Ride Design Verification
機動遊戲機設計的驗證

Mr Stefan KASPER
Head of the Department
Amusement Parks, Rides & Structures
TÜV SÜD Industrie Service GmbH
Munich, Germany

Abstract

RIDE DESIGN VERIFICATION

The legal rules for Amusement Rides depend on the requirements of the individual countries' law and are regulated by the authorities. In Europe there are several regulations, but all based on the European standard EN 13814. Also in other countries like Hongkong, Singapore, China, Malaysia or Middle East, to operate an amusement ride first the legal way has to be fulfilled. In general the way for verification is similar, but depends on local requirements and accepted standards.

The standard EN 13814 has created a Common base for the handling of amusement devices and structures all over Europe and is accepted in a lot of countries all over the world.

The standard was created to specify the minimum requirements necessary to ensure the safe design, calculation, manufacture, installation, maintenance, operation, examination and testing of the following devices: mobile, temporary or permanently installed machinery and structures e. g. roundabouts, swings, boats, Ferris wheels, roller coasters, chutes, grandstands, membrane or textile structures, booths, stages, side shows, and structures for artistic aerial displays etc.

The above items are in general called amusement rides. They are intended to be installed either repeatedly (temporary structures or travelling rides) without degradation or loss of integrity, and temporarily or permanently in fairgrounds and amusement parks or any other locations.

The object of this Standard is to define safety rules related to structures and machines, which are either an integral part of, or constitute the amusement device itself. The safety rules are intended to safeguard persons and objects against the risk of accidents caused by deficiencies in design, manufacture and operation of such structures and machinery. This standard is based upon past experience and risk analyses.

The standard contains 8 annexes which deal with different subjects in detail.

摘要

機動遊戲機設計的驗證

機動遊戲機的規管取決於個別國家的法例要求及受監管機構的監控。在歐洲有不同的規條，但全部都建基於歐盟標準EN 13814。而在其他國家，如香港，新加坡，中國，馬來西亞和中東，機動遊戲機須先符合法例的要求，才可操作。一般而言，各國驗證的方法都相類似，但亦會根據當地的要求和公認的標準有所調整。

在歐洲歐盟標準 EN 13814是一個共同平台以處理機動遊戲機的裝置和結構，並在世界各地多個國家受到公認。這個標準明確說明一些基本的要求，以確保安全設計、計算、製造、安裝、保養、操作、檢驗和測試各流動、臨時或永久安裝的機械裝置和結構。例如：旋轉木馬、鞦韆、船、摩天輪、過山車、降落傘、看台、蓬帳布或紡織物製造的建築物、貨攤、舞台、攤位遊戲、空中表演等。

上述項目一般稱為機動遊戲機。這些機動遊戲機在沒有降級或喪失結構完整性的情況下，要預計多次性的安裝（臨時結構或可移動的遊戲機）在臨時或永久的露天場地、遊樂園等地點。

這標準旨在明確定立有關結構和機械裝置的安全規則，包括構成機動遊戲機的整體或部份所需要的裝置。而安全規則的制定，是要控制因設計、製造和操作不良或不妥當所造成的意外風險，以保障人身安全及避免財物損失。這標準是根據過去的經驗和風險分析而定立的。

該標準包含八個附件，詳細例明不同項目的細節。

Biography

Stefan Kasper, *1968-06-20

1990 - 1995	Technical University of Munich, Graduation as civil engineer
1995 to present	Expert engineer at TÜV SÜD, Dept Amusement Parks, Rides & Structures
since 1998	Introduction of Approval Scheme in Switzerland
since 2002	Director of the TUV APS Services Ltd., UK
since 2005	Assistant manager of the Dept. Temporary Structures, TÜV SÜD
since 2007	Chairman of the German TÜV group for Amusement Rides
since January 2010	Head of the Dept. Temporary Structures / Wind Turbines of the TÜV SÜD Industrie Service GmbH, Munich
	Head of the Professional Engineering Department acc. German Building Code
others:	Member of German Standardization Committee for summer toboggans, European Standardization Committee for water slides and German and European Standardization Committee for Amusement Rides