Batch- and loading systems with the Batching Master 110i/210i
**Intelligent Batch Solutions** ....... *designed for you*

**Batching Master 110i** (intrinsically safe)

**Batching Master 110** (non-Ex unit)

- Field housing, IP 65
  For wall mounting
  (240 x 240 x 120 mm)

- Local installation, direct at the loading station

- Backlight optional
Batching Master 210i (intrinsically safe)

Batching Master 210 (non-Ex unit)

- Panel mount
  (144 x 144 x 130 mm)
- Front IP 65
- Backlight optional
The Batching Master controls your batching process at a filling station:

- Loading system for road tankers and railway tank wagons

in the production:

- Batch system for basic products in the pharmaceutical production
Application pictures:

IBC filling:
Mobile filling system for IBC’s with an Optimass 7300C flowmeter

Truck loading:
Truck loading system for bio fuels with a Promass 84F
Indication in the field:

- pre-set value
- batched quantity
- actual flow rate, grand total
- temperature, density and pressure optional

Safe operation in the field

The operator has all important information for a safe batching process locally at the filling station.

In case of a failure, the operator is able to stop the batch very quick by the emergency stop switch of the Batching Master.
Flow meters:
All types of flow meters can be connected to the Batching Master via single pulses, double pulses or via a 4-20 mA signal.

Precise batch:
The batching valve can be controlled by a 4-20 mA output signal which opens with a soft start-ramp and which closes at the end of the batch in 5 steps. Due to these ramps it is possible to get the highest batch accuracies.

No “pressure hammers” in high flow rate systems:
They are eliminated because of the soft-start ramp and the 5-step shut-down ramp of the 4 - 20 mA signal to the batching valve.
Error messages in clear text

The Batching Master has many safety- and monitoring functions. In case of a failure the batch will be stopped immediately. After the reset of the failure the message, the batch can be continued via the start button.

Emergency stop switch

The Batching Master 110i has a proofed emergency stop switch at the front, which can be delivered optional with a key for interlocking of the device.

When the emergency stop is pressed, then:

- the batch process will be stopped with a failure message
- the 4-20 mA valve output signal will be switched to 0 mA
- the digital outputs 1-3 will be deactivated
- one digital output give the message “emergency stop pressed”.

There is one digital input for an external emergency stop contact available.
Low flow rate monitoring

If the flow rate during the batch falls below a programmed value, then the batch process will be stopped after a programmed time. This function prevents an uncontrolled filling during a failure in the measuring system.

Sensor break- and measuring range overrun monitoring

The Batching Master monitors the 4-20 mA input and the NAMUR contact input circuit. In case of a sensor break or a measuring range overrun the batch will be stopped with a failure message.

Error at the flow meter

The error output of the flow meter can be connected to a digital input of the Batching Master. In case of a failure at the flow meter the batch process will stopped with a failure message.
Two release signals

These two custom specific release signals work via digital inputs. If they are not activated, then the batch will be stopped with a failure message.

The texts of the messages can be changed by the programming.

Terminal function:

The supervisory system is able to use the Batching Master as a HMI (human machine interface) to the operator in the field.

The supervisory system is able to show question texts at the display of the device and the user is able to make selections or to enter information like order numbers or access codes.
PID controller functions

The Batching Master has two separate controller functions, they are working parallel only during the batch. The output signals of the two controllers are working in a min-selection at the 4-20 mA output to the batching valve.

Flow controller

Via the flow controller it’s possible to batch the product with a required flowrate.

Override controller

The override controller is able to control a second physical value during the batch, e.g. the temperature or the pressure of the product.
Pressure keeping of liquefied Gas

Liquefied gas like LPG, Propane or Butane demonstrates out gassing effects as soon as the pressure falls below the vaporization pressure of the gas. These vapour locks would cause fail-measurements in the flow meter.

The override control function of the Batching Master keeps the pressure during the batch.

The 25-step linearization function of the Batching Master delivers the right pressure set point depending on the temperature signal.

A parallel PID flow controller function is also available.
Manual filling/purge functions

For the emptying, cleaning or filling of the pipe system it could be necessary to open the batching valve. This can be done by a digital input, by the Modbus interface or by the function key F1. During this time the flow rate signal will not be counted.

Automatic filling/purge functions

It is also possible to fill or purge the system automatically before each batching process for a programmed time, or until a contact at a digital input indicates liquid in the pipe.
Intelligent Batch Solutions........designed for you

Complete batch systems:
IBS BatchControl offers complete batching systems packages (turn key projects)
Consisting of: engineering support, control panels, pumps, flow meters, valves, batch controllers, Exi-interfaces, Exd-housings, printers and loading software.

Batch systems for ultra pure water:
Used in the pharmaceutical and cosmetic industries
The continuous water flow in a circulatory system prevents the formation of germs.
The Batching Master close the circle valve before the batch start. Different time functions take care, that only the batched quantity during the batch will be counted.
Product way selection via the function keys F1 - F3

With this function 3 products can be batched with one flow meter. The product way can be selected with the function keys before the start. The question text and the product texts can be modified by the programming.

SELECT PRODUCT!
F1 = METHANOL
Flow conversion functions
for the calculation between mass, volume and standard volume.

The flow input signal can be mass or volume.

The calculation can be done via the temperature, pressure and density signal.

Calculation formulas:
- API 2540 / 2004 table for crude oil, refined and special products in metric units
- linear correction function

The base density at standard temperature can be programmed or calculated from the actual values.

All physical values and counters can be indicated via a special menu at the Batching Master. These values are also shown via the Modbus interface.
Loading station with Optimass 7300C in the hazardous area
Custody transfer loading system with Optimass 7300C in the safe area
Printing solutions and batch data storage system PCC400

- Custody transfer proofed
- Storage and print out of batch reports
- Storage and print out of log files (alarm lists)
- Connection to the local Ethernet

Data storage:
- Data base with all batch information and export function into CSV files.
- PDF copy of the batch protocols on:
  - an external USB stick or drive
  - a storage path of the PCC 400

Optional:
- connection to external data bases
- Information input by the user before the start via the terminal function
- Product way selection, controlled by digital Modbus modules
Communication to an order management software via MYSQL:
- Information exchange between the order management software (TAS) and the loading system in the field.
- Customers TAS software writes open loading orders into the MySQL table “loadings”.
- The operator enters an order number at the loading station as “Access control” and the PCC 400 checks if this order is available and valid for the loading station.
- Important loading information will be shown in the field and the batch can be started.
- At the end of the batch the loading results will be written into the table “loadings”

Operation at the batch controllers:

**MySQL table “orders”:**
- Order number
- Customer name
- Product name
- Status of the order
  - 0 = order open
  - 2 = order completed

**MySQL table “loadings”, written by the PCC 400:**
- Order number
- Customer name
- Product name
- TAG number
- Batch number
- Batch start and end time
Flow computer Pipeline Master 110i/210i

For using at flow metering skids in pipelines or at continuous flow measuring systems in chemical parks between two companies.

Flow conversion functions available for the calculation to standard volume flow at 15°C out of the actual flow rate, temperature, pressure and density, based on the following formulas:

- API 2540 tables A-C for crude oil, refined and special products in metric units
- Linear correction

6 counter blocks are available with:
- mass, volume, standard volume
- in positive and reverse direction
- failure counters for all values

The PCC 400 is able to store the counted values in files and to print them via a connected printer.
Non-Ex batch controller BC 20 for simple applications

BC 20-DC
PS = 24 VDC

BC 20-AC
PS = 100-240 VAC

Options:
- 4-20 mA valve output with ramp functions
- PID flow controller for the 4-20 mA output
- RS 485 Modbus interface

Features:
- Back light for the LCD
- Intelligent overrun correction
- Dimensions: 96 x 96 x 120 mm
Power supply and interface modules

**PSC 300i-1:**
- One Exi power supply (U=24V, I=50mA) for the PS1 of the Batching Master 110i/210i

**PSC 320i-1:**
- One Exi power supply (U=6V, I=100mA) for the PS2 of the Batching Master 110i/210i (required for the optional back light of the LCD)

**PSC 330i-2:**
- One Exi power supply (U=24V, I=50mA) for the PS1 of the Batching Master 110i/210i
- One Exi power supply (U=6V, I=100mA) for the PS2 of the Batching Master 110i/210i (required for the optional back light of the LCD)

**IPC 300i:**
- One Exi power supply (U=24V, I=50mA) for the PS1 of the Batching Master 110i/210i
- Interface barrier (MODBUS Protocol):
  - Exi TTY interface to the Batching Master 110i/210i
  - RS 485 interface at the safe area side
Software system for Terminal Automatisation (TAS):
- Customer data base with delivery addresses
- Forwarder and truck data base
- Order management and a simple creation of loading orders
- Visualization of the loading process
- Printout of delivery papers and statistics
- Direct loading without order

Options:
- Data exchange to SAP R/3 (optional)
- Access authorization via card readers
- OPC-Server for the connection to supervisory systems
- User access management and audit trail
- Multi user systems with client- / server architecture
Software system for visualization and order management

Data bases:

- Trucks
- Forwarders
- Customers
- Products

Communication to the user via the terminal function of the Batching Master:

CODE: **********
PLEASE ENTER!

TARA: 13000 kg
F1=OK F3=CHANGE

Order management:
Order code for the Batching Master 110i/210i:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>120-0110</td>
<td>Batching Master 110i, ATEX, IP65 field housing</td>
</tr>
<tr>
<td>120-0120</td>
<td>Batching Master 110, non-Ex, IP65 field housing</td>
</tr>
<tr>
<td>120-0130</td>
<td>Batching Master 210i, ATEX, panel mount housing</td>
</tr>
<tr>
<td>120-0140</td>
<td>Batching Master 210, non-Ex, panel mount housing</td>
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<tr>
<td>120-0145</td>
<td>Back light for the LCD (an additional Exi power supply is required)</td>
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<tr>
<td>120-0150</td>
<td>Modbus interface (the interface and power supply module IPC 300i is required)</td>
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<td>120-0160</td>
<td>Terminal function, the price includes the option „Modbus interface“</td>
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<tr>
<td>120-0165</td>
<td>Custody transfer version, the price includes the option „Modbus interface“</td>
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<td>120-0170</td>
<td>PID controller function</td>
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<tr>
<td>120-0175</td>
<td>Flow conversion function between mass, volume and standard volume</td>
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<tr>
<td>120-0180</td>
<td>Special function „Automatic filling or empting of the measuring system“</td>
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<tr>
<td>120-0191</td>
<td>Selection of three product ways via the function keys F1-F3</td>
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<tr>
<td>120-0200</td>
<td>Emergency stop switch as a key switch</td>
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</table>

Exi interface and power supply modules:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>A-120-0210</td>
<td>PSC 300i-1, power supply module, 1-channel</td>
</tr>
<tr>
<td>A-120-0210</td>
<td>PSC 330i-2, power supply module, 2-channel</td>
</tr>
<tr>
<td>A-120-0220</td>
<td>IPC 300i, interface and power supply module</td>
</tr>
</tbody>
</table>
Some of our Main Clients:

<table>
<thead>
<tr>
<th>Main Clients</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>3M, France, Germany</td>
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<tr>
<td>Abbot, USA, Germany</td>
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<tr>
<td>Air Liquide, France, Germany, Aker Kvaerner, The Netherlands</td>
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<td>Akzo Nobel, China, The Netherlands, Germany</td>
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<td>Arkema, France, Germany</td>
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<td>Astra Zeneca, England</td>
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<td>BASF, Belgium, Malaysia, Mexico, China, Germany</td>
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<td>Bayer, Malaysia, Spain, Vietnam, Germany</td>
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<td>Basell, Germany</td>
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<td>British American Tobacco, Germany</td>
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<td>Butagaz, France</td>
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<td>Clariant, China, Greece, Switzerland, Germany</td>
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<td>Ciba, Italy, France, Switzerland, Germany</td>
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<td>Christ Water Technology, Germany</td>
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<td>Cognis, Germany</td>
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<td>Endress+Hauser, worldwide</td>
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<td>Emerson, worldwide</td>
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<td>GlaxoSmithKline, Great Britain, Italy</td>
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<td>Kraus Global, Kanada, Korea</td>
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<td>KANEX, Russia, Ukraine</td>
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<td>Krohne Messtechnik, worldwide</td>
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<td>Lanxess, Germany</td>
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<td>Linde, Germany</td>
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<td>Lukoil, Ukraine</td>
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<td>Lurgi, Germany</td>
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<td>Novartis, Switzerland, Germany</td>
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<td>Oiltanking, Belgium</td>
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<td>Oval Asia, Singapore</td>
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<td>Petroleos de Venezuela, Cuba</td>
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<td>Petrobras, Brazil</td>
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<td>Rhodia, France, Germany</td>
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<td>Roche, Switzerland, Germany</td>
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<td>Sanofi-Aventis, France, Germany</td>
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<td>Sipchem, Saudi Arabia</td>
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<td>Shell, Germany</td>
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<td>Tecnicas Reunidas, Spain</td>
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<td>Total, France</td>
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<td>Toyo Engineering, Japan</td>
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<td>Uhde, China, Egypt, Ukraine, Germany</td>
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<td>Vopak Banyan Terminals, Singapore</td>
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<tr>
<td>Wacker Chemie, China, India, Germany</td>
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</tr>
</tbody>
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Intelligent Batch Solutions....designed for you

Indicators
PID Controllers
Batch Controllers
Exi Interfaces
Process Recorders
Flow Computer

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