safely manoeuvre the crane and sleepers into position, it also enables the

operators to cross the wagons to the other side of the train.

BENEFITS

- Easier and much safer access to guide the crane into position
- Huge reduction in the risk of slips, trips and falls
- Better visibility between the crane operator and loading operative
- Improved morale and engagement as all yard operatives were involved in its design.



Download the free MPA Apps

MPA Safequarry App MPA Safeprecast App

The Apps to access the health and safety hubs for the mineral products industry and the precast concrete industry

Instant access on your mobile devices wherever you are to:

- Incident alerts
- Latest safety innovations
- Industry guidance
- Toolbox talks
- Safety videos

All the videos highlighted in this guide can be watched on your mobile devices using the Apps or via the MPA YouTube channel www.youtube.com/MineralProducts1

For info call MPA +44 (0)20 7963 8000 www.safequarry.com

For info e-mail info@britishprecast.org or call +44 (0)116 232 5170 www.safeprecast.com





1074 Bespoke lifting device

Hanson UK > Ketton Cement



DESCRIPTION

During the shutdown in 2017, a £1 million project was undertaken on the raw mill at Ketton Cement Plant.

The raw mill consists of a grinding table and two sets of roll pairs. These weigh up to 70 tonnes each. The equipment has to be lifted out of the raw mill building and placed on the floor. It is then moved out of the building and then crane lifted onto another vehicle before being taken for repairs.

This involved a series of complicated lift plans, significant time and risks in the overall movement operation. The equipment was dragged sideways across the concrete floor to remove it from the building. This would result in some damage to the floor. Once out of the building, it was lifted by another crane onto a vehicle for transport to the work area for repairs. The reverse had to take place for reinstallation.

A bespoke platform was constructed in conjunction with a site contract company, Drury Engineering. This enabled the table and rolls to be lifted and lowered directly and safely onto the platform. The platform can be moved easily to the workshop area for repair. The trailer was designed to be towed by a front end loader. A new lifting beam has been installed in the workshop.

BENEFITS

- Removed the need for very detailed and significant lift plans
- Significant reduction in the risks associated with this task
- Eliminated damage caused to the concrete floor by dragging
- Operation completed in less time and more efficiently.



1073 Safe hydraulic operation of the main kiln doors

Hanson UK > Ketton Cement

DESCRIPTION

Opening and closing the main kiln doors at Hanson's Ketton Cement Plant has been made easier, quicker and safer following modifications introduced by the site team.

The two large refractory-lined steel doors, which each weigh over three tonnes, slide in from both sides to surround and seal the kiln burner pipe. They are hung on runners which sit in a frame at the top of the doors and were traditionally opened and closed by being pushed from each side.

Operators were exposed both to manual handling risks and the possibility of the doors falling off the runners and potentially causing a fatal or serious injury. Several ways were explored to see how this could be prevented. The initial improvement was to place a beam in front of the runners at the top of the door so that if they fell when being pushed from either side, they would be

retained by the cross beam. This idea was enhanced by installing a hydraulic pack to push or pull the doors without any human intervention. The hydraulic pack is connected to the steel door during maintenance periods. Once the door is opened, or closed, the pack is disconnected.

BENEFITS

- The entire operation is significantly safer and a lot quicker
- All major risks from this operation removed.





1082 Cooling tower replacement

Tarmac Ltd > Linford

DESCRIPTION

As part of a wider investment programme to improve health, safety and environmental performance at Linford, it was determined that its existing cooling tower required replacement. This was due to its inefficiency and inherent risk of Legionnaires Disease.

The on-site cooling tower was attached to the steam system. The teams driving force was to eliminate the health risk of Legionnaires Disease from this cooling source and reduce maintenance interaction which required the handling of chemicals and manual handling risks.

Rather than replace with like for like, alternative solutions were researched. The team undertook a review of cooling options and decided on replacement of the cooling tower with an adiabatic system.



BENEFITS

- Significantly reduced Legionella risk
- Regular ongoing chemical treatment not required
- Manual handling risks reduced
- Reduced water consumption even in the summer
- System installed at a cost of circa £20K.

1065 Emergency tyre deflation device

Hanson UK > Barton Quarry

DESCRIPTION

A failure on a tyre fitted to a Volvo ADT dumper caused the inner tube to balloon out of the casing. The tyre needed to be deflated, but due to the potentially weakened structure of the casing, removing the valve manually was not an option.

A spiked device was made consisting of a hollow tube welded to a plate with a hole in it to allow the air to escape. The device was then placed behind the tyre ready for use. Before commencing, a risk assessment and safe working practice was completed for the use of the device in consultation with the tyre company. A second ADT was used as a shield from any potential debris.

The ADT was then reversed onto the spike. This allowed the spike to pierce the tyre and safely deflate.



BENEFITS

- Potentially life threatening situation made safe
- Operative removed from hazardous zone
- Simple tool to assist in safe deflation of defective tyres.

999 Transportable access and egress platform – tracked mobile plant

Sibelco > Preston Manor Clay Works

DESCRIPTION

A quarry supervisor at Sibelco has designed a safe access and egress platform for tracked mobile plant. The system consists of an inclined staircase and access platform attached to a robust sleeper base to make it easily transportable via a telescopic handler or forklift truck within the working area.

BENEFITS

- Reduce risk of slips or trips from tracked mobile plant
- Provides easy access for both operators and maintenance
- Easy to fabricate and move around quarry/plant.





1019 Safety improvements to cement mill pallet gate – 1st floor

Tarmac Ltd > Barnstone

DESCRIPTION

During a housekeeping safety audit a fall from height hazard was discovered in the cement mill area. A forklift truck was used to place pallets of raw material onto a roller conveyor through a hinged gate at a height of approximately eight metres.

During the audit, the gate was found to be jammed open by a pallet of raw material, this highlighted that the gate was inadequate as a control measure, anyone who entered the area could have fallen. Shortly after this, a safety flash highlighted a fatality at a plant where an employee had fallen involving a similar gate system.

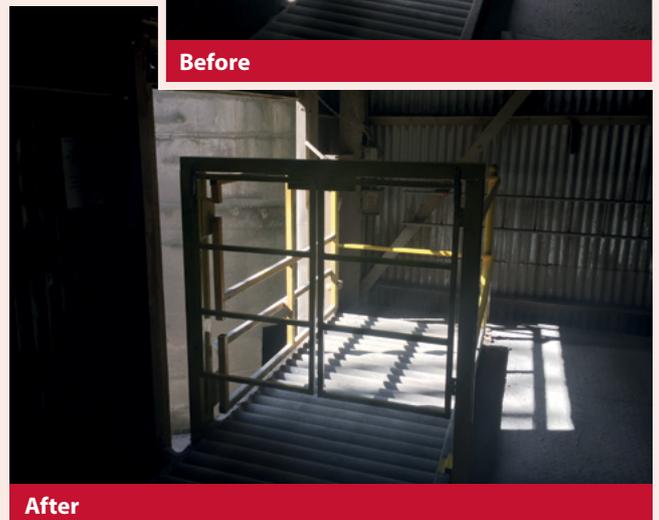
A small team developed and installed a new system which completely encloses the opening with handrails and spring-return gates. Even when the original gate is open, spring-return gates and handrails prevent anyone from entering around the pallet to the opening.

BENEFITS

- Eliminates the risk of a fall from height
- Can be easily implemented on other sites
- Employees directly involved in finding solution.



Before



After

1050 Automated mixer winch secondary device

Tarmac Ltd > Sheffield RMX

DESCRIPTION

At Sheffield readymix plant, the mixer door is raised for inspection and cleaning by a hand operated mechanical winch. The winch holds itself on an internal ratchet while an operator secures a secondary device to support the lid in the open position. On one occasion, the internal mechanism on the winch failed and allowed the door to slam back down, this could have resulted in a serious injury. Therefore, it was decided that an automated, secondary prop device should be added to the mixer lid door. This would have two advantages, eliminating the possibility of the door dropping due to another failure of the winch mechanism and enabling the task to be carried out by a single operator.

This was achieved by attaching a new prop device to the lid, and a 'cup' to the mixer wall. The prop device falls automatically into the cup as the door is lowered, preventing any further downward movement.

BENEFITS

- Potential for a serious injury removed
- Eliminates the need for second operator
- System now added to all mixers in the area
- Already demonstrated effectiveness when second winch failed
- A safer environment for all.





1036 'Aim for Excellence' campaign

Francis Flower > Scunthorpe



DESCRIPTION

Francis Flower launched an 'Aim for Excellence' initiative which was designed to integrate safety into every daily operational process whilst engaging with all employees.

A combination of managers, supervisors and key staff members were identified across the whole business with delegates from operations, logistics, customer service, and head office functions. They were invited to attend the 'Aim for Excellence' conference launch.

The launch was a two day, interactive event designed to provide safety guidance, playback real life scenarios whilst seeking feedback. The conference, which was attended by a quarter of the business, also involved reviewing the previous year's safety performance and behaviours. 'Aim for Excellence' resources were presented along with new group policies and procedures.

'Aim for Excellence' is a fully thought through process providing basic, across business safety targets and actions. The main driver of the campaign is to set business wide, non-negotiable safety standards that all employees can work towards.

The key cornerstones of the campaign are:

- A single vision
- Shared values
- Smart actions
- Realistic measures.

The 'Aim for Excellence' launch also included an apprentice style workshop. Delegates reviewed the near hits and incidents from the previous year and then highlighted the most frequent or potentially serious causes, discussing them in an honest and open way.

When delegates had decided on the most challenging aspects of health, safety and wellbeing affecting themselves and their colleagues, they were divided into groups. Each group created an 'Aim for Excellence' safety poster and tool box talk, covering one of the top four safety topics within the business.

At the end of the conference each group presented their poster and TBT to the whole group including the CEO, senior managers and members of the executive. The posters and toolbox talks have now been professionally reproduced and will be used within the business over the coming year. Each poster features a picture of the group who produced them. One poster and toolbox talk will be issued quarterly.

Following the conference, the empowered delegates returned to the business and presented the 'Aim for Excellence' values to every member of the organisation using a Power Point presentation.

All company employees then signed personal charters, demonstrating their commitment to the 'Aim for Excellence' process targetted at driving safety changes for themselves and their colleagues.

BENEFITS

- Extremely well received within business
- Business is recording an LTIFR of 3.26 and an AIFR of 22 (improvements of 80% and 44% respectively)
- Near hit reporting has increased by circa 300% over the period
- Buy-in at all levels in the business
- Sense of unity of purpose and commitment to safety in business
- An environment where safety matters every day, to everyone.





964

Driver near hit reporting and health and safety communication App



Tarmac Ltd > Tunstead Quarry

DESCRIPTION

Tarmac's analysis of near hits identified that there were very few reported by drivers which had occurred at customers' sites or delivery locations. Sometimes, they were reported a day or two later by the driver's employee. As a consequence of this, an unsafe condition or act was not being captured and followed up within an acceptable time scale – possibly putting others at risk.

Further investigation revealed that the main cause of this was that drivers were 'out of reach' for long periods, when they were on the road, away from Tarmac sites and their employer's depots. There also appeared to be a reluctance or fear of putting in a near hit report at the control room of the site where the near miss occurred. It was assumed that this was because drivers were concerned that it would be perceived by the customer as a complaint about the actual site. Another factor was that drivers were not receiving meaningful feedback from the near hits that were being submitted. This shortfall in two way communication was further compounded by drivers not receiving the safety briefings or safety alerts that are cascaded within the Tarmac communication process.

The feasibility of developing a mobile phone reporting solution was explored. This resulted in a text messaging service which allowed driver hauliers to text in a near hit immediately or soon after it was discovered. This facility slightly increased the near hits that were being reported and was seen as very positive.

Building on this success, an App was developed that could be downloaded to a smart phone. The App offers functionality so that much more content can be delivered and two way communication is facilitated.

The App has been developed with the following functions:

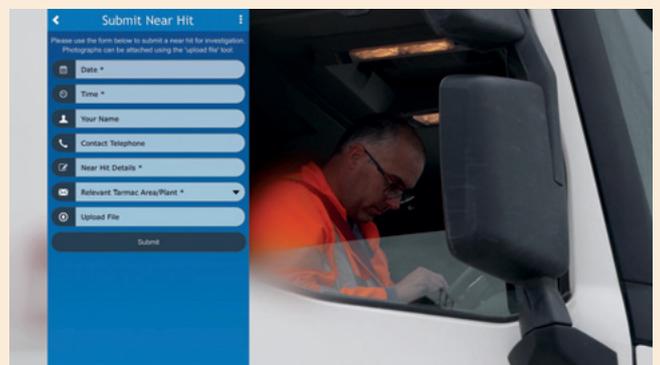
- About Tarmac – Company information, careers, company vision and more
- Submit Near Hit – Submit relevant details of an unsafe condition or act and photographs from the phone instantly

- News – safety alerts, safety briefings and more
- Safety Stream – Displays Tarmac safety related video content, policies, tool box talks
- Contact Directory – Key contacts within Tarmac
- Our location – Use as a route planner to Tunstead from any location
- Twitter – Displays the Tarmac twitter page
- Pocket Tools – user access to a notepad, torch, driving conditions, weather forecasts, a calculator and sound recorder.

The App is available to download from all App stores such as iTunes, Google Play and Windows Store.

BENEFITS

- Circa 150% increase in Near Hit reporting by the driver haulier population
- Massive 733% increase during January
- The App has enhanced and improved the near hit reporting process
- Report can include description, video clips and images of hazards
- Instant reporting enables issues to be addressed quickly
- Drivers receive feedback on action taken
- Improves safety at delivery/customer sites
- Feedback from drivers has been very positive.





1002 Behavioural and leadership safety client to contractors and back again

Sibelco > Kings Lynn

DESCRIPTION

Sibelco UK and D Wardle Plant have built up a good working relationship over the past 20 years. During 2014, they noticed a spike in incidents involving skip overturns on ADT's while unloading.

A review of the underlying causes suggested that too much emphasis had been placed on physical measures and procedures without sufficient attention being paid to behavioural safety. Using a partnership approach they discussed what both companies could do to reduce the incidents.

They were keen to involve three different levels within the business in this process; the senior management and leadership team, managers and supervisors, and operatives, ensuring that they would all be involved and committed to achieving the cultural change required. It was recognised that on some sites, D Wardle employees made up over 50% of the plants 'day-to-day' workforce but weren't integrated into the site in the same way as the Sibelco employees.

The following actions were taken:

Sibelco was already running a leadership and behavioural safety training program. Senior managers of D Wardle Plant were invited to participate to facilitate both businesses agreeing a safety strategy, the adoption of shared standards and language in respect of safety issues.

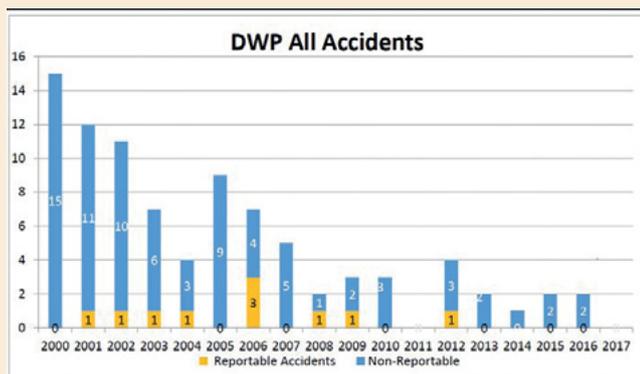
As a follow on from this, D Wardle Plant developed its own 'Stand Up' Campaign. It was designed to encourage any employee, regardless of their position in the organisation, to stop the job and speak up if they felt there was an uncontrolled hazard.

Scott Wardle, the MD of D Wardle Plant, conducted a roadshow at each Sibelco UK site to further reinforce the safety messages within the workforce and to listen to feedback on how they could improve safety. The ideas put forward ranged from simple PPE improvements to fundamental changes in the way

a site was operated. Introducing these changes often brought about efficiency gains in addition to safety improvements. The roadshows mirrored those conducted by the Operations Director of Sibelco UK, ensuring a common message across both businesses.

BENEFITS

- A significant reduction in incidents
- Noticeable change in the safety culture across the business
- Growth in the working relationship between the two businesses
- Common standards and procedures across the two businesses.





983 Health, safety and environmental information key rings

Brett Group > All sites

DESCRIPTION

Brett has built on an idea developed at one of its sites. The original concept was to produce safety information on the hazards associated with dust and silica using a credit card style format.

As the original card was so well received within the business, the leadership team challenged themselves to develop this concept further. Following debate among the team, brainstorming and interaction of site managers, supervisors and operatives, it was decided a set of cards should be produced to cover a wider range of health, safety and environmental hazards. The set of key health and safety areas were selected and then refined after internal debate and engagement with the team.

A prototype of the new card was produced and distributed to a cross section of people for feedback via questionnaires and conversations to test the effectiveness of material being communicated, the design and the suitability of the cards for Brett's working environment.

The cards function is to provide an 'aide memoire' of information to build knowledge and awareness of best practice. This helps employees understand what action to take to mitigate the risks when they are potentially exposed to a particular hazard.

The set of cards are designed to attach to mobile plant and vehicle keys. The cards also find their way into the canteens and rest rooms across the business, where they are invariably put on tables and desk tops. Brett have produced two sets of cards each containing different key messages.

BENEFITS

- Employees receive constant reminders on key hazards
- Cards are in prominent view across the business
- Cards stimulate safety conversations
- Cards can be easily updated to
 - Add new hazards
 - Reflect changes in business
 - Refresh the pack and generate new interest
- Concept developed with high level of employee engagement.



1035 Enhancing employee engagement through peer review

EPC-UK plc > Alfreton

DESCRIPTION

Behaviour impacts on over 80% of all incidents. Recognising the crucial importance of behaviour, EPC-UK's safety ambassadors introduced a process that enables individuals involved in an incident to reflect upon what happened in a neutral environment – 'Peer Reviews'.

After an incident, whether a near miss or one involving injury or damage, a peer review is undertaken. Provided no disciplinary action is to be taken, the relevant individual is requested to participate in the review by the safety ambassador to whom it has been referred.

The safety ambassador will arrange a meeting with the person(s) involved in the incident. A discussion helps them to identify how their behaviour affected the outcome of the incident. This process encourages the individual to reflect on their level of awareness at the time in relation to the hazard, the risks and the environment in which they were operating. Discussing their instincts at the time of the incident helps to establish whether other issues were in the individuals mind at the time and how they affected the outcome. The individual's perception of the hazard may have differed from the reality or they may have believed that they were acting in the best interest of the company, when in fact they weren't.

The ability to reflect on an incident with a peer has proven to be a very effective method to influence future behaviour. Following the review, a set of recommendations are proposed to management. These are normally relatively minor and the management provides feedback on what suggestions are to be adopted and implemented. The completion of these actions is also confirmed.

The peer review takes about 15 minutes and importantly, takes place in a non-threatening environment. It enables them to realise that they could have behaved differently, this recognition helps them change in the future.

BENEFITS

- Individuals are learning from the experience
- Following peer review, individuals are adjusting their behaviour
- Reinforcing that safety is genuinely important within EPC-UK
- Feedback from those involved is positive.



970 Development of safety culture of respectful challenge

Lagan Cement Group > Killaskillen

DESCRIPTION

In 2015, Lagan Cement Group reflected on the rising number and types of injuries happening to its most valuable resource, its people.

In 2016 the Group adopted a fresh approach to safety across the business which was focused on developing a safety culture. The objective was for employees and its contractors to build an improved safety environment for all stakeholders.

A new safety strategy was developed with a clear vision, mission, roles and end goals to enable the business to alter mind sets. A number of tools were developed including the implementation of Visible Felt Leadership (VFL) for managers and Step-in to encourage peer to peer respectful challenge.



To help facilitate the buy-in from management and employees a manager was appointed with overall focus on the safety culture. Their role was to help others in the business to alter their own mindset and help everyone on this journey.



Visible Felt Leadership (VFL)

In March 2016, a safety culture survey was carried out. The findings suggested gaps in getting management out of the office and back into the work areas. The introduction of VFL has helped improve the number of visits by managers to different areas of the business and their ability to engage with employees in safety conversations. VFL has now been introduced across all the product divisions within Lagan Cement Group.

Step-in

The Step-in campaign was developed to enable employees to challenge each other in a respectful way. This was launched with the creation of a short animated video and poster campaign with regular updates. The logo supporting the campaign was changed following feedback from employees. Whilst employees initially had a reluctance to confront their colleagues this approach is now gaining momentum.



BENEFITS

- 200 VFLs/safety conversations held in 2016
- No zero lost time (+1 day) injuries in second half of 2016
- Step-in gaining momentum
- 35+ step-ins of real quality in 2017
- Reduced number of incidents during annual shutdown
- Contractors and employees working closer together
- An improvement in the safety culture across the business.



1015 Redefining the delivery of driver training with help of technology



TJ Transport > Charity Farm

DESCRIPTION

TJ Transport decided to overhaul their approach to driver training. To help achieve this a new, driver induction program was formulated. This was supported with the launch of an online induction and training portal.

TJ Transport brought together their workforce of 123 drivers and delivered the brand-new training in a one day, face-to-face session. To ensure the induction could be re-delivered and referenced via the portal, all of the individual learning segments were filmed.

Features of the new portal are:

- Accessible to the whole company – every employee has a dedicated log-in
- Provides a consistent induction for new drivers
- Provides drivers with theory training on a range of topics
- Training can be carried out anytime, anywhere, according to driver preference
- Allows drivers the flexibility to build their own training timetable
- Once the driver has reviewed all the material and feels ready, they can complete the online TJ Transport Drivers Knowledge Assessment
- New drivers are paid a set fee for the time invested into successfully completing their induction
- Facilitates drivers induction into customers' protocols and procedures

- Future training dates are posted on the portal
- All users' activity is recorded and reported to the compliance manager.

Overall, the online training portal enabled the TJ Transport driver training to be consistent, interactive and trackable. It improved the ease of delivery of inductions, both internal and external, for an increasingly mobile workforce whilst maintaining and enhancing objective compliance requirements.

BENEFITS

- A dramatic reduction in occupational road risk
- Driver training hours increased from an average of 19 hours in Jan 16 to 40 hours in Jan 17
- Consistent and uniform understanding of procedures across the company
- Tracking enables individual and tailored support to be provided to drivers
- Reduction in penalty charge notices despite operating a 16% larger fleet
- Reduction in number of accidents and small scrapes
- Significant decrease in the number of minor vehicle safety defects
- A paradigm shift in driver behaviour at TJ Transport
- Drivers believe that company has their welfare as a priority.





1080 Reducing risk from mobile phone use

FM Conway > Dartford Depot

DESCRIPTION

FM Conway wanted to issue all its drivers with a mobile platform to enable it to provide them with work information and update tasks. It also wanted to allow the drivers to utilise the device for Apps that enabled online defect, near miss and hazard reporting.

However, FM Conway was concerned about the potential for a mobile device to distract the driver and the impact it might have on their ability to drive in a safe manner. Even if a driver does not answer a call or look at a text message, the knowledge that someone has called or messaged can distract them as they speculate about its content and the need to respond.

To overcome this issue, FM Conway researched a number of mobile blocking devices. Several were trialled but failed because they were relatively easy to bypass and did not cover Apple products. It was considered important that the device would also block Apps and other forms of social media.

A device called Cell Control met the test criteria and, in conjunction with the driver forum, it was decided to fit this to all commercial vehicles. It connects to all registered mobile devices and blocks the option of outgoing/ingoing texts and outgoing phone calls. Incoming calls from a pre-loaded list of individuals are permitted but must be answered using a Bluetooth, hands free connection. Effectively, when the Cell Control is in operation, the mobile platform has a non-responsive screen, no sound or vibration.

Managers, supervisors and drivers were instructed to keep incoming calls brief and, when more detailed conversations were required, the driver would be requested to pull over at a safe, convenient and legal place and call back.

In order for the device to be re-energized to normal operating parameters, the vehicle would have to be sitting stationary for a period of two minutes with the engine off and handbrake on before permitting a call to be made. This is also the case for sending text messages.

BENEFITS

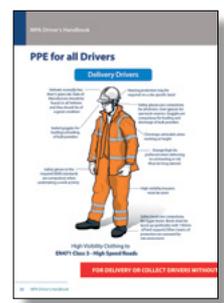
- Devices were fitted in October 2016
- Protected Miles = 429,960
- Blocked Phone Calls = 667
- Blocked SMS = 1,703 . . . Blocked Apps = 40,029
- A safer road environment for FMC Drivers
- Safer roads for other road users and members of the public
- Helps FM Conway's towards their goal:
 - Driver self-regulated behaviour is our aim; compliance is our policy.



Driver's Handbook



The Handbook is a tool for working drivers to help them understand and manage the risks that they face and create when driving and operating vehicles for work. It will help people make safer choices about the way they drive and behave around vehicles.



Download your FREE copy from www.safequarry.com or www.safeprecast.com

visit www.safequarry.com for more details or email: info@safequarry.com



1016 Complete van management system

CEMEX UK National Operations

DESCRIPTION

Following a serious road traffic collision involving a CEMEX van driver, the management of the van fleet was reviewed. A gap analysis compared the Fleet Operators Recognition Scheme (FORS), the Van Smart Management System designed by TFL and the processes already in place at CEMEX. Following this analysis, a series of improvements were identified and a new van management system designed and implemented involving circa 190 van drivers in the readymix business.

Van Drivers Handbook

An A5 handbook was created that was designed to be carried in the vehicle at all times. Based around a day in the life of a van driver, it includes CEMEX policies and procedures, vehicle maintenance information, driver next of kin and emergency contact details, breakdown information, van driving risk assessment, vehicle handover information, COSHH, site information, Highway Code and vehicle insurances.

Van Defect Reporting System

Similar to the defect book used by LGV drivers, a defect book is to be completed by van drivers. It lists the safety checks to be completed, a section to record defects and the remedial action taken which is signed off once completed.

Third Party License Checking System.

Using Descartes, all van drivers are required to permit CEMEX to carry out third party license checking on a six monthly basis. This system uses a traffic light approach which identifies drivers who have six or more points or were previously disqualified as high risk and increases the frequency of license checking.

Van Driver Training Package

A fully interactive, online training module was produced which van drivers complete. The training module acts as a walk through to the van driver's handbook and includes videos, real life incidents and activities to add context and ensure understanding. This training package has been published on the internet and is free to access at any time for any CEMEX van drivers or local managers.

Winter Safety Pack

Van drivers have been issued with a winter safety pack which is kept in the vehicle at all times. This winter safety pack includes snow shovel, foil blanket, high visibility jacket and a wind up torch.

BENEFITS

- A successful roll out across readymix business
- A safer fleet and safer drivers
- System adopted by rest of CEMEX
- Safer for other road users and members of the public.



visit www.safequarry.com for more details or email: info@safequarry.com

996 'Airscan' – active management of diversion routes



Colas Ltd > Traffic Management Operations – M3



DESCRIPTION

Highways England's new approach to roadworks' pilot scheme includes the provision of additional journey time information, easily distinguishable signing and a more consistent overall approach.

To complement this, Colas worked on a new initiative on the M3 Smart Motorway Project. The improvements provided by Colas includes the use of accurate and timely diversion route journey information, active monitoring of routes, improved signing and collaboration with adjoining road authorities.

The provision of accurate and timely journey information for road users through use of Automatic Number Plate Recognition (ANPR) is now common through work zones but is not used specifically on diversion routes for a number of reasons.

- Diversion routes may vary in location and route on a night by night basis
- Costly and less mobile equipment required to ensure coverage
- Often necessary to mount ANPR equipment on high level poles or trailers.

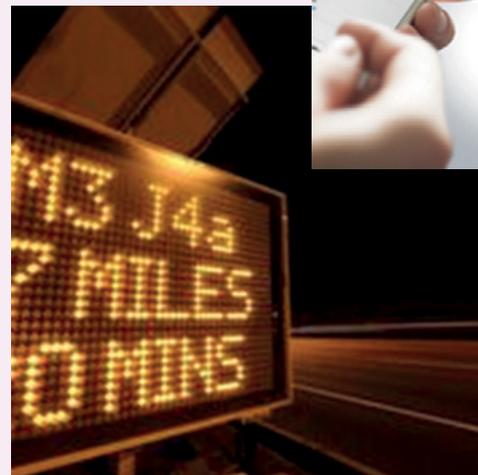
Colas, working with mobile specialist Ikania, have overcome these problems by using a new generation of sensors that analyse anonymised data from Bluetooth and Wi-Fi devices in passing vehicles. The new system 'Airscan', can be quickly and easily deployed on diversion routes using the trailer mounted signs and monitoring equipment.



The system can calculate journey time and provides real-time, accurate information to VMS, while informing works supervisors of any traffic congestion, such as that caused by collisions. The feedback provided by the mobile application on changes in journey times allows the strategic deployment of a Traffic Management™ team to assess and respond to the issue. The system also tracks the location of the Traffic Management™ teams enabling a log of their activity to be maintained.

BENEFITS

- Drivers provided with accurate traffic information on diversion routes
- Signage developed well in excess of requirements
- Problems on diversion routes can be quickly identified and resolved
- Improved driver experience of roadworks
- Provides quantified data to help identify and correct problems with signing and signalling
- Provides a detailed record of activity of the traffic management teams
- Raised the bar for the industry in terms of management of diversion routes
- High level of customer service satisfaction
- Reduced incidents of abuse to staff by frustrated drivers.





1001 Working in partnership to protect pedestrians from forklifts



Sibelco > Kingsteignton and Brassington

DESCRIPTION

Forklift trucks represent a significant risk of injury to workers on-site. Sibelco recognised that these risks must be reduced through effective traffic and pedestrian management, driver competence and, crucially, safe working behaviour.

However, traffic management inside process plant buildings can be difficult. The need for frequent and close operational interaction between process operatives and forklifts often remains, especially in bagging and palletising operations which are not fully automated. In situations like this, pedestrian proximity detection systems provide an extra layer of safety. They can help to overcome potential lapses of attention among even the most competent and conscientious pedestrians and forklift drivers.

Sibelco selected two proximity systems for trial after some initial research using criteria based on the sensing technologies, cost, and importantly, a high level of backup and technical support.

Avonwood Zonesafe

RFID (radio frequency) system. It detects special tags which are worn by each pedestrian. Offers 360° detection of pedestrians within an adjustable range of up to seven metres. Trialled at Kingsteignton-site in Devon.

Arcure Blaxtair

Stereoscopic camera based system. It uses clever algorithms to recognise the shape of the human form. Offers detection of pedestrians only at the rear of the forklift within an adjustable zone. Trialled at Brassington-site in Derbyshire.

Local project teams (site managers and supervisors) and local workforce champions were appointed to oversee the trials. A project manager acted as liaison and facilitator to support the site level implementation. Toolbox talks were developed and delivered to front line employees, by the local champions, to raise awareness of the functioning and capabilities of each system.

Throughout the trial periods, front line operatives (including process operatives, forklift drivers, contractors, truck drivers, weighbridge operators) were asked to complete feedback forms to give their open and honest opinions about each system. More than 175 feedback forms were completed.

Regular update meetings were held involving the equipment manufacturers, as part of a project review cycle. This continuous review cycle brought about minor modifications to the initial installations to improve system performance and major developments in terms of product innovation.

During the trial it was quickly recognised that a high level of false alarms were being generated in the bagging plant by the Avonwood Zonesafe tag-based pedestrian proximity system. Operatives were in a safe position but because of the close proximity to the forklift the alarms were triggered. The false alarms could lead to the alarms being ignored or even worse – switched off.

The project team came up with a solution involving a small, short range radio transmitter installed above each bagging station. This transmitter would emit a coded radio signal, effectively telling nearby pedestrian tags to 'stay quiet' and not emit a return alarm signal even if they sensed a forklift approaching. The quiet zone was the area in which the operator was in a safe position even though potentially close to a forklift. If a bagging operative were to leave this quiet zone, his tag would quickly return to its normal behaviour. Unnecessary false alarms were eliminated by this innovation – the Q Antennae.

BENEFITS

- Sibelco has implemented a global standard for mobile equipment safety
- A pedestrian detection system will be installed on Sibelco's 600 + fleet of forklifts
- Learning from trials assisted other sites in their selection and successful implementation of pedestrian proximity systems
- High level of worker involvement in trials enhanced outcome
- Proximity system enables quiet zones to be established within 10 cm accuracy
- A safer and more efficient system of operation.





1056 High speed network deliveries training video

Tarmac Ltd > Portland House

DESCRIPTION

During 2016, Tarmac experienced an increasing number of incidents relating to deliveries to sites with high speed traffic. The investigations and reviews following the incidents indicated a gap in knowledge and awareness around the practices associated with deliveries to high speed type sites.

It was clear that the existing induction and driver skills course had failed to provide the level of awareness and application required to ensure that drivers made the correct decisions when delivering to high speed networks.

Tarmac decided to produce a video to be used during inductions and with large groups of hauliers and drivers to improve control. The plan was to produce a film based upon six key steps to safe delivery which included the loading, journey and arrival at site, liaison with site personnel and safe exiting from sites.

The six key stages of the process were prepared in a storyboard format and, over a number of weeks, footage was obtained both from Tarmac and customer sites. Both night and day deliveries

were included, ensuring that the inherent risks associated with safe access to sites at night, such as lighting and visibility were captured. A range of vehicles were used to reflect the mix of vehicles delivering to high speed networks on a regular basis. All elements of the video were reviewed extensively and tested by the Tarmac logistics teams before the final version was released.

BENEFITS

- Video is a major element of the haulier induction process
- Video seen by over 1000 drivers across the product lines
- Feedback from drivers exceptionally good
- Effective means of delivering key safety messages
- Video shared with other commercial partners
- Drivers and hauliers safer when delivering to HS networks
- Other operators and road users safer whilst working at HS networks.

997 Public crossing barrier and stakeholder engagement

Sibelco > North Park Quarry

DESCRIPTION

As part of a phased development of a quarry in Surrey, Sibelco needed to establish a safe means of routing a permitted footpath across a section of quarry service road. Sibelco engaged with the local planners and key stakeholders who utilised the footpath to find a safe solution.

The discussions included site based meetings to view proposals and the areas of development. The consultation groups identified that users of the footpath such as cyclists and horse riders needed early visibility and notification of quarry vehicles using the crossing. This would help to prevent the spooking of horses and warn cyclists approaching at speed.

The implemented scheme incorporated a footbridge to span a cutting created for a field conveyor and a dedicated footpath protected by fencing and dual automated barriers each side of the pedestrian walkway to allow quarry traffic to pass. The barriers are operated by remote control from vehicle cabs. Once the barriers are operated a warning board illuminates on both sides of the footpaths to warn pedestrians and others of crossing vehicles.

Both barriers are operated by solar power incorporating battery storage. For periods of non-operation, field gates are used to provide additional security.

BENEFITS

- Reduction in the risk of pedestrian, biker and horse rider contact with vehicles
- Operators no longer need to access and egress their vehicles
- Removes risk of gates being accidentally left open
- Input from each stakeholder group provided a good solution
- Reduced impact of public interaction with operational quarry.





Occupational Health and Well Being sponsor

958 Innovative vacuum system to reduce the risk of lung disease



CPI Mortars Ltd > Coatbridge Factory

DESCRIPTION

Exposure to respirable crystalline silica (RCS) can cause serious lung disease including silicosis and chronic obstructive pulmonary disease. The HSE estimates that around 500 deaths occur every year as a result of workplace exposures to RCS in Great Britain. The HSE has recently broadened their assessment of risk in this area to one of overall employee wellbeing rather than simply safety.

CPI Euromix used this change in emphasis as the catalyst to review their control measures. The review identified an area of potential risk. Housekeeping duties at all 10 of its manufacturing locations were performed using large portable vacuum machines. The efficiency of the filters within these machines to remove airborne RCS particles was unclear.

The machines had been in operation for around 10 years and were fitted with standard filtration media rather than a high efficiency system. Exhaust monitoring was carried out on a sample of the machines to assess the efficiency of the filtration. The assessment identified that very fine particles such as RCS, if present, would not be removed by the existing system. With these units venting back into the workplace, they could represent a significant source of RCS exposure.

As the vacuum system has to be mobile and is used in many areas of the factories, installing fixed venting pipework was not a feasible. The manufacturer, Disab, was challenged to find a way to improve the filtration efficiency. The solution was a bespoke and innovative bolt-on HEPA rated filter inserted between the main filters and the vacuum pump. This overcame the difficulties in applying a highly efficient filtration to such a high volume vacuum machine. This was a first for this type of machine in the UK.

A trial unit was ordered and installed. Like for like monitoring of the exhaust emissions was commissioned and clearly indicated that the HEPA filter was removing the fine particles to a high efficiency level. £30k of capital funding was then secured on the basis of this trial to modify the fleet of 10 machines.

BENEFITS

- Removed potential source of RCS exposure to workforce
- Solution has potential to significantly improve RCS controls throughout the industry.





1057 Working safely with vibrating tools

Tarmac Marine Ltd > Drayton House



DESCRIPTION

If unmanaged, exposure to vibrating tools can cause hand arm vibration syndrome (HAVS) which is a serious and permanent disabling condition. Tarmac Marine set up a project to develop a new standard to manage all exposure from vibrating tools.

Tarmac's policy is to permit no more than 100 exposure points per person per day. The methodology used for recording and calculating the exposure points varied for each site, from completing simple paper forms in the workshop, to populating basic excel spreadsheets and printing them out for each activity or week. Colour coded tags are located on every tool informing users of its vibration magnitude which is required for the calculations used to determine how many exposure points were used.

The management team and site operatives were consulted and identified that a standardised solution was required for all marine sites, including all company vessels and wharves. The new solution was developed to incorporate several functions into one easy to use tool, providing additional information to both the onsite user and their managers that would be available anywhere at any time.

The functionality of the new system is detailed below:



On-site user interface for operatives

Users can access the new tool from a tablet or a desktop. Before a job, the operative users the 'Maximum remaining daily use checker', to determine their maximum trigger time using the relevant tool, based on their current daily exposure level. Following completion of the job, the user would then input the data into the records section.

The data is input on a tablet by simply typing in the date, selecting the tool from a drop-down list of all onsite tools, entering the trigger time, the risk assessment reference number and optional details about the activity. The system instantly calculates the number of exposure points for that activity, updating the user's daily total, and remaining points for the period.

Activities can be recorded or updated regardless of whether the tablet is online or offline as the data will be synchronized with the master database as soon as there is a signal. If there is no signal, users can access their most up-to-date record and calculate trigger time remaining.

If an individual exceeds the daily limit, the database instantly sends a copy of the workbook in an email to the site management team stating that the user has exceeded the daily limit. This is designed to discourage users from changing exposure times and to provoke a conversation even if there is simply a typo during data entry.

User interface for managers and supervisors

When managers log on to the system the first screen that they see is the user dashboard. This provides an instant default view of the weekly exposure points used by all of their site employees. The dashboard highlights anyone who is approaching, reached or exceeded their daily limit. Whilst the default view is of the current week, it can also be changed to show any other week of the year.

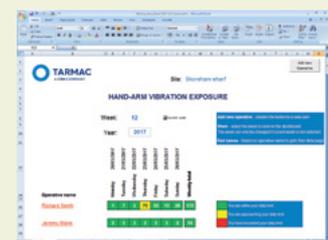
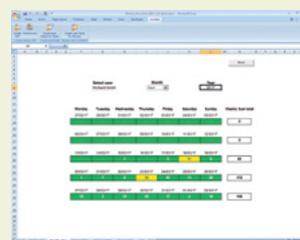
A new user can be added but requires an administrator password and confirmation that the operative has received the relevant Tarmac HAVS training.

Another report provides a monthly overview of the exposure activity for the selected user highlighting days where activity was approaching, or had reached or exceeded their daily limit. The manager can add a comment on each individual activity; query the data if it looks suspicious; delete an activities exposure points from the list if it has been entered on the wrong page, but never delete the full activity, providing a full audit trail. The manager's comments are visible to the users when they log on.

The HAVS database also includes the sites tool register. This includes details of all the sites tools and their associated details. Tools can only be added if all the required information is known. As soon as a tool has been input into the tool register, it becomes available for all users to select on the form.

BENEFITS

- A standardised tool which can be used on multiple platforms
- Available to all employees anywhere on-site
- System is user friendly and an improved method for operatives managing their HAVs exposure
- Provides operatives early warning if approaching limit
- Encourages employee behaviour to take responsibility for HAVs related action
- Managers can see their teams individual scores and take corrective action.





1012 Health and wellbeing

CEMEX UK > Nationwide Head Office



DESCRIPTION

CEMEX has been raising the profile of health and wellbeing for a number of years with campaigns such as healthy heart and keep hydrated. However, it recognised that it is difficult to motivate an individual to live healthy and, with sickness absence rates at an all-time high, some further action was required. A workplace wellbeing expert was asked to partner CEMEX in the development and delivery

of a programme to make the workplace 'health promoting'.

30 employees, drawn from various areas of the business, were recruited as wellbeing champions. These volunteers were asked to help cascade and promote material developed for the programme. They were provided training which included the use of a body composition analysis machine. This equipment takes all your 'inside' measurements such as fat mass, bone mass, BMI and total body water. The machine is set up so the individual runs the tests themselves and the results are provided in a print out to them. The health check also included a self-test blood pressure monitor. The individuals were able to compare their results with a health range chart located by the machine. They were also given a selection of information sheets which highlighted what their results meant and how they could improve.

Initially, the equipment was hired and the wellbeing champions supported a 'Know Your Numbers' road show where the equipment toured the country from Scotland to the South Coast. 50% of employees were reached over a six week period.



Following the positive 'word of mouth' feedback from employees and internal promotion, requests came in from all areas of the business to take the tests. CEMEX purchased their own equipment to enable all employees to have the checks for the first time or to re-check their earlier results.

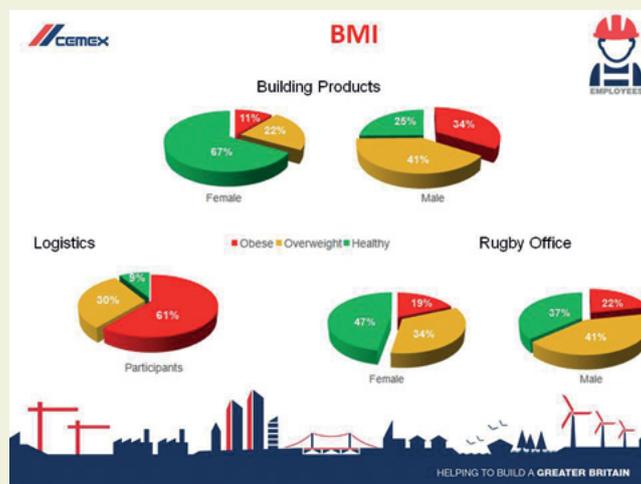
Whilst the results from the analysis were anonymous, the majority employees shared their results with each

other. It created a high level of awareness particularly around the Basic Metabolic Age which became the most talked about item. This result is calculated by comparing your basic metabolic

rate with average for your chronological age group. Quite a few employees were shocked by their results and pledged to show an improvement the next time the equipment came to site.

BENEFITS

- Improved health and wellbeing awareness across the business
- Individuals voluntarily sharing and discussing health and wellbeing
- Individuals provided with results that gave them the motivation for change
- System in place that will enable individuals to monitor improvements
- Identified individuals that needed medical advice for high blood pressure
- Provided CEMEX with summary information
- Champions helped to create employee buy-in
- A healthier workforce.



visit www.safequarry.com for more details or email: info@safequarry.com

974 **'Sit Less, Move More'****Grundon Sand & Gravel > Thames House****DESCRIPTION**

A healthy and happy workforce is of paramount importance to Grundon, in keeping with this it ran a special week with a theme of 'Sit Less, Move More'.

Event during this week included:

- Every member of staff being given a pedometer and encouraged to create a team to challenge and beat other sites in the business. This was enthusiastically received with sites adopting innovative team names such as Red Hot Chili Steppers and The Sausage Strolls.
- A number of physical activities were held, the favourite of which was a smoothie bike challenge. Staff participated in lunchtime walks, as well as an aerobic desk-exercise class and a Wii Fit challenge.
- Other areas of health covered included a refresher on manual handling, the importance of healthy food in collaboration with Oxford Foodbank and tips and ideas for staff to take home to help the rest of the family to 'Sit Less, Move More'.
- Each day had a theme led by our senior management team as champions. One such theme featured on Wee Wednesday was the importance of hydration and what urine can tell a person about their health.

**BENEFITS**

- Extremely positive feedback from staff at all levels
- Employees continuing to use pedometers or APPS on phones
- Healthier food has been requested for vending machines
- Improved awareness of health and wellbeing within business
- Noticeable change in employee's behaviour
- Oxford Food bank had many new volunteers sign up
- Introduced breaks for desk exercise and stretching during training sessions
- Set up a table tennis room to help employees get away from desks
- Fewer calls in office as staff visit others desk for conversation
- Healthier and happier workforce.

1021 **Health and wellbeing****CEMEX UK > Rail Solutions****DESCRIPTION**

The health, safety and wellbeing of its employees are Cemex Rail Solution's top priorities. With operations running 24 hours a day over four days a week and

employees working twelve hour shifts, it was highlighted that some of employees did not eat before starting their shift. It was possible that before they sat down for their first break, it could have been over twelve hours since they had eaten.

To address this issue, a breakfast club was introduced before the shift started. CEMEX now supply breakfast at 5.30 am for the day shift. A breakfast is also available for the night shift when they finish work at 6.00 am. Allowing them to have breakfast before leaving work helps them to get to bed earlier.

Other initiatives include:

- Fruit being supplied on a quarterly basis to promote healthier eating



- New Leaf, a specialist health and wellbeing company, attended a training day during which key health measurements were taken and individuals advised on appropriate lifestyle changes as necessary
- The health partners will be attending on a quarterly basis and will run sessions on issues such as healthy eating, fitness and stress management
- Some volunteers will be trained by New Leaf to become health champions.

BENEFITS

- Recognition that wellbeing, not just health and safety, is a top priority
- Improved awareness of health and wellbeing within business
- Operators better prepared to undertake shift work
- A healthier and safer workforce.



1090 Vacuum system

Aggregate Industries > Croft

DESCRIPTION

Aggregate Industries reviewed the vacuum system to remove dust and small particles created by production of concrete blocks at their Croft precast factory. The existing system was a large industrial vacuum that was only used on occasions in a small area due to its lack of manoeuvrability.

A vacuum system was required that met the following criteria; it could be used on all three levels within the factory, could reach and be used in all areas, was user friendly, could be used by anyone and would not be time consuming for the operatives. The small team at the Croft works suggested that the new system would be more useful if it was either more mobile or there were several systems around the plant.

The concerns about the multi-machine solution were uncertainty over whether they would be used, the cost of a multi-unit system, storage of the units and potential maintenance issues.

An engineer reviewing the problem observed that the existing system was very powerful and would be capable of vacuuming material from a 'hundred meters away'. The option of purchasing a 100 metre lengths of flexible pipe was considered. However, the

issues around the storage of the pipes and practicality of using the system led to this option being discounted.

Following consultation with the operatives on-site, it was suggested that some fixed piping was installed reducing the amount of flexible piping required. Leading on from this idea was the concept of a ring main of pipe work that could be used on all three levels of the building. Analysis showed that this was a cost effective and practical solution and the system has been installed.

BENEFITS

- A cleaner, more desirable environment has been created
- Reduced exposure of operatives to crystalline silica
- The vacuum is now used on a regular basis
- System has been embraced by the team on-site
- Similar system has been installed at Burton and being considered for other sites
- System is easy to maintain
- A cost effective solution.





1077 **Mobile pedestrian safety zones**

Hanson UK > Needingworth Quarry



DESCRIPTION

Hanson's Needingworth Quarry wanted to improve pedestrian access with the aim of providing safe routes to link all the buildings on-site. One of the main challenges was to create safety zones for pedestrians in and around areas with traffic. The solution was arrived at through a process in which all the employees were actively engaged, primarily through the safety committee.

The solution was to create a mobile safety zone which could be moved as the pedestrian routes developed. Experience showed that once a route was created it had to be tested, this would frequently reveal issues that required the route to be revised. Changes would also be required as the quarry evolved and different areas were worked.

Safety pods were created that could be moved around the site by a telehandler. A pedestrian could navigate between the pods, knowing that they were always safe once in the pod.

The development of the pedestrian routes was a site team 'journey' involving everyone on-site. Once the routes had been developed the safety zones were positioned with the use of flags to try to make them more visible to vehicles.

Finally, during winter, the idea of fitting lights was also incorporated into the design. Lighting towers were installed with solar powered LED lights activated by a PIR sensor. As a pedestrian enters the zone, the lights are activated.



BENEFITS:

- Reduced risk of pedestrian being involved in collision
- Provide zone in which pedestrian can safely plan their next movements
- System allows pedestrian routes to easily change as a quarry develops
- Flags and lights serve as a guide for pedestrians to the safety zone
- Lights further minimize the potential for slips trips and falls
- Flags and lights provide visual warning to vehicles that pedestrians are in the area
- All employees involved in design process
- System can be easily adapted for use on other sites.

1034 **Enhancing safety through technology****EPC-UK > Rough Close Works****DESCRIPTION**

13 employees at EPC-UK volunteered to start a new safety initiative, centred on behavioural safety, they became the company's safety ambassadors. Their employee lead campaign has been developed with the mind-set that all employees are 'One Team', with one vision – for all to return home safely at the end of each day.

The safety ambassadors are working to enhance behavioural safety by facilitating greater worker involvement. Their work involves encouraging safe working amongst their peers by:

- Giving them the confidence to challenge unsafe behaviour
- The delivery of safety presentations centred around behaviours and awareness
- Conducting peer reviews following incidents where the cause is deemed to be behaviour related (See entry on page 20)
- Informal safety chats with their colleagues around any issues of concern
- Regularly walking around site to ensure they are visible and accessible.

They have also developed a safety based mobile phone App which is designed to provide an easy to use, paperless system for the immediate communication of issues, near misses and to complete

dynamic risk assessment forms. The ambassadors provided small working group sessions on how to use the App.

BENEFITS

- Employee lead safety initiatives helps others to engage
- App based system enhanced safety communications
- App system reduces isolation of workers in remote location
- Culture changed as staff better understand behavioural safety
- Better learning by discussing behavioural factors
- Employees more confident in challenging unsafe behaviours.

1091 **Action cam video****Aggregate Industries > Torr Works****DESCRIPTION**

Aggregate Industries had an employee who thought he had isolated a piece of machinery and carried out a task with the equipment still live, this could have resulted in a fatality. When he realised the extreme risk he had exposed himself to, he felt sick. Although he knew that his failure to correctly follow the isolation procedures was a potentially dismissible offence, he chose to report the incident. He did not want any other colleague to put themselves in this position and recognised that there might be valuable lessons to be learnt from his experience.

The subsequent investigation revealed that the machine had a faulty isolator switch which would have been noticed if he had carried out the isolation procedure in full. Critically, he had not completed the compulsory test to confirm that the equipment was no longer live.

The isolation procedure was immediately reviewed and a brief cascaded to everyone to check their isolators on-site. Certain isolators were changed as a precaution to eliminate the possibility of this happening again. The standard was improved (now use

LOTOTO) and revised to provide greater clarity about the lock off procedures. The objective was to ensure that it was fully understood and always followed by all employees.

A short video was made using an action cam. This approach was able to capture the noise and experience of operating in a difficult environment. However, the video can be viewed in a safe area where questions can be asked and answered clearly and without ambiguity. It is an ideal training tool. A register of employees who have watched the short video is maintained.

BENEFIT

- Comprehensive understanding of the lock off procedure
- People more receptive to visual messages
- Video training ideal for noisy environments where difficult to confirm understanding
- Video is clear, comprehensive and easily accessible
- Action cam will be used for other training processes.

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976 Workforce site self-audits

Brett Group > Faversham

DESCRIPTION

During site walk arounds Brett managers asked employees about their perception of ownership and personal responsibility for health and safety. Although the feedback was positive, it became clear that they viewed auditing as typically a top down activity during which the workforce was involved but they are normally being led. This did not help their sense of ownership of the problems identified and could lead to concerns about being blamed for faults identified.

The employees recognised that the SHEQ audit process is needed and should be continued. However, Brett still wanted to find a way to improve the sense of ownership of health and safety issues with the supervisors and the wider team.

An additional tool was introduced that enabled supervisors to quickly look at five specific areas per month and record improvements as they took place. The big difference was that the mini, self-audit was owned and completed by the site supervisor and their team.

Each month, the supervisor and members of the wider team look at the key areas listed, score accordingly and comment as appropriate. The scores are aggregated and applied to a spider graph for the month and on a year-to-date basis. The graph quickly identifies short comings and key areas to focus on. The team are encouraged to record accurately and transparently even if this means admitting a failing.

Using this data, the management team is able to assist and help drive improvement. Site managers, key senior managers and the supervisor walk the site each month as part of this process.

The supervisors have ownership of the audits and maintain the records. The findings are discussed on a regular basis with the workforce to further encourage engagement.

BENEFITS

- Supervisors/site team have high level of ownership of audit
- System is open and encourages discussion
- Easy to track progress and focus on priorities
- Encourages a team approach to finding solutions
- System minimises culture of fear or blame
- Will be expanded to cover more sites, site specific issues and environmental and quality issues.



981 Improving product quality

Brett Group > Rainham Quarry

DESCRIPTION

A new concrete plant was erected at Brett's Rainham Quarry in 2016. It was recognised that some additional measures would be required to ensure that the dedicated stock piles for the concrete operation would not become contaminated. The concern was that in addition to moving a lot of different materials from the washing plant, the shovel drivers regularly carried out maintenance including the grading of the yard and haul roads, introducing the possibility of product contamination.

The team discussed how to check the cleanliness of the loading bucket prior to tipping processed aggregates into the concrete plant hoppers. The existing method was to step out of the machine and check, which could lead to a risk of slips, trips and falls. Alternatively, the driver could ask another operator to check, distracting them from whatever task they were engaged in.

After a short brainstorming session, they came up with a very simple, but effective solution. A large Perspex mirror was installed on the supporting wall for the concrete ramp. The shovel drivers use this to see directly into their bucket, negating the need to leave the cab to confirm it is clean prior to loading the concrete plant.

BENEFITS

- No contamination of processed aggregate
- Reduced risk of slips, trips and falls from shovels
- Cost effective solution that also saves time
- Customers receive the best quality product
- Site team all engaged in finding a solution.





982 Operative involvement in site operation and management

Brett Group > George Green Quarry

DESCRIPTION

Brett's George Green Quarry became operational in June 2016. It was important that all members of the site team had a good understanding of operational control of the site. The site team had a meeting to discuss what would aid them in monitoring, maintaining and optimising the processes. They designed a system based on five key notice boards and also determined the optimum locations for them. The boards are:

Board one – Active Contractor board

A magnetic white board installed in the main office where all contractors are signed in, inducted and complete relevant paperwork. All the relevant paperwork such as competency certificates, appropriate permissions/permits to proceed with the tasks they are carrying out are attached to the board. On completion of the task, they sign out in the office and the paperwork is removed from the board and filed as appropriate. At a glance, anyone can see the activities being undertaken and which contractors are still on-site.

Board two – Maintenance TCard Board

Any job that is required to be carried out is transferred to the appropriate TCard and these are monitored by the site team. The TCard Board is located in the welfare unit so that any jobs seen during a shift can be written down when that person goes to their break. It would also enables jobs to be discussed prior to the work being done.

Board three – Inspection Calendar

This was devised by the team in order to ensure all inspections required on-site are carried out in a suitable time. This was also located in the welfare unit so it could be checked at the beginning of a shift.

Board four – Process KPI board

This board was devised by the team to allow them to have a better understanding of the plans, capabilities and throughputs. This was located at the entrance to the welfare unit so that anyone who came to site could see that the team were looking at the plant and monitoring it.

Board five – Activity Board

The final board was a company-wide initiative to ensure everyone is made aware of what is happening on-site that day, also located in the welfare unit. It is updated prior to work commencing and added to as necessary.

BENEFITS

- Site team all engaged in designing a system that would be efficient for them
- Ensures that all employees have buy-in to the system
- Effective management and control of contractors
- Clarity for site team on what activities were being undertaken on-site
- Facilitates team planning and prioritising activities.

Safer and Healthier by Leadership



MPA is running a series of workshops at different locations throughout the UK during 2018, contact Kevin Stevens for more details.

A programme that will help leaders to understand how leadership behaviours influences their organisation's development. Also to analyse their business, to develop their strategies and inspire their workforce to achieve 'Zero Harm'.





1042 5+2 Campaign – Safety zone blue lights and other enhancements



Tarmac Ltd > Alfreton

DESCRIPTION

Three separate incidents occurred at Tarmac Contracting over a 13 month period. All the incidents involved very experienced operatives who suffered serious injuries as a result of collisions with rollers. The underlying causes of the incidents were; the lack of segregation between people and plant, lack of planning in relation to the risks, poor communication between the mobile drivers and pedestrians, complacency towards risk due to lack of awareness. This led to the successful introduction of Tarmac's 5+2 safety campaign.

During Safety Days in January 2016, Tarmac introduced the 5+2 plant and people protection zones initiative on their sites for all plant. The 5+2 protection zones represents:

- 5m exclusion in the direction of travel for all plant (except pavers, planers and chippers)
- 2m to the side of all plant (except pavers, planers and chippers).

A 5+2 working group of experienced surfacing personnel from a number of contracting areas was set up to monitor and improve the system. Through their work the following refinements have been made:

- All supervisors and gangs review the shifts' planned works and they create a daily laying plan as part of the risk assessment process. This helps to identify areas such as hot spots and pinch points where further safety controls may need to be introduced.

- Blue Lights have been fitted to plant which give the site workers a guide to the 5+2 safety zone. The blue lights shine onto the ground and identify the correct measured area around the plant and provide visual awareness of the safety zone. Operators and drivers are provided with a 'thought nudge' if pedestrians encroach within the zone.
- A successful trial using radio communications for all workers has been completed. This is a similar to the comms device used in formula one race pits, it gives a perfect but not intrusive communication to all site personnel wherever they are on-site. The comms system will be rolled out to gang members in all areas of the business to help improve on-site communication.
- A video has been made to reinforce the reasons behind the 5+2 safety system which is widely used for training and inductions.

BENEFITS

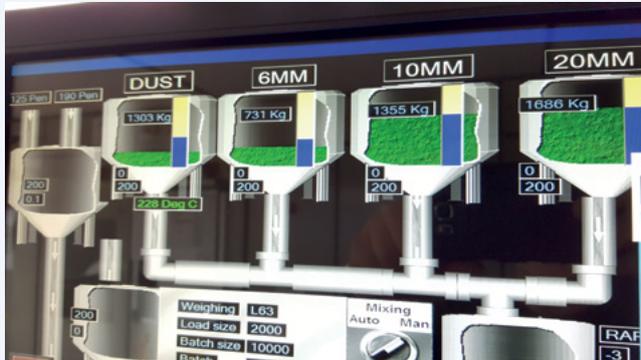
- The 5+2 slogan and campaign has worked extremely well
- Working group and others suggesting further developments
- Greater awareness of the dangers of proximity to mobile plant
- Reduce chance of contact with mobile plant
- A safer working environment for contracting and laying operatives.





993 Aggregate overflow cut off device

Aggregate Industries > Express Asphalt Darwen



DESCRIPTION

During asphalt production, when the hot aggregate bins become full, any excess material is expelled through the overflow chute. At Aggregate Industries' Darwen Plant it was usual to remove on average 10 tonnes a day. A large amount of airborne dust was generated by overflow and its removal, creating a significant respirable silica hazard to both customers and operatives. Additionally, this heated aggregate (up to 200°C) could present a burns hazard until it had a chance to cool.

A solution was required that would eliminate the problem altogether rather than just mitigate the risks. Invertech Solutions and the company's technical department installed a PLC to micro manage this function. Data on flow rates was mapped into an algorithm which calculated how much aggregate was in storage plus what was in transit during production. When a

pre-set maximum was reached, the feed would be disabled by the controlling PLC. When room was available in the storage bins the feed would start up again.

BENEFITS

- Overflow dropped from 10 tonnes per day to just one tonne per month
- 99.6% reduction in the risk posed by airborne respirable silica
- 3000 tonnes less aggregate processed unnecessarily
- Removal of hot aggregate exposure risk and associated fumes
- Reduced maintenance requirement due to less processing through the asphalt plant
- Annual savings from 1,400 less loading shovel movements
- Savings in fuel burned and emissions
- Reduced risk of collisions on congested site
- Three month pay back on investment that can be easily adapted for other plants
- Safer working environment for everyone on-site.





1051 Asphalt plant load out light bar

Tarmac Ltd > Dolyhir Quarry



DESCRIPTION

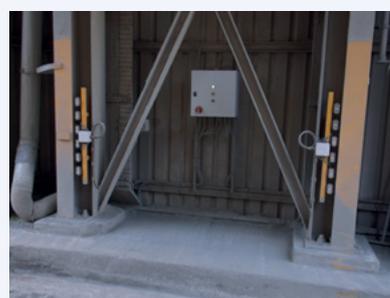
There are a number of incidents on asphalt plants where asphalt has been dropped onto the cabs of lorry. This normally occurs because either the driver or plant operator are not fully aware of

the position of the asphalt plant discharge door in relation to the body of the lorry.

Dolyhir Asphalt Plant has installed a light bar to assist drivers in the load out area. The light bar shines high power, blue LED lights at the side of the vehicle, this creates a line of light that indicates the front and back edges of the plant load out point. The driver and operator are able to confirm that the vehicle is correctly positioned before discharging the load. The addition of a convex mirror allows the driver to clearly see the lights on the side of the lorry.

BENEFITS

- Significantly reduces risk of discharge on cab
- New system popular with drivers and plant operator
- Reduces time and effort to position smaller vehicles correctly
- Simple and cost effective solution – easy to install
- Could be replicated on other plants.



1006 Bitumen weigh kettle overflow safety measures

CEMEX UK > Lincoln Coating Plant



DESCRIPTION

The bitumen kettle at CEMEX's Lincoln Coating Plant is in an elevated position. In the event of an overspill, there is an increased potential to cause harm to operatives or customers being loaded. Four separate safety features have been installed to prevent the bitumen weigh hopper from overflowing. Each

system works independently of the others to make it failsafe. An overflow pipe has also been fitted directly into the mixer to prevent bitumen running through the plant in the unlikely event that all the safety features fail.

The systems are:

- PC over weight cut off – PC will stop the bitumen pumps when it reads 140Kg
- PC time out – PC will stop the bitumen pumps when they run for more than 30 seconds
- Bitumen pump time out – a separate mechanical timer that will stop the bitumen pumps after 36 seconds
- Hycontrol over fill probe – the probe will stop the bitumen pumps at two thirds capacity.

BENEFITS

- Risk of overflow has been eliminated
- A safer plant for all.





1095 Bitumen kettle dual modular redundancy (DMR)

Aggregate Industries > Express Asphalt Darwen



DESCRIPTION



Dual modular redundancy (DMR) is the duplication of critical components to increase their dependability in the form of a failsafe. Darwen Asphalt Plant decided to install a second set of load cells onto the bitumen kettle which are used to continuously monitor the correct operation of the primary set. The DMR system looks for discrepancies between the primary and secondary load cells, if there is a difference of more than 10kg is detected, the pump is immediately shut down to prevent any further filling. The pump can

only be restarted when the reason for discrepancy between the load cells has been identified and rectified.

The system can be checked using a very simple test facility. Two handles gently squeezed together simulates a weight difference which should automatically shut down the pump. The operator can restart the pump after this simple test has been completed. Without DMR, a load cell fault could allow the kettle to overweight bitumen. In this situation, the high level sensor would become the last line of defence for the shut down of the pump.

Additionally, installing DMR has provided further operational benefits. 'Zero Drift Protection' monitors the potential negative drift on the weighing. A 'Rate of Change' indicator monitors the free movement of the kettle where a snag could allow bitumen to accumulate undetected. In either scenario, the pump is shut down pending further investigation.

A visual display in the mixer cabin gives real time weight display and also flashes a clear fault message in the event of a problem.

BENEFITS

- Eliminates the risk of bitumen kettle overflow caused by load cell failure.
- Allows a 'real time' check on the health status of the primary weighing system
- Removes reliance on the high level probe as 'last line of defence'
- Automated stop systems reduce operator error risk – ignoring alarms
- Easier to identify and rectify faults
- Low cost solution that can be easily installed on other plants
- Good hierarchy of controls and exceeds AI's existing bitumen standard.

1071 Restraint bars for Bomag rollers

Hanson UK > Contracting Division



DESCRIPTION

Hanson's contracting division has recently taken delivery of the latest version of Bomag 161 large vibratory roller. Hanson recognised that the split door on the roller, which enables the driver to have the window wide open whilst the door is still closed, presented an opening large enough for the roller driver to fall out if suddenly jolted. Bars were fabricated and fitted to help contain the driver in the cab during use.

BENEFITS

- Reduced risk of driver falling from height
- Improved safety of roller operation
- Expect bars to become standard on this roller model.





1096 Bitumen flow heating system

Aggregate Industries > Express Asphalt Darwen



DESCRIPTION

The failure of the overnight trace heating on the pipes transporting bitumen has been the biggest cause of breakdowns at Darwen and has led to production delays. The problem was compounded by delay whilst electrical support was bought on-site. The maintenance team were working in difficult conditions, usually at height, and often in darkness.

Invertech Solutions were asked to investigate how to improve the situation. The solution was to exploit an already hot pipe from the day's production. Studies were undertaken to determine the thermal characteristics of the pipe temperature drop and this data was fed into a PLC controller. The PLC determined the optimal temperature for the bitumen to be re-circulated through the pipes before being returned back to the tank once the target upper temperature is reached. This system of heating is so efficient that it takes just 120 seconds to raise the temperature from 50°C to 100°C.

As the site is unattended overnight, safety features protect against the possibility of system failure or bitumen leakage. For example, weight deviation in either the bitumen tank or weigh kettle or a temperature drop below the operational minimum will disable any further circulation. A warning message displayed on the mixing screen will alert the operator to the problem and the system reverts back to the 'old' trace heating system to warm up the pipes instead.



BENEFITS

- Removed need to work at height often in dark
- Reduced fire risk and maintenance associated with trace lines
- System has operated with 100% efficiency during the winter
- Eliminated biggest cause of breakdowns and pipe blockage
- More efficient plant with reduced downtime
- Energy savings of 6,570 kWh per annum
- The system is cheap to install and easily applied to other sites.

1054 Fitters initiative – gasket replacement on filler silo

Tarmac Ltd > Teesport

DESCRIPTION

The filler silo to add dust to the mix at Tarmac's Teesport plant used a bottom valve to release the dust via a conical door. A rod pushed against the conical door releasing the dust into the process. When closed, the door would seal against a gasket, this frequently required changing. The only way to change it was to gain access in to the hopper, take out the conical door and rod and replace the gasket. This process involved working in a confined space, dealing with the dust in the hopper and working at height to gain entry. It was a two man job.

The site fitter suggested that the base of the silo was re-engineered to fit a butterfly valve.

BENEFITS

- Hazards associated with replacing gasket removed
- Job can be completed by one person

- Reduction in down time
- Improved site moral as idea from fitter implemented.





1079 Reduction of fumes and particulates

FM Conway



DESCRIPTION

FM Conway wanted to improve the performance of the capture of fumes and particulates when the plant was not in operating or mixing mode but was using the loading functions. Within the operating processes, an element of fuming and particulates in the closed off areas was also impacting on mechanical efficiency which required addressing.

Various solutions were reviewed to identify a capture system that could perform whatever functions were operating. An extraction system was selected that could be retrofitted to the existing plant and would improve air quality, fumes, minimize emissions to air and capture and clean the particulate and fume.



The system extracted fumes and dust from the mixed material storage bins and the vehicle loading bin area. Extractions fans capable of a maximum volume flow of 28,000m³/hr were used. The captured emission dust and fumes were processed through a wet scrubber, which removed heavier particles, and then a carbon filtration system to remove nuisance fumes.

BENEFITS

- Few complaints have been received since the installation
- Fume build up in the mixed storage bins area clears within minutes
- Operatives and drivers have better visibility during the loading process.



1044 Vehicle marshall and vehicle pedestrian management plan (VPMP)

Tarmac Contracting

DESCRIPTION

The analysis of a number of high potential near miss events and incidents at Tarmac Contracting identified common themes. A People and Plant Segregation Working Group was created to review these themes and look at practical solutions. The following actions have been implemented based on their recommendations:

- All fixed sites must undertake a Vehicle & Pedestrian Management Plan (VPMP) which assesses all the risks arising from work place transport activities
- On all Tarmac contracting sites the VPMP defines on a daily basis the layout of the working area and how it will work. This will evolve during day as circumstances or vehicle movements change
- Adjustment of the working methodology to ensure adequate segregation of pedestrians and all vehicles/plant

- Selected key site staff to be trained as 'Vehicle Marshalls', who not only control reversing delivery vehicles, but control all vehicle movements on-site and facilitate the VPMP at the start of the working day
- Improved gang communications systems
- A supporting video for this campaign was made, this forms part of the education and roll out programme.

BENEFITS

- Reduced risk of pedestrians coming into contact with mobile plant or LGVs
- Individual has high level of ownership for VPMP
- More thorough risk assessments and planning to minimise risk
- Enhanced risk awareness
- Improved communication of how site will be managed.



1075 Safety improvement at MQP asphalt plants

Hanson UK > Wednesbury and Ettingshall

DESCRIPTION

MQP's asphalt plants at Wednesbury and Ettingshall have introduced three innovative ideas to improve health and safety.

At Ettingshall, the sole access to the batch heater drum was via the drum spigot plate meaning it was classified as a confined space. The front plate of the batch heater drum was redesigned so that the complete plate could be lifted, pivoted and safely secured to allow 'walk in access'.

At Wednesbury, the reject bunker was fitted with automated gates to further reduce the potential risks of airborne dust. The doors are operated by remote control along with an audible alarm.

A roller attachment for the site conveyors was also introduced at Wednesbury. It allows just one person to change a roller safely and will also catch the roller on support bars if it does fail.

BENEFITS

- Eliminated confined space classification at Ettingshall
- Improved dust suppressions
- Safer and more efficient roller replacement on conveyor system.



1048 Steam evacuation system

Tarmac Ltd > Harper Lane



DESCRIPTION

At Tarmac's Harper Lane asphalt plant, the steam created when adding recycled aggregates (RAP) to the mixer was escaping up and out of the feed chute. This resulted in the plant above the mixer filling with steam and dust, creating a hazardous environment for staff accessing this area. The steam also condensed on the RAP feed transfer chute and conveyor, regularly causing blockages and spillage. Clearing the spillage exposed staff to

hazards such as manual handling and moving machinery.

A new steam extraction system was designed and installed that draws steam away from the RAP chute into the plant's main steam evacuation system. The vacuum needed to create the suction

that removes the steam is provided by the plant's baghouse system. The extraction system is comprised of a cowl over the RAP conveyor transfer chute, pipe work and a control valve that is operated by the plant's computerized control system. The valve is timed to open the instant the RAP enters the mixer box.

BENEFITS

- Reduced downtime and spillages
- Improved plant efficiency
- Reduced exposure to dust for plant operatives
- Reduced risk from manual handling and other hazards
- Improved working environment
- Simple and low cost solution.

961 Hot box load out chute

Aggregates Industry > Express Asphalt Exeter

DESCRIPTION

The Express Asphalt Plant in Exeter has a fixed chute used to load out hot boxes. Because of the fixed chute, hot boxes requiring a split load, would require vehicles to turn around and enter the plant against the flow of traffic for the second half of their load.

The load out has been modified by fitting an extra chute and an air ram which allows the plant operator to guide the material to both sides of the hot box. Vehicles now only enter the plant once, reducing the risk of collision.

BENEFITS

- Improved efficiency of loading
- Reduced risk of collision
- Safer environment for pedestrians
- Improved service for customers.





975 Bitumen delivery procedure improvements

Brett Group > Ridham Asphalt Plant

DESCRIPTION

As a result of a manager attending a Eurobitume Bitumen Discharge Safety Course, the safety procedures for discharging bitumen at Ridham Plant were reviewed. The following improvements were made:

- Introduced retractable barriers to mark off discharge area
- Tanker driver asked to brief staff on the emergency shutdown procedures on their vehicle
- Procedures for assisting a delivery driver in an emergency situation updated
- Site emergency plan and visitor/contractor induction updated
- Pipework re-aligned so discharge point was moved away from other traffic routes.

BENEFITS

- Tanker drivers believe system is a considerable improvement
- Delivery points away from all employees, customers or third parties on-site



- A clear view of the driver from the weighbridge
- Increased awareness and understanding of updated emergency procedures
- A safer environment for all.

1043 Monthly safety information pack

Tarmac Contracting

DESCRIPTION

Tarmac Contracting had identified some common themes in the feedback on its safety communications.

- The communication chain was too long and the safety message is lost
- Indiscriminate issue of TBT and safety alerts had diluted impact and messages
- The right people were not receiving the safety messages.

A working group formed from a cross section of employees was asked to recommend how the communications could be improved. They recommended the following changes:

- A monthly safety pack that gave a consistent message
- TBT and safety alerts filtered for relevance and applicable learning points
- Recent incidents are included
- Delivered in small groups, off site in a warm friendly environment

- Everyone attends – two hours each month allocated for sessions
- Collated feedback from groups used to select topics for following month
- Senior line managers pick up on areas identified of concern or for improvement.

BENEFITS

- Changes have been well received
- Site members have opportunity to discuss and share experiences
- Line management has the opportunity to address wider issues
- The quality of the delivery and message is consistent and relevant
- Attendance very good.



1003 3D animation of RAMs and TM plans

Colas Ltd > Newcastle

DESCRIPTION

An employee's or contractor's vision of a site based on words and 2D images may be different to reality. This can lead to confusion, poor decision making and ultimately incidents. The lack of visual stimulus during pre-start briefings or training may also cause operatives to lose interest, possibly missing out on key information. It is often not practical to have a test run in a controlled environment therefore, the first time an operative sees the reality is often out on a live site alongside members of the public.

Colas has worked with the Adjuvo Group to produce a number of 3D animations of its traffic management operations and safer driving campaign.

The animations use accurate 3D modelling of the vehicles and equipment is on-site and a life like representation of the environment they will be working in, the public highway. All the traffic management RAMS are produced in 3D allowing the operatives to be taken through them on screen. The animation displays the key points as they occur i.e. at 400 metres you put on your beacons or whatever the required message is.



BENEFITS

- Animations can be easily adapted at minimal cost when changes occur
- Drivers and operators engaged by animations
- High level of realism helps them internalise key messages
- Allows drivers to experience a test run in a safe environment.

1053 Rap hopper access

Tarmac Ltd > Clitheroe Asphalt Plant

DESCRIPTION

To access the RAP hopper at the asphalt plant in Clitheroe for maintenance and cleaning, a mobile platform was rolled into place. This was replaced by a permanent fixed ladder and working platform with collapsible handrails. The collapsible handrails allowed the loading shovel to load the bin without obstruction. When needing to access the hopper, the operator would lift the handrail and lock it in to position to form a safe working area with

kickboard. Concrete stops prevent the bin or platform being hit and damaged by moving machinery.



BENEFITS

- Reduce risk of fall from height
- Safer working environment.

1008 Load safe view

CEMEX UK > Local Asphalt Sheffield

DESCRIPTION

At CEMEX's Sheffield asphalt plant loading hot boxes correctly when customers require two different products in two compartments was an issue.

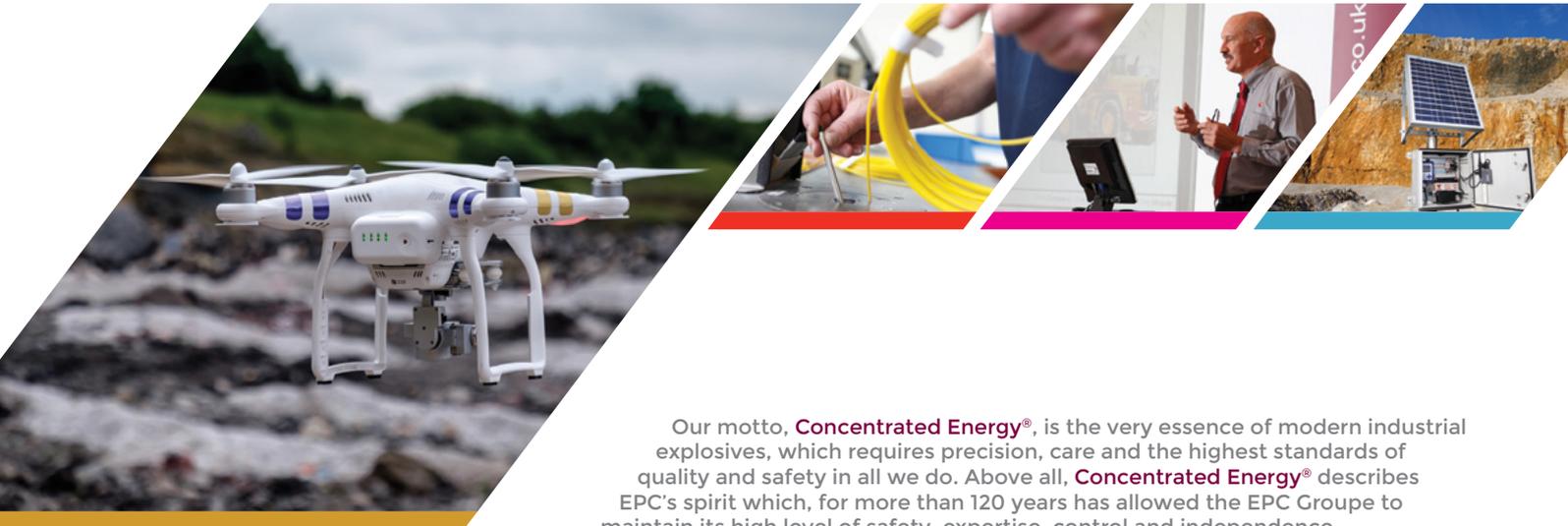
A camera was mounted on a shovel bucket, this gives the driver a bird's eye view of the vehicle being loaded on a cab mounted monitor. This is a real benefit when looking in aggregate bins and generally removing the blind spot directly in front of the shovel.

BENEFITS

- Better loading of vehicles
- Ability to check for blocks or contaminants prior to loading
- Less chance of spillage or loading errors
- Safer for drivers on road and when delivering.



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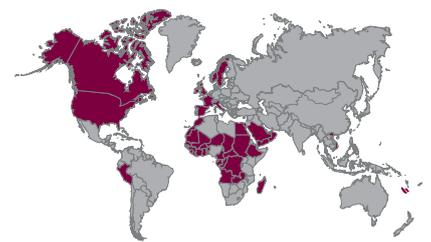
Explosives Manufacturing



Engineering Training



Real-time Blast Monitoring



Index

Title

Page number	Entry number	Asphalt & Coated Stone	Quarry, recycling and waste	Ready mix & Mortar	Concrete & Precast	Cement & lime	Contracting	Marine	Company wide	Contractors	Dust and fumes	Maintenance	Guarding & isolation	Mobile plant	Transport & delivery	Hazards & incidents	Risk Assessments	Safer processing	Induction & training	Manual handling & storage & HAVs	PPE and emergency equipment	Working at height & confined spaces	Traffic management	Mobile technology, videos, camera, radio	Health and wellbeing
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Autonomous impact protection vehicles (IPVs)	6	995					●			●			●	●	●									●	●
Contractor management during shutdown	7	1024				●				●		●				●	●								●
Contract haulier selection and management	8	1010								●		●				●									●
Site inductions using drone technology	9	1049	●							●				●	●					●				●	●
Contractor safety ... changing the mind-set	9	1025								●						●				●					●
Robotic arm wrecking machine	10	1020				●				●	●	●		●							●	●			
Mixer wash system	10	1087		●	●							●							●			●	●		
The hole system	11	1085			●						●										●	●	●		
Wire dispenser improvement	11	1083			●							●							●						
Device to reduce media displacement during cement mill discharge	12	968				●						●									●				
Safe removal of meal chutes – Cauldon Cement	12	992				●					●	●									●		●		
Winch operated loading platform	13	1022			●										●						●		●		
Bespoke lifting device	14	1074				●						●									●				
Safe hydraulic operation of the main kiln doors	14	1073				●						●									●				
Cooling tower replacement	15	1082										●							●						
Emergency tyre deflation device	15	1065	●									●		●											
Transport access and egress platform – tracked mobile plant	15	999	●									●		●									●		
Safety improvements to cement mill pallet gate – 1st floor	16	1019			●								●										●		
Automated mixer winch secondary device	16	1050		●								●									●				
'Aim for Excellence' Campaign	17	1036			●				●							●	●			●					
Driver near hit reporting and health and safety communication App	18	964	●							●					●	●				●					●
Behavioural and leadership safety client to contractors and back again	19	1002	●							●	●			●		●				●					●
Health, safety and environmental information key rings	20	983								●											●				
Enhancing employee engagement through peer review	20	1035								●						●					●				
Development of safety culture of respectful challenge	21	970				●				●	●					●					●				
Redefining the driver training with help of technology	22	1015								●					●						●				●
Reducing risk from mobile phone use	23	1080								●					●						●				●
Complete van management system	24	1016								●		●			●	●				●		●			●
'Airscaan' – active management of diversion routes	25	996	●				●																	●	●
Working in partnership to protect pedestrians from forklifts	26	1001	●											●	●									●	●
High speed network deliveries training video	27	1056	●				●			●					●						●			●	●
Public crossing barrier and stakeholder engagement	27	997	●										●											●	●
Innovative vacuum system to reduce the risk of lung disease	28	958		●							●	●													●
Working safely with vibrating tools	29	1057						●				●									●				●
Health and wellbeing	30	1012								●															●
'Sit Less, Move More'	31	974								●											●				●
Health and wellbeing	31	1021			●										●						●				●
Vacuum system	32	1090			●						●														●
Mobile pedestrian safety zones	33	1077	●										●											●	●
Enhancing safety through technology	34	1034								●						●					●				●
Action cam video	34	1091	●									●	●			●	●			●				●	●
Workforce site self-audits	35	976	●														●								●
Improving product quality	35	981	●	●											●										
Operative involvement in site operation and management	36	982	●							●		●													
5+2 Campaign – Safety zone blue lights and other enhancements	37	1042					●			●			●	●										●	●
Aggregate overflow cut off device	38	993	●								●			●						●					●
Asphalt plant load out light bar	39	1051	●												●									●	●
Bitumen weigh kettle overflow safety measures	39	1006	●																	●					●
Bitumen kettle dual modular redundancy (DMR)	40	1095	●																		●				●
Restraint bars for Bomag rollers	40	1071					●								●								●		●
Bitumen flow heating system	41	1096	●																	●				●	●
Fitters initiative – gasket replacement on filler silo	41	1054	●								●	●											●		●
Reduction of fumes and particulates	42	1079	●								●									●					●
Vehicle marshall and vehicle pedestrian management plan – VPMP	42	1044					●								●	●		●		●				●	●
Safety improvement at MQP asphalt plants	43	1075	●								●	●	●										●		●
Steam evacuation system	43	1048	●								●									●		●			●
Hot box load out chute	43	961	●												●									●	●
Bitumen delivery procedure improvements	44	975	●												●		●			●		●		●	●
Monthly safety information pack	44	1043						●								●				●				●	●
3D animation of RAMs and TM plans	45	1003					●								●					●				●	●
Rap hopper access	45	1053	●									●											●		●
Load safe view	45	1008	●												●								●		●

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