# EAS

## Euro Attractions Show





### Ride Safety in Europe -A Current Assessment

Gianni Chiari (EAASI), Colin Dawson (BALLPA) & Andreas V. Andersen (IAAPA)

















#### Three issues of importance ...

... EN 13.814 Amusement Ride Safety Standard

... European Ride Safety Reporting System

... Community- and National Legislation



















EN 13.814



















EUROPEAN STANDARD NORME EUROPÉENNE EN 13814

EUROPÄISCHE NORM

December 2004

ICS 91.040.99

English version

#### Fairground and amusement park machinery and structures - Safety

Machines et structures pour fêtes foraines et parcs d'attraction - Sécurité Fliegende Bauten und Anlagen für Veranstaltungsplätze und Vergrügungsparks - Sicherheit

This European Standard was approved by CEN on 19 May 2004.

CEN members are bound to comply with the CENICENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any afteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretarial has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

#### EN 13814 is officially a standard of Europe since Dec. 10, 2004





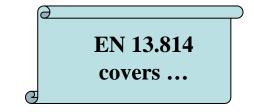












#### **Design Analysis**

- **¥** Types of analyses
- Materials
- **¥** Loads
- **★** Components (bolts, ropes, chains, etc.)







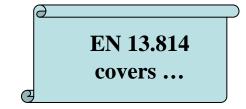












#### **Requirements for Design and Manufacturing**

**¥** Hazard analysis

- **⋈** hazards due to motion of passengers
- **⋈** hazards associated with environmental conditions
- **⋈** hazards associated with emergency procedures
- **⋈** hazards associated with water
- <sup>⋈</sup> hazards associated with crowds, etc.

**№** Risk reduction

- <sup>□</sup> risk reduction for platforms, ramps, stairs, etc.
- <sup>⋄</sup> risk reduction by the use of railings, fencing, etc.
- <sup>□</sup> risk reduction in case of access/egress
- <sup>□</sup> risk reduction for passenger units, etc.

**▼** Supplementary safety requirements for various types of rides

- <sup>⋄</sup> area delimitation & access / egress openings
- <sup>□</sup> passenger units
- **⋈** restraints
- **⋈** miscellanea





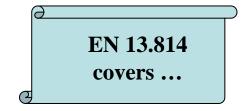












#### **Requirements for Design and Manufacturing** (continued)

- **▼** Mechanical systems
- <sup>⋈</sup> hydraulic & pneumatic devices
- <sup>□</sup> lifting units (when integral part of the ride)
- **¥** Manufacture & supply
- **⋈** personnel
- <sup>™</sup> subcontracting & supply
- <sup>™</sup> quality assurance & quality plan
- $^{r}$  manufacturing process
- **⋈** manuals
- **▼** Initial approval, examination and acceptance Recommended procedures
  - $^{r}$  review of design documents
  - $^{\mbox{$\Bar{$}$}}$  inspection of manufacturing process
  - **⋈** initial examination & test







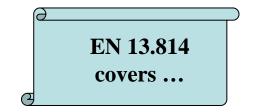












#### **Requirements for Design and Manufacturing** (continued)

**₹** Provisions before supply and use

- <sup>□</sup> log book (available on site)
- $^{\mbox{$\Bar{$}$}}$  official technical dossier (available when / where required)







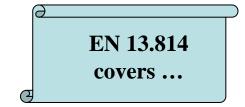












#### **Operation & Use**

**№** Documentation

- <sup>□</sup> log book (available on site)
- <sup>™</sup> operating manual (available on site)
- **⋄** official technical dossier (available when / where required)
- **▼** Requirements for personnel
  - **⋈** min. age 16
  - 尽 min. age 18
- **▼** Duties of the controller
- <sup>™</sup> checking and maintain documentation
- <sup>□</sup> checking permissions
- <sup>⋈</sup> ensuring safe operation, safely maintaining and repairing
- **⋈** selecting and training operators and attendants
- **▼** Duties of the operator
- **⋄** complying with instructions
- <sup>□</sup> daily checking of the ride
- <sup>□</sup> checking that passengers are safely contained



















#### **Operation & Use**

- **№ Duties of the attendant**
- <sup>□</sup> correctly loading the ride
- <sup>□</sup> excluding passengers who may not ride safely
- $^{5}$  checking that passengers are safely contained
- **▼** Independent examinations
  - 5 independent thorough examinations
  - **⋄** installation examination

  - **\( \sigma\)** reports

**¥** Fire

- **∇** fire procedures
- $^{\mbox{$ \Bar{ iny S}$}}$  provisions in case of fire (less than 3000 people)
- $^{\sim}$  access of emergency services



















#### **Annexes**

- **★**A Fatigue analysis (informative)
- **▼**B Detailed analysis rules (normative)
- **★**C Examination forms (normative)
- **♣**D Electrical equipment & Control systems (normative)
- **▼**E Guidance on design of passenger containment (informative)
- **▼**F Log book (informative)
- **★**G Acceleration effects on passengers (informative)
- **★**H Provisions prior to use (informative)
- **▼** I List of hazards (informative)













