

CUSTOMER PRODUCT TRAINING

Online courses and practical sessions

CATALOGUE 2023



Bronkhorst®

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GAS FLOW – online course

Training objectives

In this course you will gain knowledge about the principles of mass flow measurement and control for gases based on thermal measurement technology. You will get insight in the construction, operation principles and typical applications of the wide range of available Bronkhorst products series.

Audience

This training course is intended for attendees who are interested in the field of low flow fluidics handling technology.

Level

Attendees are supposed to be experienced or educated on vocational or bachelor level in the field of engineering.

Prerequisites

No specific prerequisites required.

Content

In this course the following topics will be discussed:

- ◆ Introduction
- ◆ Model numbering
- ◆ Models and ranges:
 - ◆ EL-FLOW Select
 - ◆ Derived products (LOW- Δ P-FLOW, METAL SEALED, IN-FLOW, EX-FLOW)
 - ◆ EL-FLOW Prestige
 - ◆ FLEXI-FLOW
 - ◆ MASS-STREAM
- ◆ Operating and construction principles
- ◆ Features and benefits
- ◆ Examples of applications
- ◆ Installation and start-up
- ◆ Read out and control options:
 - ◆ BRIGHT
 - ◆ E-8000
- ◆ Bronkhorst user software: FlowSuite, FlowDDE, FlowView, FlowPlot



Duration

3 hours.

Online platform

Microsoft Teams will be used as communication platform. Required are Microsoft Teams desktop application or web browser, a webcam and a headset (or separate mic/speaker).

Dates

Monday 6 March 2023 09:00-12:00h UTC+1

Monday 5 June 2023 09:00-12:00h UTC+2

Monday 30 October 2023 09:00-12:00h UTC+1.

Attendees

Maximum 20 persons.

Executive trainer(s)

Bronkhorst Specialists.

Course number: combination of

7.26.040 / 7.26.041 / 7.26.042 / 7.26.043



LIQUID FLOW – online course

Training objectives

In this course you will gain knowledge about the principles of mass flow measurement and control based on the Coriolis-, ultrasonic and thermal measurement technology. You will get insight in the construction, operation principles and typical applications of the wide range of available Bronkhorst products series.

Audience

This training course is intended for attendees who are interested in the field of low flow fluidics handling technology.

Level

Attendees are supposed to be experienced or educated on vocational or bachelor level in the field of engineering.

Prerequisites

No specific prerequisites required.

Content

In this course the following topics will be discussed:

- ◆ Introduction
- ◆ Model numbering
- ◆ Models and ranges:
 - ◆ CORI-FLOW
 - ◆ mini CORI-FLOW
 - ◆ ES-FLOW
 - ◆ μ-FLOW
 - ◆ LIQUI-FLOW
- ◆ Operating and construction principles
- ◆ Features and benefits
- ◆ Examples of applications
- ◆ Installation and start-up



Duration

3 hours.

Online platform

Microsoft Teams will be used as communication platform. Required are Microsoft Teams desktop application or web browser, a webcam and a headset (or separate mic/speaker).

Dates

Tuesday 7 March 2023 09:00-12:00h UTC+1
Tuesday 6 June 2023 09:00-12:00h UTC+2
Tuesday 31 October 2023 09:00-12:00h UTC+1

Attendees

Maximum 20 persons.

Executive trainer(s)

Bronkhorst Specialists.

**Course number: combination of
7.26.044 / 7.26.045 / 7.26.071**



VAPOUR FLOW – online course

Training objectives

In this course you will gain knowledge about the principles of liquid vaporization. You will get insight in the technology, construction and the operation principles of the Bronkhorst Controlled Evaporation Mixing (CEM) equipment. The advantages and typical applications will be explained including the compact Vapour Delivery Module (VDM).

Audience

This training course is intended for attendees who are interested in the field of low flow fluidics handling technology.

Level

Attendees are supposed to be experienced or educated on vocational or bachelor level in the field of engineering.

Prerequisites

Course: GAS FLOW.

Course: LIQUID FLOW.



Duration

2 hours.

Online platform

Microsoft Teams will be used as communication platform. Required are Microsoft Teams desktop application or web browser, a webcam and a headset (or separate mic/speaker).

Dates

Wednesday 8 March 2023 09:00-11:00h UTC+1

Wednesday 7 June 2023 09:00-11:00h UTC+2

Wednesday 1 November 2023 09:00-11:00h UTC+1

Content

In this course the following topics will be discussed:

- ◆ Introduction
- ◆ Construction principles
- ◆ Model numbering
- ◆ Models and ranges:
 - ◆ CEM (Controlled Evaporation and Mixing)
 - ◆ VDM (compact Vapour Delivery Module)
- ◆ Operating principles
- ◆ Features and benefits
- ◆ Examples of applications
- ◆ Installation and start-up

Attendees

Maximum 20 persons.

Executive trainer(s)

Bronkhorst Specialists.

Course number: 7.26.049



FLOW SOLUTIONS – online course

Training objectives

In this course you will gain insight in the extended options within the Bronkhorst product range to engineer and construct customer specific integral solutions for mass flow and pressure measurement and control. You will get insight in the construction and the operation principles of the Bronkhorst IQ+FLOW, FLOW-SMS, MANI-FLOW and FLEXI-FLOW Multi-Channel product series.

Audience

This training course is intended for attendees who are interested in the field of low flow fluidics handling technology.

Level

Attendees are supposed to be experienced or educated on vocational or bachelor level in the field of engineering.

Prerequisites

No specific prerequisites required.

Content

In this course the following topics will be discussed:

- ◆ Introduction
- ◆ Construction principles
- ◆ Model numbering
- ◆ Models and ranges:
 - ◆ FLOW-SMS
 - ◆ MANI-FLOW
 - ◆ IQ+FLOW
 - ◆ FLEXI-FLOW Multi-Channel
- ◆ Operating principles
- ◆ Features and benefits
- ◆ Examples of applications
- ◆ Installation and start-up



Duration

1.5 hours.

Online platform

Microsoft Teams will be used as communication platform. Required are Microsoft Teams desktop application or web browser, a webcam and a headset (or separate mic/speaker).

Dates

Thursday 9 March 2023 09:00-10:30h UTC+1
Wednesday 7 June 2023 13:00-14:30h UTC+2
Thursday 2 November 2023 09:00-10:30h UTC+1

Attendees

Maximum 20 persons.

Executive trainer(s)

Bronkhorst Specialists.

Course number: 7.26.050



PRESSURE – online course

Training objectives

In this course you will gain knowledge about the principles of pressure measurement and control for gases and liquids. You will get insight in the construction, operation principles and typical applications of the EL-PRESS and IN-PRESS Bronkhorst products series.

Audience

This training course is intended for attendees who are interested in the field of low flow fluidics handling technology.

Level

Attendees are supposed to be experienced or educated on vocational or bachelor level in the field of engineering.

Prerequisites

No specific prerequisites required.

Content

In this course the following topics will be discussed:

- ◆ Introduction
- ◆ Construction principles
- ◆ Model numbering
- ◆ Models and ranges:
 - ◆ EL-PRESS
 - ◆ IN-PRESS
- ◆ Operating principles
- ◆ Features and benefits
- ◆ Examples of applications
- ◆ Installation and start-up



Duration

1.5 hours.

Online platform

Microsoft Teams will be used as communication platform. Required are Microsoft Teams desktop application or web browser, a webcam and a headset (or separate mic/speaker).

Dates

Thursday 9 March 2023 11:00-12:30h UTC+1

Wednesday 7 June 2023 15:00-16:30h UTC+2

Thursday 2 November 2023 11:00-12:30h UTC+1

Attendees

Maximum 20 persons.

Executive trainer(s)

Bronkhorst Specialists.

Course number: 7.26.077



Practical sessions

GAS FLOW practical set-ups:

- **FLEXI-FLOW Compact:** multi-parameter instrument with fast and stable chip sensors.
- **EL-FLOW Prestige:** experience the versatility of our high-end mass flow meters and controllers.
- **MASS-STREAM:** robust direct through mass flow meters and controllers for industrial usage.
- **EL-FLOW Select:** installation, start-up and PID optimising.
- **Portable Calibrator:** demo of the calibration of an EL-FLOW Select mass flow controller using a Portable Calibrator.
- **Trouble Shooting:** fault finding in EL-FLOW Select mass flow controllers.

LIQUID FLOW practical set-ups:

- **ES-FLOW:** combined with a gear pump or valve.
- **mini CORI-FLOW:** batch dosing with valves.
- **mini CORI-FLOW:** combined with a gear pump.
- **WADose:** HPLC pump combined with a CORI-FLOW.
- **Calibration:** demo of the calibration of a mini CORI-FLOW mass flow controller using a REF meter.
- **mini CORI-FLOW:** start-up and trouble shooting.
- **mini CORI-FLOW:** read out and control with the BRIGHT Compact Local R/C Module.

Pressure practical set-ups:

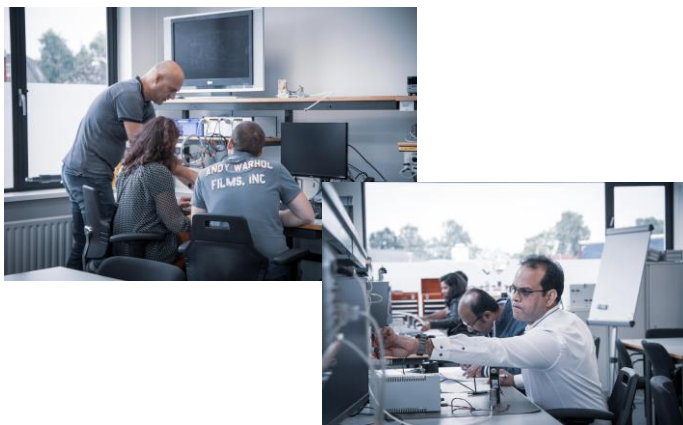
- **EL-PRESS:** test back-, forward- and process pressure control systems.

VAPOUR FLOW practical set-ups:

- **CEM:** test our Controlled Evaporator mixer combined with liquid and gas flow controllers.
- **VDM:** test our compact sub-system Vapour Delivery Modules which incorporates liquid and gas controllers.

Bus communication practical set-ups:

- **Bus communication:** install and operate Bronkhorst slave instruments.
- **FLOW-BUS and FlowWare:** set-up a FLOW-BUS system and test with Bronkhorst user software.



Duration

1 day (lunch and factory tour are included)

Location

Bronkhorst High Tech B.V.
Nijverheidsstraat 1A 7461AK Ruurlo
The Netherlands

Dates

Bronkhorst Nederland BV:

14 March, 13 June, 7 November 2023

Flowcor - Division of Gefran Benelux:

14 March, 13 June, 7 November 2023

Bronkhorst Deutschland Nord GmbH:

15 March, 14 June, 8 November 2023

Wagner Mess- und Regeltechnik GmbH:

16 March, 15 June, 9 November 2023

Attendees

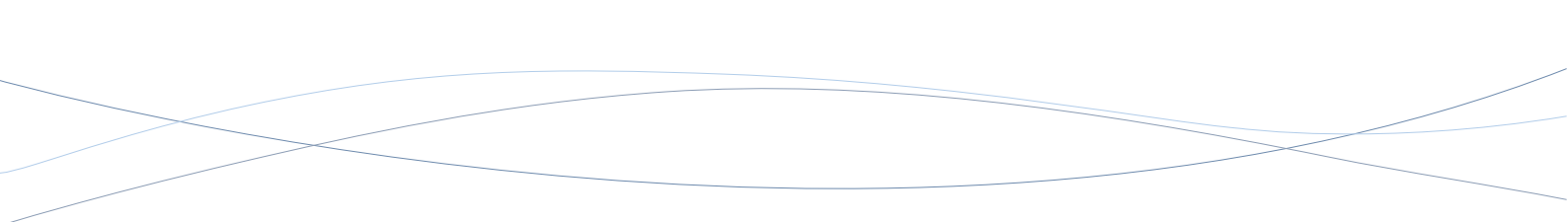
Maximum 15 persons.

Executive trainer(s)

Bronkhorst Specialists and Area Sales Managers.

Certificate

A certificate of participation will be supplied.



Contact

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Bronkhorst High-Tech B.V.
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