



DE DIETRICH® TRAINING PROGRAM 2016



De Dietrich
PROCESS SYSTEMS





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WELCOME TO THE REAL WORLD OF GLASS-LINED STEEL!

Dear valued Customer,

Glass-lined steel provides a tried and tested, rugged design that has proven its value in countless applications across various industries that require a high level of corrosion resistance and durability in their process equipment. Nonetheless, people hear the term “glass” and often develop a negative perception of glass-lined steel, associating the material of construction with terms like “fragile”, “maintenance hassle”, and “costly”. But by familiarizing yourself with the unique properties and advantages of glass-lined steel you can dismiss these misconceptions.

Our training program is designed for that purpose.

Building upon a basic understanding developed in Module 1, the full training courses will add to this knowledge and allow you to reach the highest level of performance in selecting, operating and upgrading your process equipment.

Aware that our customers from the chemical and pharmaceutical industries are global players who require suppliers capable of meeting their expectations on the world stage, De Dietrich Process Systems has been broadening its field of activity for a number of years and has developed its global presence to satisfy them and develop relations with the users of our products.

We are determined to develop customer satisfaction through irreproachable quality suited to growing needs, particularly in terms of performance, safety and pro-activeness in finding solutions suited to such needs. To achieve this, we involve the entire company at each level in the process. We also involve our customers in training programs and so widen our Glass-Lining, Glass and Process Community.

Enjoy you Glass-Lining experience in Zinswiler, France, our International Glass-Lining Competence Center.



Frédéric GUICHARD



Title	INTRODUCTION TO GLASS-LINED EQUIPMENT		
Duration: 1,5 days Location: Zinswiler	French: 25 - 26/01/2016 10 - 11/10/2016	German: 25 - 26/04/2016	English: 01 - 02/02/2016 21 - 22/11/2016
Price	1 480 € EX VAT (accommodation & catering included)		
Public	12 MAXI - All audience		
Prerequisites	None		
Objective	Acquisition of the basics in enamel and glass-lined equipment		

- Presentation of the DE DIETRICH group & factory tour
- Enamel: general:
 - First introduction to enamel: advantages - particularities of glass-lined equipment
 - Enamel quality in glass-lined equipment
 - Main characteristics of enamel from the point of view of chemical and mechanical resistance, resistance to mechanical shock and thermal shock
- Manufacture of the appliances: boiler making, enamelling
- Factory tour and equipment manufacturing workshops
- Glass-lined equipment:
 - The different types of reactors: AE - BE - CE - OptiMix®
 - Pharma reactors, bio reactors, Euro EZ, laboratories
 - Receivers and tanks
 - Columns
 - Dryers
 - Exchangers - Condensing units
 - Pipes
 - Valves
 - Instrumentation (measuring temperature, pH, conductivity, taking samples)
- Cleaning: Cleaning In Place (CIP)
- Optimisation of the equipment, agitation and heat exchange
- Reglassing and upgrade of the equipment
- Our turnkey solutions



Title	INSTALLATION AND MAINTENANCE OF GLASS-LINED EQUIPMENT		
Duration: 2,5 days Location: Zinswiller	French: 27 - 29/01/2016 12 - 14/10/2016	German: 27 - 29/04/2016	English: 03 - 05/02/2016 23 - 25/11/2016
Price	1 880 € EX VAT (accommodation & catering included)		
Public	12 MAXI - Maintenance Services / Inspection Services		
Recommendation Prerequisites	Have a good knowledge of glass-lined equipment or have followed the course "Introduction to glass-lined equipment"		
Objective	Acquisition of maintenance techniques on glass-lined equipment		

DAY 1 ENAMEL INSPECTION AND REPAIR	DAY 2 MECHANICS	DAY 3 MECHANICS
<ul style="list-style-type: none"> • Introduction to enamel and enamelled equipment • Preventive inspection <ul style="list-style-type: none"> • Cleaning of the glass lining • Visual and spark test inspection • Measurement of the enamel and steel thicknesses • Rectification maintenance <ul style="list-style-type: none"> • Tantalum repairs • PTFE and Tantalum sleeves • Enamelled discs • Special repairs • Practical workshops Workshop 1: <ul style="list-style-type: none"> • Enamel cleaning and protection • Visual and spark test inspection • Measurement of the enamel and steel thicknesses Workshop 2: <ul style="list-style-type: none"> • GlasTest introduction and implementation • Sampling baffles and temperature sensors introduction • Dismantling and assembly temperature sensors on baffle Workshop 3: <ul style="list-style-type: none"> • Tantalum plates and fixing screws installation • PTFE and Tantalum sleeves fitting 	<ul style="list-style-type: none"> • Mechanical seal model 06 and MDL drive introduction <ul style="list-style-type: none"> • Mechanical seal model 06 • MDL drive • MDL lateral dismantling tool • Introduction of the different gaskets and shimming procedure <ul style="list-style-type: none"> • Aramid • Graphite • Gore® S1000 • Cleanvalve introduction • Practical workshops Workshop 1: <ul style="list-style-type: none"> • Disassembly / assembly of glass-lined support flange on MDL mechanical seal cartridge model 06 Workshop 2: <ul style="list-style-type: none"> • Assembly / disassembly of a mechanical seal housing model 06 on MDL drive Workshop 3: <ul style="list-style-type: none"> • Aramid / graphite / Gore® S1000 gaskets shimming 	<ul style="list-style-type: none"> • Agitators introduction • Pneumatic and davit arm openings • Practical workshop: Introduction and assembly outlet bottom valve • Explanation and visualisation of the manufacturing process of glass-lined reactors - Factory tour

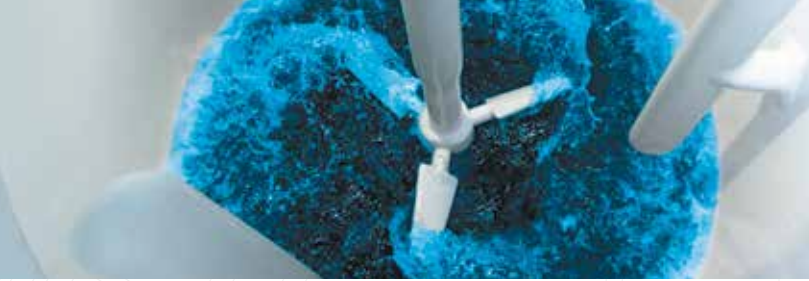


Titre		GLASS-LINED EQUIPMENT: PROCESS IMPROVEMENT/OPTIMISATION AGITATION AND HEAT EXCHANGE - Advanced training over 3 days	
Duration: 3 consecutive days Location: Zinswiller	French: 22 - 24/03/2016 04 - 06/10/2016	English: 19 - 21/04/2016 15 - 17/11/2016	
Price	2 950 € EX VAT (accomodation & catering included)		
Public	12 MAXI Experts: Project Managers, Engineers and Specialists in Materials, Processes, Engineering Systems		
Recommendation Prerequisites	Have a good knowledge of glass-lined equipment or have followed the course "Introduction to glass-lined equipment"		

DAY 1: GENERALITIES

Introduction to agitation with a global approach to learn about the components to define an agitation system and the criteria used to select the agitation suited to one's process

- **Introduction**
 - The different types of agitator
 - Baffles effect
 - Fluid properties: density, viscosity; Newtonian, non-Newtonian fluid
 - Types of flow rate: turbulent, laminar system; Reynolds number
- **Overall characterisation**
 - Absorbed power: theory, measurements, curves, impact of different parameters, exercises
- **Hydrodynamics:** tip speed, pumping and circulation flow rates, mixing time, shear rates
- **Practical Workshops**
 - Absorbed power measurement
- **Elementary operations**
 - Homogenization
 - Solids suspension
 - Crystallization
 - Gas/liquid dispersion
- **Solutions in glass-lined steel:**
 - Agitators
 - Baffle
 - Dip pipe
- **Mechanical design**
 - Mechanical components of a mixing system
 - Mechanical design:
 - Loads on agitator
 - Strength calculation: static, fatigue
 - Dynamic calculation: critical speed



DAY 2: BLENDING AND HEAT EXCHANGE

Objective: Further examination of the two most common operations in agitation: Blending and Heat Exchange

- Blending of miscible fluids
 - General principles
 - Blending in turbulent systems
 - Blending in laminar systems
 - Measurements
- Continuous blending in reactor
 - Introduction
 - RTD basics
 - Approximation
- Practical works
 - Measuring the macro-mixing time
- Heat Exchange
 - Introduction
 - Calculations: Fourier's law, calculation of exchange coefficients and times
- Influence of different parameters
 - General datas: Order of magnitude of different exchange coefficients
 - Recommendation for glass-lined equipment

DAY 3 : FURTHER EXAMINATION OF PROCESSES

Objective: Further examination of specific processes such as solid/liquid mixtures, gas/liquid dispersion...

- Solid / liquid mixing
 - Suspension: Principle, characterisation, peel-off and suspension speed
 - Crystallisation: Problematics, criteria
 - Dissolution: Significant criteria
 - Implementation
- Gas / liquid dispersion
 - Principle
 - Type of operating system
 - Characterisations: gas hold-up, mass transfer coefficient
 - Measurements
- Practical works
 - Solids suspension
- Blending of immiscible fluids
 - Emulsion type
 - Break-up and coalescence
 - Implementation
- Extrapolation
 - Introduction
 - Dimensional analysis
 - Choice of criteria
 - Exercise

N.B.: Trainees are invited to come with a scientific calculator



Title	GLASS-LINED EQUIPMENT: PROCESS IMPROVEMENT/OPTIMISATION ENAMEL - Advanced training over 1 day	
Duration: 1 day Location: Zinswiler	French: 15/03/2016 20/09/2016	English: 31/05/2016 29/11/2016
Price	990 € EX VAT (accommodation & catering included)	
Public	12 MAXI Experts: Project Managers, Engineers and Specialists in Materials, Processes, Engineering Systems	
Recommendation Prerequisites	Have a good knowledge of glass-lined equipment or have followed the course "Introduction to glass-lined equipment"	
Objective	Advanced knowledge of the vitreous substance we call enamel; enamel frit manufacturing process; manufacture and properties of steel/enamel composite; optimal use of glass-lined equipment	

- Introduction to enamel and glass-lined equipment
- Enamel:
 - Structure and properties of glass
 - Vitrification criterias
 - Enamel, a particular glass
- Manufacture and physical characteristics of enamel
 - Enamel production
 - Quality control
 - Physical characteristics of enamel
- Enamelling
 - The different substrates
 - Different kinds of enamel
 - Manufacture of a steel / enamel composite
 - Adhesion
 - The defects of enamelling – vocabulary and reference standards
 - Requirements and quality checks
 - Specific enamelling
- The properties of glass-lined steel and limitations on use
 - Chemical properties – reference standards
 - Mechanical properties
 - Thermal properties – reference standards
 - Delete any risk of electrostatic damage
 - Recommendation on uses
- Practical work session
- The cleaning of a glass-lined equipment
 - Operating mode and cleaning procedure for glass lining and half coil/jacket
- Conclusion and questions



Title	TRAINING IN GLASSWORKING TECHNIQUES
Duration: 2,5 days Location: Mainz (D)	French: 15 - 17/03/2016 06 - 08/12/2016
Price	1 290 € EX VAT (accommodation and Monday & Tuesday dinners are not included)
Public	12 MAXI - All audiences
Objective	To train users and "Maintenance" and "Methods" services technicians in the assembly, maintenance and use of industrial chemical engineering equipment in glass. To discuss EC Directives on pressurised glass equipment, safety rules and good manufacturing practices.

• Theoretical training:

- Introduction to glass
- Presentation of Borosilicate 3.3. glass
- Properties and limitations on use
- Presentation of the SUPRA Line range
- Presentation of the older ranges of QVF and SCHOTT products & compatibility for maintenance operations
- Presentation of parts and accessories – learning to recognise the products
- Visit to the manufacturing workshops

• Practical training:

- Assembly of a representative unit that incorporates the particularities of glass equipment
- Practical work in frame assembly
- Practice in glasswork assembly
- Inspection of the unit: functionalities and analysis of assembly operations on the unit
- Preventive maintenance, what is necessary to analyze
- Dismantling the unit and tidying away
- Introduction to ATEX & static electricity
- Questions / Answers



GENERAL CONDITIONS FOR TRAINING COURSES

Deadline for registration:

2 weeks before the beginning of the training course according to place availability (the number of participants is limited to 12 people per session).

If the number of participants is not sufficient, we reserve the right to postpone the course to a later date.

Included in the price: (unless otherwise stated) are theory and practical lessons, documents relating to the training session, meals and accommodation.

Not included in the price: travel expenses.

Telephone charges, bar and minibar are to be paid by the trainees leaving the hotel.

Cancellation fees:

Over 4 weeks prior to beginning of the course: no charge

Between 4 and 2 weeks prior to the beginning: 50% of total amount

Less than 2 weeks prior to the beginning of the course: 100% of total amount.

Payment:

The inscription to the training will be taken into account only with reception of the bank transfer corresponding to the amount of the course.

N.B.: A group dinner is organised at 8:00 pm the evening before the beginning of the session. Please try to avoid late arrivals if possible!

Your contact:

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REGISTRATION FORM CONSTITUTING AN ORDER

*To be filled out with an order form and/or order reference from the company.
Please fill out a different registration form for each type of training.*

Company

.....
.....

Training Manager:

Email address:

Phone:

wishes to register the following trainees:

.....

in the training course (fill in below the title and date of the training course)

.....

Cost of the course to be paid to DE DIETRICH S.A.S.

Unit price EX VAT X number of trainees = € EX VAT

Unit price INCL VAT X number of trainees = € INCL VAT

Invoice address

.....

Please provide below the references to be quoted on the invoice:

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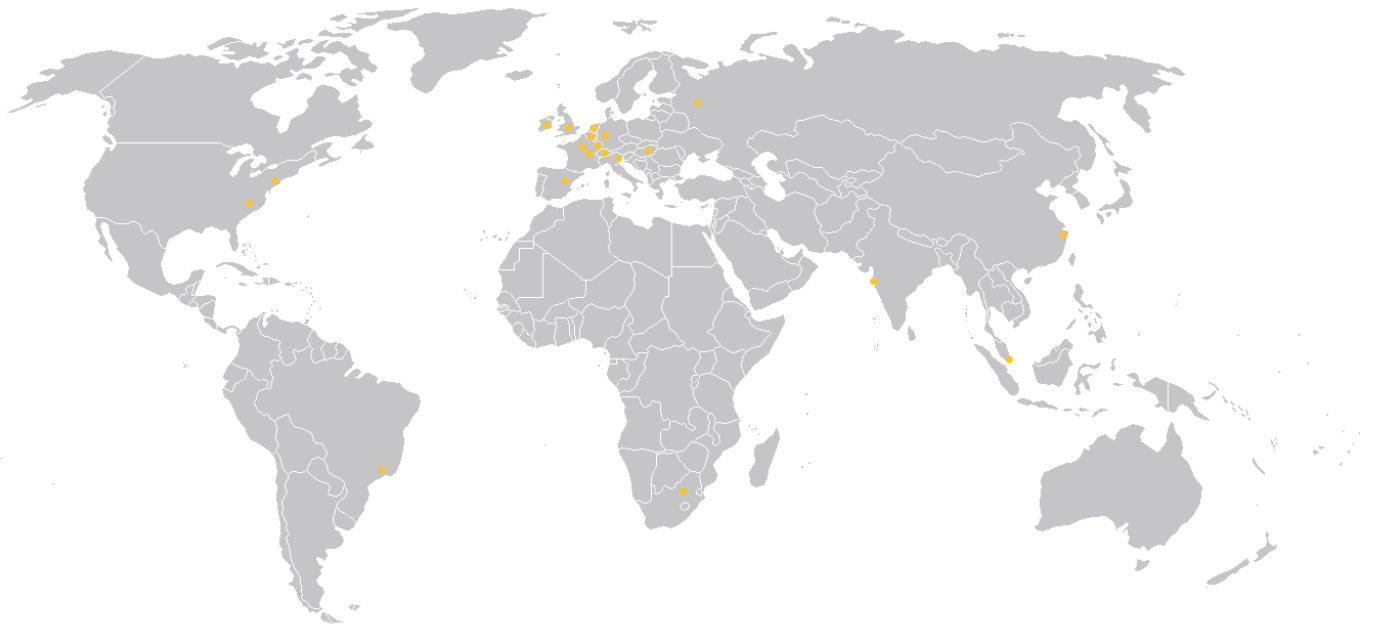
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The international business group De Dietrich Process Systems is the leading provider of system solutions and reactors for corrosive applications as well as plants for mechanical solid/liquid separation and drying. The system solutions from De Dietrich Process Systems are used in the industrial areas of pharmaceuticals, chemicals and allied industries.

www.dedietrich.com