Courses and Services 2013.
Cocoa / Chocolate.

DE / EN / FR / IT / ES
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Cocoa and chocolate products are enjoying increasing popularity. The sweet and tempting treats are successful all over the world – whether in the traditional markets in the Northern Hemisphere or in the rapidly growing markets of the Southern and Eastern hemispheres. One global trend is clear – the products are becoming more and more diverse, which is making processing requirements more and more complex.

We would like to make a contribution that will allow you to produce your products with even greater quality, efficiency and productivity. Together with our customers, we provide you with practical experience from worldwide applications, paired with scientific and technological insights. To make this more successful, we have revised the courses based on your feedback and tailored them even more precisely to suit your requirements.

Look forward to courses with more practical elements, more exercises and enhanced demonstrations.

Benefit from our many years of experience and our tried and tested mix of theory, practice and social interaction.

I look forward to welcoming you at one of the courses.

Dr. Peter Braun
Manager Research & Development Chocolate / Cocoa
### Course Program 2013

<table>
<thead>
<tr>
<th>Course</th>
<th>Language</th>
<th>Date</th>
<th>Laboratory Course</th>
<th>Remarks</th>
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<tr>
<td><strong>Cocoa course</strong></td>
<td>English</td>
<td>Jun. 11-14</td>
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<td>Bühler, Uzwil</td>
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<td>Bühler Barth, Freiberg</td>
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<td><strong>Chocolate course / Laboratory course</strong></td>
<td>English</td>
<td>Feb. 5-7</td>
<td>Feb. 8</td>
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<td></td>
<td>German</td>
<td>Mar. 12-14</td>
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<td>Italian</td>
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<td>French</td>
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<td>Aug. 20-22</td>
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<td>Russian</td>
<td>Nov. 5-7</td>
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<td>English</td>
<td>Oct. 15-17</td>
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<td></td>
<td>German</td>
<td>Nov. 26-28</td>
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<tr>
<td><strong>Depositing and moulding course</strong></td>
<td>German</td>
<td>Jun. 18-20</td>
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<td>Bühler Bindler, Bergneustadt</td>
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<td>English</td>
<td>Oct. 15-17</td>
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<table>
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<tr>
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<td>2,700</td>
<td>3,900</td>
<td>2,400</td>
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<tr>
<td>Chocolate course with Analytics Laboratory</td>
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<td>5,200</td>
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<tr>
<td>Service course</td>
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<td>1,800</td>
<td>2,600</td>
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Subject to change.
Cocoa Course.
(Uzwil, Switzerland and Freiberg, Germany).

This course is aimed at production employees, product developers and technologists in the cocoa processing industry. The course is held over four days, with three days in Freiberg at our center of competence for cocoa in Germany, and one day in Uzwil, Switzerland. We organize transport to the course locations.

- Quality always starts with bean cleaning:
  Cleaning equipment and handling
- The secret behind NARS (Nibs Alkalizing, Roasting and Sterilizing System): Thermal pre-treatment, crushing / winnowing, nibs alkalizing and roasting
- Debacterizing and roasting of cocoa bean
- Two-stage cocoa grinding process using a beater blade mill as a pre-grinder and a bead mill as a fine-grinder. Influence of the cocoa mass on the chocolate and coating masses
- Glossy powder: Cocoa pulverizing and stabilizing
- Tour of the laboratory and factory
- Demonstrations in the pilot plant in Uzwil with hands-on exercises:
  - Cocoa bean process: Cleaning, debacterizing, roasting
  - Cocoa grinding by PreGrind and FineGrind
- Demonstrations in the pilot plant in Freiberg with hands-on exercises:
  - Thermal pre-treatment by infrared device with subsequent crushing / winnowing
  - Nibs alkalizing and roasting by drum roaster
  - Grinding, pressing and cocoa powder production

Course day: Course duration: 4 days, max. 10 persons per course.
Chocolate Course.  
(Uzwil, Switzerland).

This course is aimed at production employees, product developers and technologists in the chocolate manufacturing industry. The course has been redesigned with more practical exercises, explanations and demonstrations.

- Overview of the entire chocolate manufacturing process, various procedures
- Properties and influences of various raw material components on production of the chocolate mass
- Technological relationships of the dosing, mixing, pre-refining and refining and conching process steps
- Setup and function of Bühler chocolate mixers, refiners, FRISSE™ conches and seed crystallization in the SeedMaster™
- A closer look at the refining process:
  - Setup of the five-roll refiner
  - Wear and tear on the refiner, and damage
  - Retrofitting options
- Technological questions and product optimization relating to conching
- Overview of tempering and depositing processes with a focus on seed crystallization
- Demonstration in the pilot plant with practical exercises
  - Chocolate production (optimal mixing approach for two different recipes)
  - Incorrect settings for refining
  - Conching with an optimal precharge compared to a non-optimal precharge
  - Seed crystallization of chocolate and manual moulding
- Visit to the Bühler factory

Course day: Course duration: 3 days, max. 18 persons per course.
Laboratory Course.
(Uzwil, Switzerland).

This course is recommended to product developers, laboratory and production personnel. Analytical methods related to cocoa and chocolate for process control, product development and quality assurance. Follows the choco-course and combines theory with demonstrations in the laboratory.

- Small particles in large amounts: Determination of the particle size by wet sieving and laser measurement
- The flow behaviour matters: Rheological measurements for determining the viscosity and yield stress
- The secret of chocolate that melts in your mouth: Determining the fat content and characterizing the melting behaviour of fat by calorimetry
- Water in minor quantities with a large impact: Quantifying water by Karl Fischer titration
- The fragrance of roasted cocoa: The creation of flavour substances and their characterization by gas chromatography
- Tracking down undesirable contamination: Detection of shells, sand and metals
- A view into the micro-world of cocoa and chocolate: Microscopic methods from light to electron microscopy

Course day: Course duration: 1 day, max. 10 persons per course.
This course is aimed at production employees, product developers and technologists in the chocolate processing industry. The course is held over two and a half days at our center of competence for depositing and moulding in Germany.

- Depositing machines and their applications (theory and practice)
  - Depositing of different masses
  - OneShot applications
- Shell forming (theory and practice)
  - Conventional
  - Cold stamping technology
- Pre-chrystallization of chocolate (theory and practice)
  - Conventional tempering
  - Seed pre-crystallisation SeedMaster™
- Thermo-technology
  - Cooling of chocolate products
  - Mould pre-heating
  - Plant concepts
- Service subjects
  - Preventive overhaul
  - Machine operation and maintenance
- Factory tour

**Course duration:** 2 ½ days, max. 10 persons per course.
Service Course. 
(Uzwil, Switzerland).

This course is aimed at mechanics and electricians in the chocolate manufacturing industry. The course is held over three days and includes practical exercises, explanations and demonstrations.

- Presentation of the two-stage refining process
- Design and function of the Bühler chocolate mixers and refiners
- Operation of the machine control systems
- Machine setting
- Machine maintenance and repairs
- Hydraulic and pneumatic
- Preventive maintenance
- Roll wear and roll damage
- Retrofits
- Factory tour

**Course duration:** 3 days, max. 12 persons per course.
Arrival and Departure / Leisure Activities.

The course dates do not include the days of your arrival and departure. All course participants will arrive on the evening before the course starts (overnight stay is included in the course fee). On the day of your arrival, we will have dinner together at about 7 pm. The course manager will then inform you of the exact course program.

During the course in Switzerland and in Germany, excursions to the region will be organized. For Switzerland, we recommend you to take along a sturdy pair of boots or shoes. Depending on the season, we also recommend warm clothing (Switzerland and Germany).
Contact / Application.
By fax / e-mail.

We must receive applications at the latest one month before the course begins. With regard to allocation of places, applications will be processed in the order in which they are received.

Hotel reservations for the duration of the course are made automatically with the application.

Course costs must be paid in full before the course begins.

Online registrations:
www.buhlergroup.com
– Services
– Courses
– Chocolate & Cocoa

Courses at Bühler Bindler GmbH, Germany to:
Ms Anke Löttgen
F +49 2261 4091 95
anke.loettgen@bindler.com

Courses at Bühler AG, Switzerland and Bühler Barth GmbH, Germany to:
Ms Stefanie Keller
F +41 71 955 71 87
stefanie.keller@buhlergroup.com
The course fees include the following services:

- Accommodation
  (one overnight stay per course day)
- Meals
- Support by Bühler staff
- Course materials in hard-copy form
- Transport from the hotel to Bühler / Bühler Barth / Bühler Bindler and back

Travel expenses to and from Uzwil shall be borne by the participants themselves. Additional overnight stays at the hotel and contingent expenses such as phone calls, mini-bar etc. shall be paid directly by the course participants. If these additional expenses are not paid directly by the participants, they will be separately listed and charged in the course invoice.

Participants accompanied by their partners shall bear the associated expenses themselves.

If a registered person is unable to attend, we must be notified no later than seven days before the course starts. If not, a cancellation fee of CHF 1,200.00 (EUR 900.00 / USD 1,300.00 / GBP 800.00) per person shall be charged.

If an insufficient number of participants register for a given course, we reserve the right to postpone or cancel the course.
Carefully trained personnel will guarantee your long-term success: High plant uptime, high profitability and maximum end product quality. Upon customers’ special request, we will organize in-house production course at their local sites.

Our specialists will teach your employees the latest cocoa processing and chocolate production knowledge (process technology, equipment operation and maintenance). Course or continuing education of your production personnel on your own production plant will ensure that your employees have the knowledge that they need in the future to optimally utilize your plant.

The subjects to be treated will be individually matched to your specific requirements.

Chocolate production: The course duration is two or three days with subjects from the choco-course, which will be tailored to the customer’s specific needs.

In addition, it is possible to add an additional cocoa processing training course: The duration is one or two days, with subjects from the Cocoa course, which will also be tailored to the customer’s specific needs.

Please fix the dates for such in-plant training courses at an early stage with Bühler Uzwil.

Contact:
Bühler AG, CH-9240 Uzwil, Switzerland
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andreas.ziegler@buhlergroup.com
For fine-tuning your production process to achieve top end product quality and maximum efficiency, we recommend you to have your production plant assessed by a Bühler specialist. He or she will analyze your plant according to your instructions and requests.

The goal of an assessment performed by Bühler is to suggest improvements for your current plant and to fine-tune your current process.

Another service offered is technological and product-specific consulting by our experienced food engineers.

Please fix the dates for such technological support at an early stage with Bühler Uzwil.

Customer Trials in our Pilot Plants.

Our customer pilot plants are equipped with state-of-the-art cocoa processing and chocolate production equipment. We will conduct pilot tests for you in order to thoroughly test your good product ideas down to the last detail long before you have to decide whether you want to buy a plant. The Bühler Central Laboratory is your competent partner for performing a broad range of analyses relevant to product quality and offers you consulting, courses and methods development as additional services. Please fix the dates with the relevant centers of competence at an early stage.
Contacts for Customer Trials.

**Trials for cocoa and chocolate:**
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andreas.ziegler@buhlergroup.com

**Trials for cocoa and nuts:**
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Mr Tobias Lohmüller  
Manager Pilot Plant  
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F +49 717 170 5100  
tobias.lohmüller@buhlergroup.com

**Trials for depositing and moulding:**
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F +49 2261 4091 95  
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