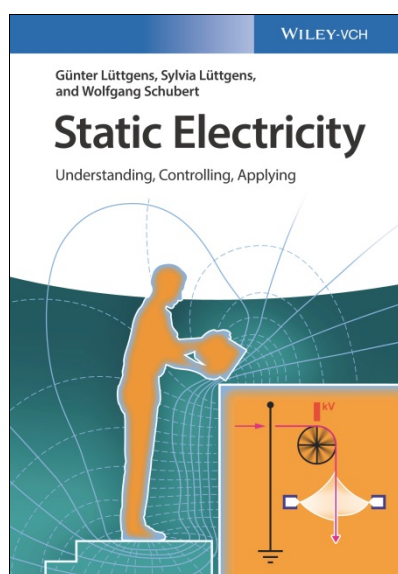


Günter Lüttgens, ELSTATIK, Odenthal, Germany;
Sylvia Lüttgens, ELSTATIK, Odenthal, Germany;
Wolfgang Schubert, SCHUBERT GMD, Taucha, Germany

Static Electricity

Understanding, Controlling, Applying



2017
304 pages with 225 figures, 152 in color
Hardcover
119 € / £95 / \$165
ISBN: 978-3-527-34128-3

Written by world-renowned experts on the topic with many years of research and consultancy experience, this invaluable book provides the practitioners' perspective, outlining the dangers and benefits of static electricity in industry.

The first chapter reviews the fundamentals of understanding fires and explosions in general and electricity-induced ignition in particular, while the following chapter is dedicated to the origins of static electricity in industrial settings, such as in flowing gases and the transport of disperse systems.

The major part of the text deals with measuring static electricity, elimination of unwanted charges and hazard prevention under different conditions. It concludes with an overview of practical applications in chemical and mechanical engineering. Throughout the book, real-life case studies illustrate the fundamental aspects so as to further an understanding of how to control and apply static electricity and thus reduce material damages as well as increase occupational safety.

Plus additional movie sequences on the dedicated website showing static electricity in action.

This specialist book is addressed to:
University teachers and students of all disciplines, who have to observe electrostatic phenomena,
Engineers designing and operating plants in the Chemical and Oil Refining Industry,
Manufacturers and users of plastic products,
For all those who are working in the field of delicate electronic equipment and who are responsible for preventing electrostatic interferences,
Inventors and developers who wish to make use of electrostatic application possibilities,
Testing laboratories and supervisory authorities
Trade associations and property insurances.

FROM THE CONTENTS

BASIC KNOWLEDGE OF FIRES AND EXPLOSIONS - RISK ASSESSMENT

Understanding Fire and Explosion Processes
Explosion Limits
Ignition Hazards Due to Electrostatic Charges
Comment on the Risk Assessment
Classification of Hazardous Areas in Danger Zones
Protective Measures with Regard to Static Electricity
Methods to Determine the Ignition Capability of Gas Discharges
Avoiding Explosion Hazards

ORIGIN OF STATIC ELECTRICITY

What Determines the Charging Amount?
Charging of Flowing Liquids
Attempt at Classification
Charging of Flowing Gases
Charging of Disperse Systems
Reduction of Charging Tendency
Electric Field
Electrostatic Induction

MEASUREMENT TECHNOLOGY

Explanation of Electrostatic Measurements
Voltage Measurement with Fieldmeters
Measuring the Electric Field Strength

Measuring the Electrical Resistance of Insulating Materials
Other Metrological Applications
Capacity
Influencing Factors
Detection of Gas Discharges

GAS DISCHARGES AS SOURCES OF IGNITION

Gas Discharges in Electrostatics
Gas Discharge Types
Effects of Gas Discharges
How to Avoid Gas Discharges?
Assessment of Ignition Hazards Posed by Gas Discharges
Damage Resulting from Gas Discharges
Effects of Electricity on the Human Body

ELIMINATION OF DISTURBING CHARGES

Discharging of Charged Surfaces
Potential Hazards from Discharging Electrodes

DESCRIPTION OF DEMONSTRATION EXPERIMENTS

Electrostatic Force Effects
Separation Charging
Charging of Particles
Induction

Conductivity
Experiments with the Explosion Tube
Gas Discharges
Fire and Explosion Hazards

CASE STUDIES

Investigation Strategy
Ignition Due to
Brush Discharges
Propagating Brush Discharges
Spark Discharges
Cone Discharges
Doubts About Electrostatic Ignition
Experience-Led Actions

PRACTICAL APPLICATIONS OF CHARGES

Practical Applications
Examples of Creative Implementations
Summary

MATHEMATICAL TOOLBOX: QUANTITIES, UNITS, FORMULAS,

Appendix A: SI Units
Appendix B: Derived SI Units
Appendix C: Units in General Applications
Appendix D: Decimal Parts and Multiples
Appendix E: Symbols
Appendix F: Permittivity

ORDER FORM

Yes, please send me the following title:

___ copies Lüttgens, G. / Lüttgens, S. / Schubert, W.
Static Electricity
Understanding, Controlling, Applying
119 € / £95 / \$165
ISBN: 978-3-527-34128-3

In EU countries the local VAT is effective. Postage will be charged. Due to fluctuating exchange rates, the prices for John Wiley & Sons' titles are approximate. Prices are subject to change without notice. Our standard terms and delivery conditions apply. Date of information: 07/08/17

Delivery and Invoice address:

___ private ___ business

Surname, First Name

Firm/Institution

Department

Street/P.O. Box

Country, Postcode, City

VAT No.*

Tel.

Fax

e-mail

Date, Signature

Please keep me informed of new publications in the subject areas:

- Power Electronics (EE10)
 Process Safety (CG14)
 Electricity (CG14)

*: If you would like the invoice to be addressed to your company, please include your VAT number so that we can process your order quickly and competently.

Thank you for your order.

Please pass this order form to your local bookseller

or to:

Wiley-VCH
P.O. Box 10 11 61, 69451 Weinheim, Germany
Tel. +49 (0) 62 01-60 64 00
Fax +49 (0) 62 01-60 61 84
e-mail: service@wiley-vch.de
Visit us at <http://www.wiley-vch.de/>

Register now for the free
Wiley-VCH Alerting Service!
<http://www.wiley-vch.de/home/pas>

WILEY-VCH