CERTIFICATE

TÜV NORD

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

Ivan Vasilev

certifies that the above named has achieved the qualification

CMSE® - 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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CERTIFIED MACHINERY SAFETY EXPERT CMSE®

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pilz
the spirit of safety

Pilz is the official training provider of CMSE®

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