



tec.nicum Training Brochure



tec.nicum academy



Training and seminars. From professionals for professionals.

The tec.nicum academy offers you a comprehensive training and seminar

program on topics of machine and plant safety – for example:

- Risk assessment and conformity assessment.
- Safety-compliant design
- Legal issues arising from EU directives.
- Individual standards of machine and plant safety
- Product- and technology-specific workshops.

Summary

CORPORATE PHILOSOPHY	2
Our Vision.....	2
Our Mission.....	2
tec.nicum Engineering Services	2
BRIEF HISTORY OF THE SCHMERSAL GROUP	2
TEC.NICUM AT GLANCE	3
GLOBAL PRESENCE	3
SERVICES OFFERED	4
Academy	4
Consulting.....	4
Engineering	4
Integration	4
Digitalization.....	4
Outsourcing	4
BASIC SAFETY TRAINING COURSE	6
ADVANCED SAFETY TRAINING COURSE	7
CUSTOMIZED ADVANCE SAFETY TRAINING COURSE	9
TERMS & CONDITIONS	11
CONTACT	11

CORPORATE PHILOSOPHY

Our Vision

For the Schmersal Group to be the leading system and solution provider in the areas in which we operate reaching the highest level of customer satisfaction. Be recognized as an innovative global leader in safety technology and engineered services.

Our Mission

To provide our global and local markets with safe, reliable and innovative solutions oriented towards ensuring the safety of man and machine. Develop sustainable and long-term alliances which benefit our customers and the Schmersal Group by continuously improving our processes through technology and market experience.

tec.nicum Engineering Services

The tec.nicum team is the Engineering Services division of the Schmersal Group which works to assure our clients receive the highest quality engineered safety services. Leveraging our extensive industry knowledge and application experience, our goal is to help in the optimizing of production processes through efficient safety following the latest local and international standards. By utilizing our global network of safety engineers, tec.nicum is able to meet the safety requirements of our customers by providing a neutral approach every time, everywhere.

BRIEF HISTORY OF THE SCHMERSAL GROUP

- 1945:** Foundation by the brothers Kurt Andreas Schmersal and Ernst Schmersal in Wuppertal
- 1974:** Foundation of ACE Schmersal in Boituva, Brazil
- 1982:** Heinz and Stefan Schmersal take over the company from their fathers
- 1999:** Foundation of Schmersal Industrial Switchgear Co. Ltd (SISS) in Shanghai, China
- 2004:** Heinz Schmersal takes full control of the Group
- 2007:** With Philip Schmersal, the third generation of the family enters the Schmersal Group
- 2008:** Acquisition of Safety Control GmbH (Mühldorf)
- 2013:** Acquisition of Böhnke + Partner Steuerungssysteme
Foundation of Schmersal India Private Limited
- 2016:** Foundation of the tec.nicum division
- 2017:** Michael Ambros appointed as Managing Director of K.A. Schmersal GmbH & Co. KG (Wuppertal/Wettenberg)

TEC.NICUM AT GLANCE

In 2016, the Schmersal Group founded an independent service division, tec.nicum. Our experts design and implement projects and safety solutions in all life cycle phases, such as the development, manufacture, operation or modernisation of machines and plants all over the world. Demand for these services has grown steadily in recent years. As a result, we have continuously expanded our global consulting network of TÜV Rhineland-certified specialists and engineers, including through the acquisition of Omnicon engineering GmbH in 2019.

In 2024, tec.nicum significantly expanded its range of safety services – particularly about digitalisation and complete solutions for machine safety. In addition, global activities and competences are to be more closely integrated. For this reason, the Schmersal Group founded a new subsidiary in 2024, tec.nicum – Solutions & Services GmbH, into which Omnicon engineering GmbH was also merged. The new company is based in Kirkel.

On the one hand, our customers benefit from the greater pooling of the extensive industry knowledge and application experience of our global network of safety engineers. For example, we use the expertise of our Brazilian engineering team to support our customers in the Americas and Europe, and the expertise of our Indian team in Asia.

Secondly, tec.nicum has significantly expanded its portfolio of safety services. The four pillars on which tec.nicum offering has been built to date – academy, consulting, engineering, and integration – have been supplemented by two more: digitalisation and outsourcing. This involves additional services such as cloud solutions, IIoT applications and energy management – but also the option of completely outsourcing all tasks relating to machine safety to tec.nicum.

The services can be accessed around the globe. A manufacturer-neutral and objective consulting approach is part of the tec.nicum core philosophy. Our tec.nicum guiding principle is: We offer customers competent, product- and manufacturer-neutral advice and support them in analysing and designing their machines and workplaces in terms of safety – true to the slogan: excellence in safety!

GLOBAL PRESENCE

At present, the Schmersal Group has approximately 2,000 employees worldwide
With more than 150 full-time tec.nicum safety consultants.



SERVICES OFFERED

tec.nicum offers a broad range of safety engineering services – with core competencies arranged in **Six modules**:

Academy

Under the academy module, **tec.nicum** offers a series of safety training courses designed to educate people on machine guarding practices and principles consistent with current national and international machine safety standards. Being a separate division from the Schmersal group allows **tec.nicum** to offer training course which are free from product endorsements and advertisements.

To meet our vision of offering high quality training, Schmersal USA has received accreditation from International Accreditors for Continuing Education and Training (IACET) and may offer continuous educational units on selected courses.

Consulting

The experts at **tec.nicum** can provide expertise and experience for every life-cycle phase of the machine. We provide information on the applicable regulations and norms on machine and industrial safety and, make product neutral recommendations on the relevant norm-compliant protective equipment.

tec.nicum employees are available to their customers on an hourly basis and provide support on your premises, by telephone, or online.

Engineering

One of the most important phases in the modification of a machine or production line is engineering prior to the conversion work. This lays the foundations for the quality of subsequent implementation. The aim is to develop technical safety solutions for machines and systems.

tec.nicum engineers define and validate the necessary machine-specific safety elements thorough measurements and calculations. At the same time, the **tec.nicum** engineer can show you the best way to implement the safety modifications.

Integration

tec.nicum has extensive experience in the planning and implementation of complex protective equipment for various industries. These include the food and packaging industry, the automotive industry, paper manufacturing, metal processing and chemicals and pharmaceuticals.

tec.nicum's technical safety solutions are tailored to the individual requirements of the respective industry and the client's application. This involves the planning and installation of fixed or moveable guarding and protective safety devices and systems.

Digitalization

More than a safety solution – a complete technology platform

tec.nicum is increasingly offering newly developed software solutions, such as a new tool for carrying out risk assessments, as well as new digital technologies such as cloud solutions, IIoT applications, digitalized lockout tagout procedures and energy management tools.

Outsourcing

tec.nicum offers companies the opportunity to completely outsource all tasks related to machine safety, from the planning and installation of control cabinets to the design of integrated safety solutions. The specialists at **tec.nicum** analyze the entire supply chain and are therefore able to offer integrated solutions. They provide support in product development and the optimization of products through co-design. The customer benefits from simplified processes and reduced costs. On request, orders can be processed according to the "Engineer to Order" (ETO) principle, whereby products or components are designed and produced according to customer specifications.

<p>academy</p> <p>Education center</p> <ul style="list-style-type: none"> ■ Training courses ■ Customer-specific trainings ■ In-house seminars ■ Certified courses (mce.expert and FSE) 	<p>consulting</p> <p>Analysis and documentation</p> <ul style="list-style-type: none"> ■ Technical support ■ Risk assessment ■ CE conformity assessment ■ Evaluation of machines and production lines ■ Reports
<p>engineering</p> <p>Planning and design</p> <ul style="list-style-type: none"> ■ Technical project planning ■ Conceptual project development ■ Electrical and mechanical design ■ Executive project management 	<p>integration</p> <p>Practical application</p> <ul style="list-style-type: none"> ■ Turnkey approach ■ Installation ■ Retrofit
<p>digitalisation</p> <p>Software integration</p> <ul style="list-style-type: none"> ■ PSS (Production Safety System) ■ SSM (Schmersal Smart Machine) ■ AI and computational vision solutions ■ Digital Lockout Tagout (dLOTO) ■ EMS (Energy Monitoring System) 	<p>outsourcing</p> <p>Serial solutions</p> <ul style="list-style-type: none"> ■ Plug & Play products ■ ETO (Engineer to Order projects) ■ Systems and cabinets
<p>tec.nicum</p>	

BASIC SAFETY TRAINING COURSE

Pre-requisites	<ul style="list-style-type: none"> • Basic knowledge of Electric and Electronics. • Basic knowledge of Pneumatics & Hydraulic equipment's.
Duration	1 Day (8 Hrs.)

Duration	Activity/Contents
Day 1	
09:00 AM to 05:00 PM	Basic Safety <ul style="list-style-type: none"> • Definition of Functional Safety • Importance of safety • Understanding of dangerous failure • Hazard vs Risks • Understanding about workplace hazard
	Indian Factory Act 1948 <ul style="list-style-type: none"> • Understanding of Indian Factory Act and state Rule from Machinery Safety purview • Machine safety standard as per Indian regulation by BIS
	EN ISO 12100 - Risk Assessment <ul style="list-style-type: none"> • Introduction to the standard. • Understanding the risk assessment flow chart • Types of hazards (Mechanical, electrical etc.) • Type of methods for risk estimation • Classroom example
	EN ISO 13849-1 - Safety Related Parts of the Control System <ul style="list-style-type: none"> • Introduction to the safety standard. • Understanding Safety Control System • SFP chart to derive required Performance Level (PL) • Control Categories Definitions. • Introduction to PL parameters • Understanding of tables and charts for EN ISO 13849-1. • Examples of safety function • V-Model
	Safety Product Identification <ul style="list-style-type: none"> • Electromechanical Safety Limit Switches • +Ve Break Contacts & '+Ve mode mounting • Emergency Stop Devices • Guard Safety Devices • Area Guarding - Safety Light Curtain • Tactile Safety Devices • Safety Relay Modules – Importance
Feedback	

ADVANCED SAFETY TRAINING COURSE

Pre-requisites	<ul style="list-style-type: none"> • Basic knowledge of Electric and Electronics. • Basic knowledge of Pneumatics & Hydraulic equipment's.
Duration	2 Days (16Hrs.)

Duration	Activity/Contents
Day 1	
09:00 AM to 05:00 PM	Basic Safety <ul style="list-style-type: none"> • Definition of Functional Safety • Importance of safety • Understanding of dangerous failure • Hazard vs Risks • Understanding about workplace hazard
	Indian Factory Act 1948 <ul style="list-style-type: none"> • Understanding Indian Factory Act and state Rule from Machinery Safety purview • Machine safety standard as per Indian regulation by BIS
	Machinery Directive 2006/42/EC <ul style="list-style-type: none"> • Meaning of Directive • Difference between Directive & Standards • Harmonised Standards • Type A, B & C Standards
	EN ISO 12100 - Risk Assessment <ul style="list-style-type: none"> • Introduction to the standard. • Understanding the risk assessment flow chart • Types of hazards (Mechanical, electrical etc.) • Type of methods for risk estimation • Learning Risk Assessment techniques • HRN methodology • Risk mitigation techniques • Classroom example
	EN ISO 14120 - Safety of machinery — Guards — General requirements for the design, construction, and selection of fixed and movable guards <ul style="list-style-type: none"> • Introduction to the standard and Understanding Machine Safety Guarding requirements as per the standard. • General requirements for the design. construction and selection of fixed and movable guards
	EN ISO 13855 - Safety of machinery — Positioning of safeguards with respect to the approach speeds of parts of the human body <ul style="list-style-type: none"> • Introduction to the standard, overview and main requirements of the approach speed while considering an Interlock or guards.

	EN ISO 13857 - Safety of machinery -- Safety distances to prevent hazard zones being reached by upper and lower limbs. <ul style="list-style-type: none">• Introduction to the standard and Purview of Safety Distance requirements for selection of an Interlock or a Safety Guard	1.
	EN ISO 14119 - interlocking and other safety applications <ul style="list-style-type: none">• Introduction to the standard and Understanding various Safety Devices and their selection parameters as per the application.• Why Safety Devices are better than non-safety devices for Safety Applications	
	Safety Product Identification <ul style="list-style-type: none">• Electromechanical Safety Limit Switches• +Ve Break Contacts & '+Ve mode mounting• Emergency Stop Devices• Guard Safety Devices• Area Guarding - Safety Light Curtain• Tactile Safety Devices• Safety Relay Modules – Importance	
Day 2		
09:00 AM To 05:00 PM	EN ISO 13849-1 - Safety Related Parts of the Control System <ul style="list-style-type: none">• Introduction to the safety standard.• Understanding Safety Control System• SFP chart to derive required Performance Level (PL)• Control Categories Definitions.• Introduction to PL parameters• Understanding of tables and charts for EN ISO 13849-1.• Calculation of PL parameters<ul style="list-style-type: none">1. Probability of dangerous failure per hour (PFHd)2. Mean time to dangerous failure (MTFd)3. Diagnostic coverage (DCavg)4. Common cause failure (CCF)• Design and evaluation of safety circuits• Examples of PL calculation• Examples of safety function• V-Model	
	SISTEMA Software <ul style="list-style-type: none">• Introduction to SISTEMA Software• Project Creation• Safety Function (SRP/CS)• PL calculation• NOp Calculation• Report generation	
Feedback		

CUSTOMIZED ADVANCE SAFETY TRAINING COURSE

Pre-requisites	<ul style="list-style-type: none"> • Basic knowledge of Electric and Electronics. • Basic knowledge of Pneumatics & Hydraulic equipment's.
Duration	1 Day Practical Assessment of Machine + 2 Days Classroom Training (24Hrs.)

Duration	Activity/Contents
Day 1	
09:00 AM to 05:00 PM	Basic Safety <ul style="list-style-type: none"> • Definition of Functional Safety • Importance of safety • Understanding of dangerous failure • Hazard vs Risks • Understanding about workplace hazard
	Indian Factory Act 1948 <ul style="list-style-type: none"> • Understanding Indian Factory Act and state Rule from Machinery Safety purview • Machine safety standard as per Indian regulation by BIS
	Machinery Directive 2006/42/EC <ul style="list-style-type: none"> • Meaning of Directive • Difference between Directive & Standards • Harmonised Standards • Type A, B & C Standards
	EN ISO 12100 - Risk Assessment <ul style="list-style-type: none"> • Introduction to the standard. • Understanding the risk assessment flow chart • Types of hazards (Mechanical, electrical etc.) • Type of methods for risk estimation • Learning Risk Assessment techniques • HRN methodology • Risk mitigation techniques • Classroom example
	EN ISO 14120 - Safety of machinery — Guards — General requirements for the design, construction, and selection of fixed and movable guards <ul style="list-style-type: none"> • Introduction to the standard and Understanding Machine Safety Guarding requirements as per the standard. • General requirements for the design. construction and selection of fixed and movable guards
	EN ISO 13855 - Safety of machinery — Positioning of safeguards with respect to the approach speeds of parts of the human body <ul style="list-style-type: none"> • Introduction to the standard, overview and main requirements of the approach speed while considering an Interlock or guards.
	EN ISO 13857 - Safety of machinery -- Safety distances to prevent hazard zones being reached by upper and lower limbs. <ul style="list-style-type: none"> • Introduction to the standard and Purview of Safety Distance requirements for selection of an Interlock or a Safety Guard
	EN ISO 14119 - interlocking and other safety applications <ul style="list-style-type: none"> • Introduction to the standard and Understanding various Safety Devices and their selection parameters as per the application. • Why Safety Devices are better than non-safety devices for Safety Applications

	Safety Product Identification <ul style="list-style-type: none"> • Electromechanical Safety Limit Switches • +Ve Break Contacts & '+Ve mode mounting • Emergency Stop Devices • Guard Safety Devices • Area Guarding - Safety Light Curtain • Tactile Safety Devices • Safety Relay Modules – Importance
Day 2	
09:00 AM To 05:00 PM	EN ISO 13849-1 - Safety Related Parts of the Control System <ul style="list-style-type: none"> • Introduction to the safety standard. • Understanding Safety Control System • SFP chart to derive required Performance Level (PL) • Control Categories Definitions. • Introduction to PL parameters • Understanding of tables and charts for EN ISO 13849-1. • Calculation of PL parameters <ol style="list-style-type: none"> 5. Probability of dangerous failure per hour (PFHd) 6. Mean time to dangerous failure (MTFd) 7. Diagnostic coverage (DCavg) 8. Common cause failure (CCF) • Design and evaluation of safety circuits • Examples of PL calculation • Examples of safety function • V-Model
	SISTEMA Software <ul style="list-style-type: none"> • Introduction to SISTEMA Software • Project Creation • Safety Function (SRP/CS) • PL calculation • NOp Calculation • Report generation
Duration	Activity/Contents
Day 3	Assessment of the Machine for Practical Example
	Discussion & comparison of report prepared by consultant & by participants
Feedback	

TERMS & CONDITIONS

1. Minimum requirement of training is at least of 8 participants.
2. Accommodation and Travel (Local + Domestic) will be included in customer scope at actual.
3. Participation Certificate and Hard copies of course material will be provided only for participants of Advance Safety Training & Customized Safety training program.
4. We recommend considering 15-20 participants in one batch to maintain training quality.

CONTACT

Send us your “Safety Training” enquiries to below contact details and give us an opportunity to serve you. Thanks in advance for showing your interest in tec.nicum safety services.

Rohan C. Shah

Mob: - +91-8484926235

Email: - rshah@tecnicum.com