

 **target zero**
= **zero harm**

 **mpa**
essential materials
sustainable solutions



Influencing Equipment Design - the European 'Safer by Design' Project

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Chairman, H&S Committee, European Aggregates Association (UEPG)



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Mineral Products Association is the British trade association for:

- **Aggregates (land-won; marine; and recycled)**
- **Asphalt**
- **Agricultural Lime**
- **Cement**
- **Mortar**
- **Ready-mixed concrete**
- **Silica**
- **Slag**



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**Presented to Patrick O'Shea, CEO, Hanson UK by Dr Jukka Takala, Director, EU-OSHA
UEPG Awards, Munich, 27 May 2010**



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**UNION EUROPÉENNE DES
PRODUCTEURS DE GRANULATS**

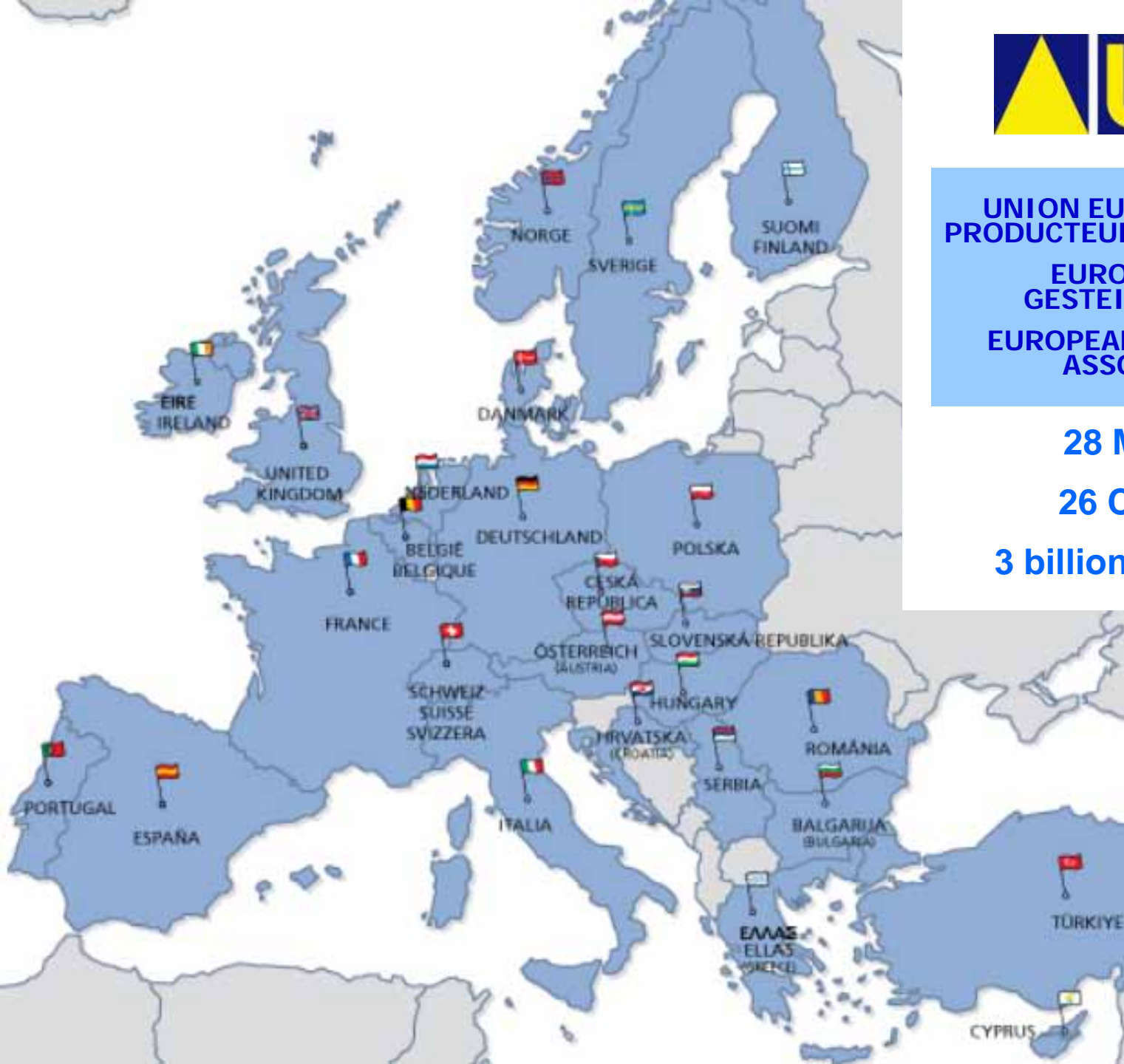
**EUROPÄISCHER
GESTEINSVERBAND**

**EUROPEAN AGGREGATES
ASSOCIATION**

28 Members

26 Countries

3 billion tonnes/year



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<http://www.uepg.eu>

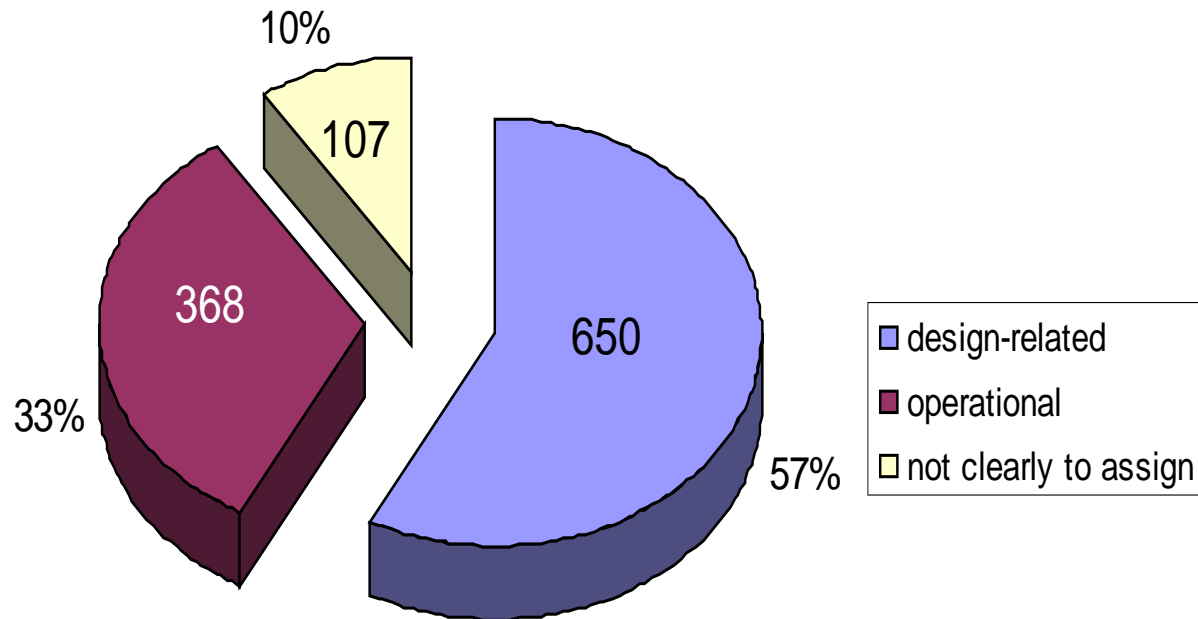


Statistics: Earthmoving Machinery Analysis

Study of 1125 accidents (2001-2003)

Institute of Mining
Clausthal University of Technology
Department of surface and
international mining

Univ. Prof. Dr.-Ing. habil. H. Tudeshki
Dipl.-Ing. Matthias Könnecke



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Statistics: 'Root Causes' Analysis (100 injury incidents, 2008)



Employees by weighting

Number of Citings



Contractors by weighting

Number of Citings



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Machines new in 2007: Examples of Design Challenges



Easy access to cab?
NO! (Man is 2m tall)

First step is 500mm high and far too flexible



Safe to clean the windscreen? **NO!**

Slippery, sloping surfaces
– unsafe foothold



Safe access to fuel filler?
NO!

Tracks should not be used as access

Fuel filler should be accessible from the ground



Easy access for checking fluid levels?
NO!

‘Safer by Design’: *Objectives*

- ∅ To **collate**, from Users, **voluntary Best Practice Guidance** on health & safety features for new and re-engineered mobile plant.
- ∅ To **work within** the European/International **standards** framework (eg: CEN and ISO standards)
- ∅ To **ensure** ‘Safer by Design’ is **communicated** effectively to all stakeholders
- ∅ To **involve** the employers, employees *and* the ‘supply chain’ in working **together** towards achieving **Zero Harm**.



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‘Safer by Design’: *Plant Categories*

Ø Loading shovels



Ø Excavators



Ø Bulldozers



Ø Dump trucks

ü Rigid



ü Articulated



Ø Mobile crushers and screens



(Thanks, Caterpillar!)



Web pages accessed via:



In 2009,  adopted 'Safer by Design' as a UEPG Project



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- Home
- About this site
- BEST PRACTICE
- INCIDENT ALERTS
- HOT TOPICS & GUIDANCE
- TOOLBOX TALKS
- CPD reports
- Links

Welcome to Safequarry.com



Intro demo video
 ➤ [Click here to play](#)

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Is your mobile plant Safer by Design?
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Awards won by safequarry.com



SAFER_{BY}DESIGN

Safer by Design is a ground breaking project that will reduce injuries and ill-health attributable to poor mobile plant design. Research has shown that even though meeting international safety standards and the requirements of the EU Machinery Directive, a significant proportion of incidents involving mobile plant on mineral producing and processing sites are due to poor design.

User companies and mobile plant manufacturers have co-operated in helping to identify key safety features on mobile plant that represent best practice. The features have been combined into voluntary guidance which recommends core safety requirements for loaders, bulldozers, excavators, dump trucks, mobile crushers and screens.

Operators who commit voluntarily to this best practice guidance will specify some or all of these safety features on new plant purchases. They will also be able to compare their existing plant against the guidance. This ALSF funded project has achieved cross industry support and generated significant international interest from companies involved in minerals extraction. The principles are closely mirrored in other parts of the world, eg: the global [Earth Moving Equipment Safety Round Table \(EMESRT\)](#) initiative, managed and facilitated in Australia by the University of Queensland.

Click on the boxes on right to view the guidance by machine type and size



Participating companies



Find out more about the [project aims](#) or [watch TWO introductory videos](#)



Is your mobile plant Safer by Design?

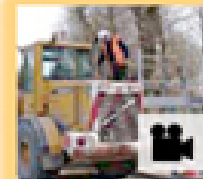
[Click here to learn more](#)



Are your mobile crushers or screens Safer by Design?

[Click here to learn more](#)

SAFER_{BY}DESIGN
CLICK HERE FOR MACHINE INDEX



WATCH TWO INTRO VIDEOS





- LOADERS
- BULLDOZER
- EXCAVATORS WHEELED
- EXCAVATORS TRACKED
- DUMPTRUCKS ARTICULATED
- DUMPTRUCKS RIGID
- MOBILE CRUSHERS AND SCREENS
- MACHINE INDEX



- Access Systems
- Visibility
- Safety & Security
- Maintenance
- Environment & Health
- View all options
- MAKE TEXT BIGGER

Home

Home

DUMPTRUCKS RIGID

MACHINE SIZE **S** M L CHECKLIST FOR MY PLANT

Maintenance = core OPT↑ or OPT↓ = optional

1	Service points - All daily checks capable of being carried out at ground level (electronic readouts can be located in the cab)			✓	✓	✓	
2	Service points - All daily checks capable of being carried out from a safe working platform (electronic readouts can be located in the cab)			N/A	N/A	N/A	
3	Service points - All daily checks capable of being carried out at a grouped service point at ground level			OPT↑	OPT↑	OPT↑	
4	Service points - All daily checks capable of being carried out at a grouped service point from a safe working platform			N/A	N/A	N/A	
5	Service points - All service points to be adequately lit and switched from ground level			✓	✓	✓	
6	Lighting - Engine bay to be adequately lit for servicing with options to switch on or off			✓	✓	✓	
7	Fuel points - Refuelling from ground level			✓	✓	OPT↑	
8	Fuel points - Refueling from a safe working platform accessed from a stairway requiring only three points of contact			N/A	N/A	✓	
9	Fuel points - Refuelling point from ground level fitted with formula 1 type fast fill and connection point, such as Wiggins/Banlow type			OPT↑	OPT↑	OPT↑	
10	Service points - Machines to be fitted with an autolube system for all greasing points (except rotating prop shafts)			✓	✓	✓	
11	Service points - Machine fitted with a facility to remove oils to enclosed containers to prevent an inadvertant spillage			OPT↑	OPT↑	OPT↑	
12	Service points - Maintenance hatches shall be designed such that once opened they can be retained in the open position and require positive pressure to close, i.e. they can not slam shut unexpectedly			✓	✓	✓	

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Examples of best practice . . .



Mirrors; Guard-rails; fuel fast-fill

'Blind-side' camera

Protected from damage



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National Stone, Sand & Gravel Association



From simple low-cost roots . . . to international recognition



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'Safer by Design' http://www.safequarry.com/safer_by_design.aspx



Prof. Jim Joy

Australian Experience



Mobile equipment related accidents are some of the most common accidents in Australian mining. Human error analysis has found that **error is often due to equipment design** problems, either in operability or maintainability

Human Factors Engineering (HFE) attempts to **fit the system to the person** rather than making the person fit the system



Earth Moving Equipment Safety Round Table

..... an internationally recognised issue!



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Earth Moving Equipment Safety Round Table

RioTinto



2010



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EMESRT DPs

1. Equipment Access & Egress
2. Working at Heights
3. Noise
4. Whole-body Vibration
5. Fire
6. Dust, DPM & other airborne hazards
7. Isolation of energy, including parking
8. Visibility/collision detection & avoidance
9. Machine stability/slope indication
10. Guarding
11. Controls & Displays
12. Tires & Rims
13. Manual Handling
14. Operator Workstation
15. Confined spaces



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EMESRT Engagement Process

Understanding each other better

- Establishing communication
- Providing information
- Asking for input
- Looking for change
- Communicating success

Engagement History

- q Caterpillar
- q Komatsu
- q Hitachi
- q Bucyrus / Terex
- q Liebherr
- q Ingersoll Rand
- q Sandvik
- q Atlas Copco
- q P&H / Joy



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Recommended actions :

SINGLE AIM: ZERO HARM

Joined-up thinking; international co-operation; Users working with manufacturers/suppliers, standards bodies and regulators



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+



*a single
global issue*



*Thank you for
listening . . .*

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