
Explosion and Fire Safety:
Become an IND EX®er.
IND EX e. V.®
IND EX® Intercontinental Association of Experts for INDustrial EXplosion Protection e. V.

The consequences of explosions or fires can be catastrophic:

- ✓ extensive cost
- ✓ production downtime
- ✓ loss of market share
- ✓ loss of facilities and equipment
- ✓ and most importantly, loss of **life**.

To prevent such occurrences, IND EX® has assembled this team of specialists to address the safety needs of industries at risk of explosions and fires. To achieve this goal, IND EX® has laid out a set of commitments to achieve its objectives.

IND EX® involves.

Assimilation and interpretation of the existing sets of international guidelines to gain an overarching understanding of explosion and fire safety related regulations. Every employer has technical and practical challenges to interpret explosion and fire safety regulations.

IND EX® researches.

Support research in explosion and fire safety that will lead to the production of new and innovative technologies aimed at reducing the risk of explosion and fires.

IND EX® connects.

Organize periodical congress and symposia to facilitate knowledge transfer in explosion and fire safety IND EX® has become the name for expertise, experience, and knowledge in the field of explosion and fire safety.

We are IND EX®.

IND EX®, the "Intercontinental Association of Experts for INDustrial EXplosion Protection e. V.)", was established in 2009 in Frankfurt am Main as an association of EXperts for industrial explosion protection. The members come from science and research, as well as from industry.

IND EX® stands for

- ✓ A strong community of international experts
- ✓ Decade-long experience in explosion and fire safety
- ✓ An international exchange of experiences
- ✓ Training in industrial explosion and fire safety

Full Members

B·A·D Gesundheitsvorsorge und Sicherheitstechnik GmbH · GreCon · IEP Technologies – HOERBIGER Safety Solutions · PROTEGO · rembe – Safety is for life.™ · rico – certified safety · Silesia

Scientific and Technical Committee

Dr. Kees van Wingerden (Vysus Group)
Prof. Ulrich Krause (Otto von Guericke Universität Magdeburg)
P. Eng. Hugues Châteauneuf (BBA)
Jürgen Kern, M.Eng. (rico – certified safety)
Marius Bloching, M.Sc. (rembe – Safety is for life.™)
Ursula Aich

IND EX® Ambassadors

Nalini Krishnan – Republic of India
Niklas Kitzhoefer – China
Stefano Cavallin – Republic of Italy
Univ. Prof. Dr.-Ing. Uli Barth – D-A-CH
Dr.-Ing. Lorenz Boeck – North America

For more information, please visit ind-ex.info

Associated Members

AREGUS Services
Ingenieurbüro Eckart Hillenkamp

BS&B

BSP - Consulting GmbH
Buehl Spray Powder Consulting

BÜHLER

ExNB Notified Body

Fike

FireEx Consultant GmbH

GVW Graf von Westphalen

Herding Filtertechnik

KELLER Maßstab für reine Luft

Lübbers Anlagen- und Umwelttechnik GmbH

nova Protection Systems

ProTectum - Prüftec GmbH

REMBE Research+Technology Center GmbH

SiccaDania

SISTAG

Steinar H Sunde AS

STS

SWISSRTEC

THORWESTEN VENT

TRM Filter

TÜV SÜD

Markus Eckert Karsten Frese František Krejčí

Honorary Members

M.Sc. Richard Siwek, Honorary President
Dr. Chris Cloney, PEng. Dr. Dirk Oberhagemann Ron Sinclair Wolfgang Schubert

Accompanying Members

SCHÜTTGUT & PROZESS

The Powder/Bulk Portal bulk-online http://www.bulk-online.com

PROCESS

POWDER&BULK

IPB 2025

POWTECH TECHNOPHARM International Exhibition for Process Operations

Know-how available everywhere at any time.

EXTOOLS®mobile and EXTOOLS®pro are the universal tools in explosion safety e.g. for safety officers, experts and technical consultants, etc. who must deal extensively with the topic of explosion protection. They based on EN-, IEC- and ISO-Standards as well as on VDI Guidelines and reports, research work, theses, publications and technical books.

EXTOOLS®mobile

The App.
Availabe for iOS & Android.

EXTOOLS®mobile is separated in five categories: „ignitability indices“, „explosion indices“, „equipment“ „literature“ and „abbreviations“. Since the indices are obtained under standard laboratory conditions, it is important to know how they depend on factors such as temperature, pressure, particle size of the process and plant under consideration. The basic transformation rules for gases/vapours and dusts are applied. EXTOOLS®mobile also estimates the degree of ignition hazard and the energy of various ignition sources and calculates equipment-related parameters such as maximum experimental safe gap, circumferential speeds or determines the permissible type of filter fabric for dust collectors. In the „literature“ you will find the information on which EXTOOLS®mobile is based. The category abbreviations explains the meaning of the used acronyms.

For more information,
please visit extools.eu

EXTOOLS®pro

The Program.

Available for Windows® 7 or higher.

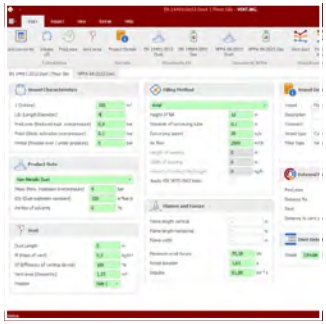
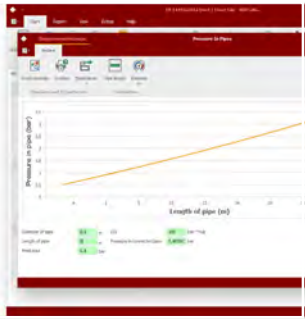
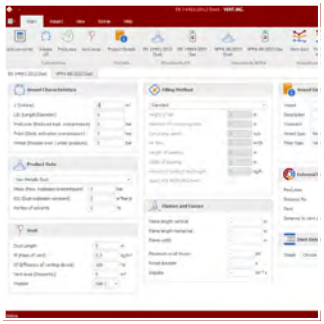
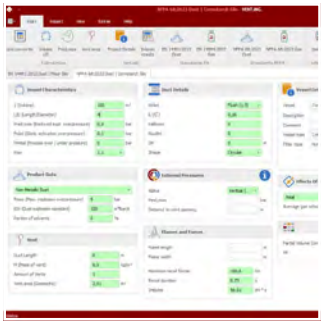
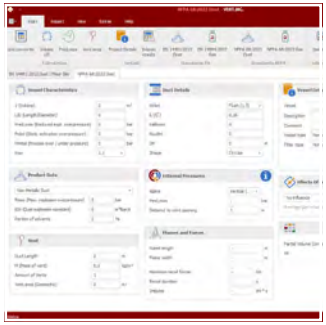
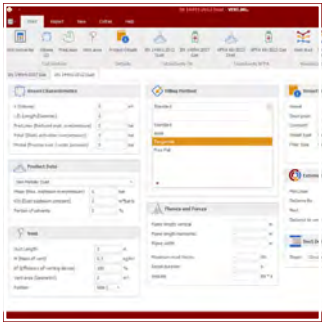
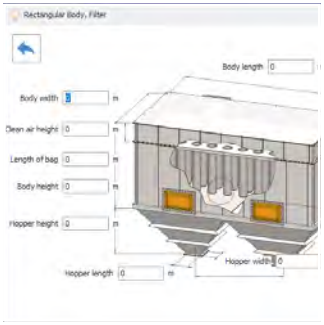
EXTOOLS®pro is divided into eleven categories: „Fuel“, „Explosive Atmosphere“, „Ignition Hazards“, „Protective Systems“, „Equipment“, „Volumes and Surfaces“, „Miscellaneous“, „Database“, „Converter“, „Abbreviations“, „Literature“. With the help of this app, both preventive and constructive explosion protection can be analyzed, determined or calculated in detail. Various equipment-specific parameters for e.g. rotary valves, screw conveyors, mixers can also be determined. Furthermore, release rates of liquids / gases and the degree of ventilation of gases / vapours can be determined. The safety parameters of numerous gases and liquids are summarized in the database.

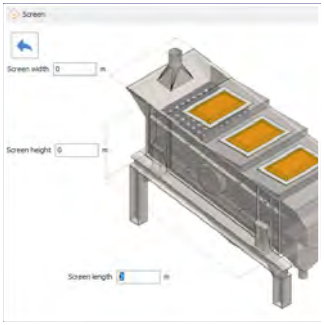
For more information,
please visit extools-pro.eu

IND EX® presents: VENT.iNG

Extensive research has been conducted over the last decades, enabling experts worldwide to establish standards and guidelines do deal with the hazard of gas and dust explosions. Besides preventive measures to avoid explosions, explosion protection techniques were developed to protect process equipment such as dust collectors, silos, dryers and or cyclones and many others.

One of the most common explosion protection measures is explosion venting, to reduce occurring explosion pressures in the equipment to an acceptable minimum.In a globalized world, equipment manufacturers are forced to know about many standards and guidelines present in their destination country they are going to supply to. This sometimes can be overwhelming. With VENT.iNG., a software is available which supports the explosion protection expert to apply the two most common explosion VENT. iNG approaches in the world, following EN and NFPA.



VENT.iNG.
Explosion. Pressure. Relief. EN. VDI. NFPA.

Apply the two most common explosion venting approaches in the world, following EN and NFPA.

Available for Windows® 7 or higher.

VENT.iNG. in its different versions is essentially based on

European Standards / Guidelines

- ✓ EN 14491-2012 “Dust explosion Venting protective systems”
- ✓ EN 14994-2007 “Gas explosion Venting protective systems”,
- ✓ Guideline VDI-3673, Part 1-2002 “Pressure release of dust explosions”
- ✓ NFPA standard
- ✓ NFPA 68:2023 “Standard on Explosion Protection by Deflagration Venting”.

Additional features

- ✓ Explosion pressure calculation in pipes
- ✓ Exception calculation for explosion isolation
- ✓ Multiple calculations in one file for larger projects containing multiple equipment such as Spray Dryer-Cyclone-Filter combinations

Future features

- ✓ DIN CEN TR 16829
- ✓ Calculation of bucket elevators following NFPA 68:2023

For more information,
please visit ind-ex-venting.de

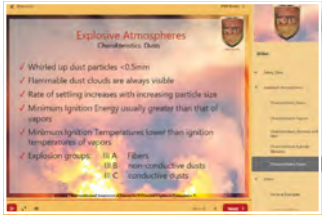
e-learning - another IND EX® Service

Technical explosion protection measures are always related to organizational measures. The qualification of personnel is therefore an important element of explosion protection. International standards and national laws define the high requirements for persons working in potentially explosive atmospheres, but also for those who plan, install, or maintain explosion-proof installations.

IND EX® therefore provides web-based e-learning units. They cannot replace the attendance of conventional continuing education events, but they can be used as basic training for people who are new to the topic of explosion protection or who want to periodically refresh their knowledge.

IND EX® e-learning units

- ✓ Unit 1: ATEX Basics
- ✓ Unit 1: ATEX Grundlagen (german language)
- ✓ Unit 2: Avoiding ignition sources
- ✓ Unit 2: Vermeiden von Zündquellen (german language)
- ✓ Unit 3: Static Electricity
- ✓ Unit 3: Elektrostatik (german language)
- ✓ Unit 4: Maintenance of ATEX Equipment
- ✓ Unit 4: Instandhaltung von ATEX Geräten (german language)
- ✓ Unit 5: Key elements of safe warehousing
- ✓ Unit 5: Schlüsselelemente der sicheren Chemiekalienlagerung (german language)



For more information,
please visit ind-ex-e-learning.de

IND EX® e-learning is not a subscription. You will receive time-limited access to our e-learning content on the IND EX® website, which you can use freely. Once the booked period has expired, your access ends automatically.

System requirements: IND EX® e-learning runs on all platform-independent computers in the Internet browser.

Your e-learning benefits:

Flexibility
e-learning enables learners to access educational content at their own convenience and pace, so they can study anytime, anywhere.

Continuous learning and updates
Online platforms can be easily updated with new content, ensuring learners have access to the latest information and resources in a rapidly changing world.

Tracking and assessment
e-learning tools provide tracking and assessment features, allowing learners and educators to monitor progress, identify areas for improvement, and provide timely feedback.

Cost Effectiveness
e-learning eliminates the need for physical classrooms, reducing costs associated with travel, accommodations, and infrastructure. It also enables reuse and scalability of digital content.

Global reach
e-learning breaks geographical boundaries, enabling learners to connect with experts and educators worldwide, fostering cross-cultural learning experiences.

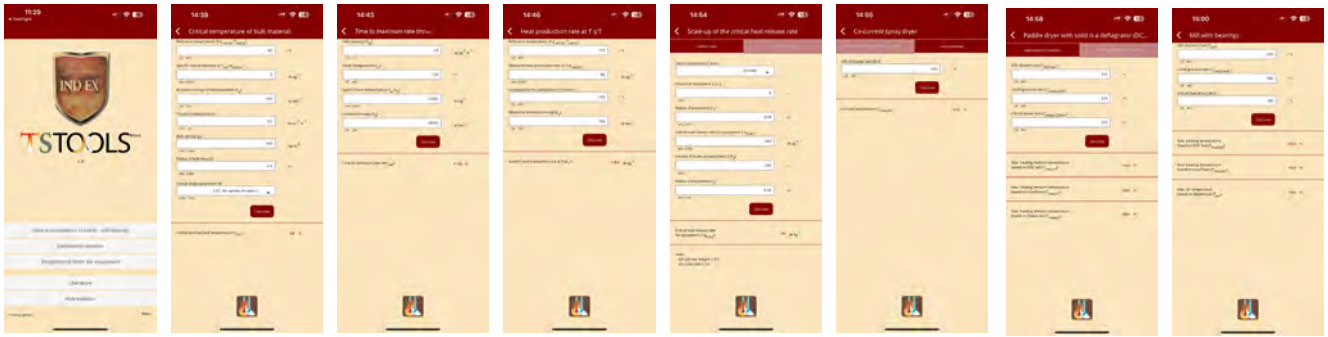
Environmental sustainability
e-learning reduces the need for printed materials and commuting, contributing to a more sustainable and eco-friendly approach to education.

Thermal safety convincingly calculated.

Chemical reactions are one of the 13 types of ignition sources to be considered in explosion risk analyses that EN 1127 requires. The variety of reactions is large and the analysis of ignition scenarios ranges from runaway reactions to self-heating and self-ignition.

IND EX® has therefore developed a thermal safety programme, TSTOOLS®*basic*, which facilitates this analysis and consists of five categories:

- ✓ **Heat accumulation in solids - self-heating,**
- ✓ **Exothermic reaction,**
- ✓ **Temperature limits for equipment,**
- ✓ **Literature,**
- ✓ **Abbreviations.**



New

TSTOOLS®basic

Thermal safety convincingly calculated.
Available for iOS and Android.

TSTOOLS®basic is based on many years of experience in assessing the thermal risks of chemical reactions or processes involving heat or fire. The tool's calculations provide scientifically sound - but practical - results to ensure that chemical reactions or other thermal processes are carried out safely.

Parameters that can be determined:

- ✓ Critical temperature for bulk material
- ✓ Time to maximum rate, trm
- ✓ Temperature at an induction time of 24 hours, TD24, AZT24
- ✓ Scale-up of the critical heat release rate
- ✓ Maximum drying temperature for various dryers
- ✓ Scale-up of the critical heat output

Become an IND EX®er.

With your membership, you become an insider of a top-class group. You are active by improving worldwide safety standards in explosion protection and fire safety. IND EX® offers you the possibility of full or associated membership.

Full member

- Codetermination in selection and implementation of research projects.
- Access to complete research reports.
- Presentation of your products during the IND EX® Safety Congress.
- Access to our complete database per member-login at ind-ex.info.
- Having your organisation named in relevant IND EX® publications.
- Submission of possible research topics.
- Free participation and free performance at the IND EX® Safety Congresses.
- Profile page at ind-ex.info linked to your homepage.
- Strengthening the international reputation of your organisation.
- Direct access to an international network of experts.
- Free updates for EXTOOLS®pro.

Associated member

- Free participation and free performance at the IND EX® Safety Congresses. *
- Profile page at ind-ex.info linked to your homepage.
- Strengthening the international reputation of your organisation.
- Direct access to an international network of experts.

* after 3 years of membership

Associated private individual

- Free participation and free performance at the IND EX® Safety Congresses. *
- Private profile page (no mention of company data such as logo or product details) with a link to your homepage on ind-ex.info.
- Strengthening the international reputation of your organisation.
- Direct access to an international network of experts.

* after 3 years of membership

IND EX® membership: Application

Here you can register as a member. The board decides whether your application will be accepted.

full

€

5000 ☐ 5 votes

associated

€

400* ☐ 1 vote

800 ☐ 1 vote

2000 ☐ 2 votes

3000 ☐ 3 votes

4000 ☐ 4 votes

* for private individuals only

name	
organisation	
industry	
VAT ID	
street	
post code | city	
country	
phone	
e-mail	
date	
signature	

Please fill in and send to
info@ind-ex.info

IND EX® Intercontinental Association of Experts for INDustrial EXplosion Protection e. V.
info@ind-ex.info
phone +49 69 97503-408 | Friedrich-Ebert-Anlage 36 | 60325 Frankfurt am Main, Germany