

# CERTIFICATE



Following the completion of training provided by Pilz, this certificate issued  
by TÜV NORD CERT to

**Theo Raaijmakers**

certifies that the above named has achieved the qualification

**CMSE<sup>®</sup> - Certified Machinery Safety Expert**

which meets the requirements of the guideline for Certification of  
Certified Machinery Safety Experts (CERT-P12VA101)

(Contents of Training and Examination overleaf)

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A handwritten signature in black ink, which appears to read "M. Beyer".

Martina Beyer  
Specialist Manager Personnel Certification

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## **Contents of training and examination for the qualification Certified Machinery Expert (CMSE)**

### **Module 1**

- ▶ Fundamentals of Safety
- ▶ Introduction to safety legislation and standards
- ▶ Motivation for Safety
- ▶ Responsibilities of key players and duty holders

### **Module 2**

- ▶ Machinery Safety Legislation
- ▶ Legislation requirements for the design, construction and maintenance of machinery and work equipment
- ▶ Conformity procedures for putting machinery on the market or placing into service
- ▶ Equipment and Workplace Regulations
- ▶ Occupational Health and Safety Regulation considerations in relation to machinery

### **Module 3**

- ▶ Risk Assessment
  - Applicable definitions and terminology relevant to risk assessment
  - Analysis of different risk assessment methodologies
  - Risk assessment according to international standard ISO 12100 and best practice
  - Introduction to risk reduction following risk assessment completion

### **Module 4**

- ▶ Mechanical Guarding
  - International standards requirements relevant to machine guarding
  - Guard definitions, types and application to reduce risk
- ▶ Safety Components
  - Analysis of safety components, requirements and application
  - Specification and usage, advantages and disadvantages
- ▶ Electrical Safety
  - Review of international standard IEC 60204-1
  - Safety of electrical, electronic and programmable electronic equipment
  - Safe use and maintenance of electrically powered machines

### **Module 5**

- ▶ Functional Safety control systems specification, design and validation
  - ISO 13849 - Safety of machinery -- Safety-related parts of control systems
  - IEC 62061 - Functional safety of electrical, electronic and programmable electronic control systems
- ▶ Functional Safety of Pressurised Fluid Systems
  - Pneumatic and Hydraulic System Safety Requirements
  - Pneumatic and Hydraulic Safety Control Systems
- ▶ Functional Safety Workshop with worked examples
  - Practical Examples of ISO 13849-1 circuits
  - Practical Examples of IEC 62061 circuits