

1. Introduction

The *simply* **BATCH** System is an automatic batch program that includes a complete batch documentation for small and medium applications. The *simply* **BATCH** System guarantees a high, reproducible quality of the product, which is made evident by the consequent and thorough documentation of the production process.

The *simply* **BATCH** Formula is processed step by step. The automatic functions of the mixer are started and stopped automatically. The manual functions are executed and documented according to precise instructions from the operator.

The *simply* **BATCH** Sequence Program stores all process variables by date and time on an **SQL Server**.

The *simply* **BATCH** Documentation provides a printable batch evidence according to the process variables stored on the **SQL Server**.

2. Hardware Modules

The hardware of the *simply* **BATCH** System mainly consists of a Batch Server and the Batch Clients. One client per mixer is needed. The clients are linked to the Batch Server by Ethernet.

The Batch Server is an independent PC with printer. It is used for formula creation and management as well as for the batch data management.

The Batch Client contains a software which is installed on the system control PC of the mixer. The Batch Client starts and processes the batches.

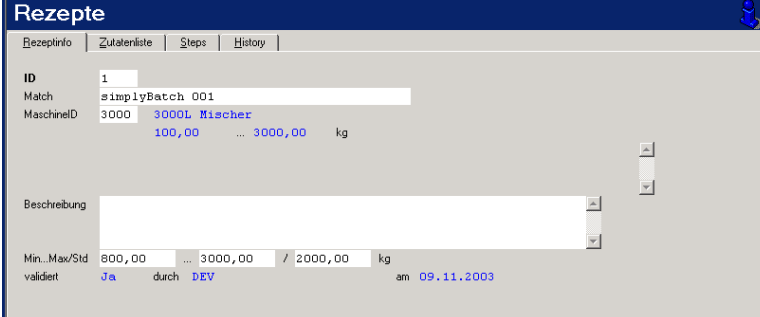
The IO Server is a component of the Batch Client and functions as an interface to the SPS and thus to the mixer.

3. Program Module

The *simply* **BATCH** Formula Editor is a component of the Batch Server. With the Formula Editor formulae may be created, managed, validated and printed.

The *simply* **BATCH** Formula consists of four elements: the formula header, the list of ingredients, the sequence of operations and the instructions.

Formula Header



Rezepte

Rezeptinfo | Zutatenliste | Steps | History

ID: 1

Match: simplyBatch 001

MaschinellD: 3000 3000L Mischer
100,00 ... 3000,00 kg

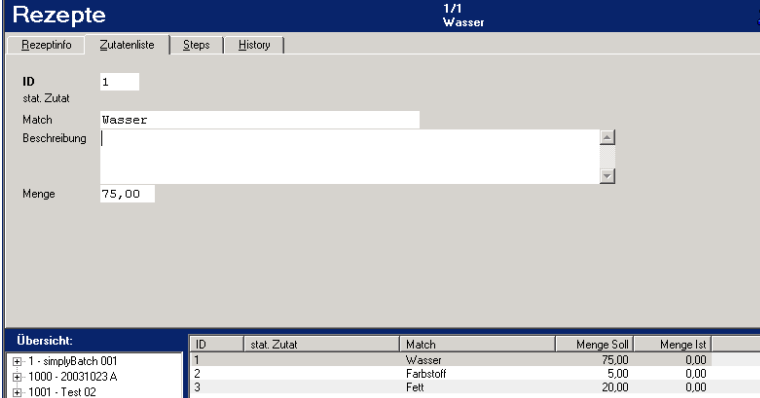
Beschreibung:

Min...Max/Std: 800,00 ... 3000,00 / 2000,00 kg

validiert: Ja durch DEV am 09.11.2003

The **Formula Header** contains the general data of the formula. The validation is stored by name and data. For every formula a minimum and a maximum production quantity may be determined.

List of Ingredients



Rezepte 1/1 Wasser

Rezeptinfo | Zutatenliste | Steps | History

ID: 1

stat. Zutat

Match: Wasser

Beschreibung:

Menge: 75,00

Übersicht:

ID	stat. Zutat	Match	Menge Soll	Menge Ist
1		Wasser	75,00	0,00
2		Farbstoff	5,00	0,00
3		Fett	20,00	0,00

The **List of Ingredients** contains all ingredients needed for the batch. The ingredients for the batch are drawn from the data base "Ingredients". Since the production quantity is not determined before the execution of the batch, all quantities are given in per cent. The program controls the adherence to 100 per cent.

Sequence of Operations

ID	#	Match	Value	Parameter
1	1	Dosieren	50,00	Menge=50,00 %, Zugabe=VE+Wasser
2	2	Rührwerk		Drehzahl=100 RPM, Action=ein, Richtung=normal
3	3	Temperatur		
4	4	Dosieren		
5	5	Temperatur		
6	6	Homogenisator		
7	7	Zeit		

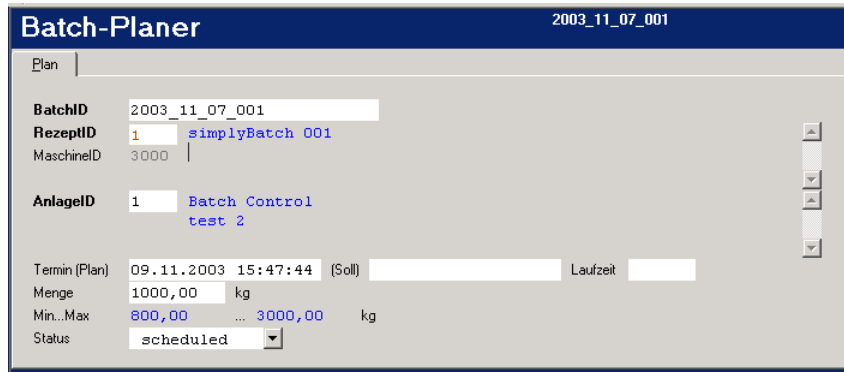
In the **Sequence of Operations** all steps (phases) to be processed are specified. The Sequence of Operations is programmed graphically. The batch is supplied with the ingredients from the List of Ingredients. Just like the phases, the generated instructions are included in the Sequence of Operations. During the execution of the batch, the instructions are conveyed to the operator via the monitor. These instructions have to be confirmed by the operator.

Instructions

ID	Match	Beschreibung
3	Mannloch	Bitte das Mannloch fest verschliessen!

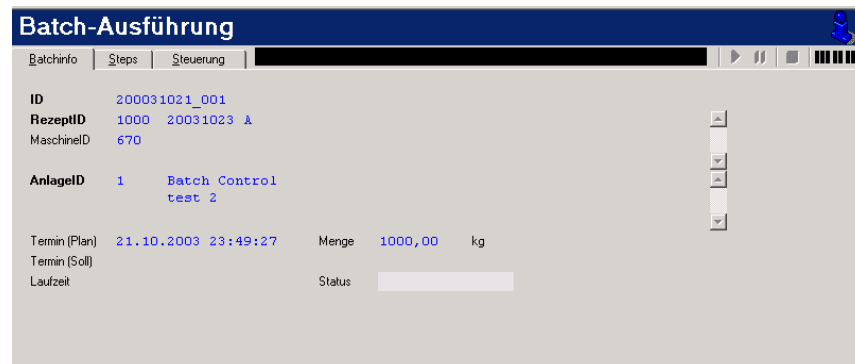
The **Instructions** are generated with a simple editor and conveyed to the data base.

Batch Scheduler

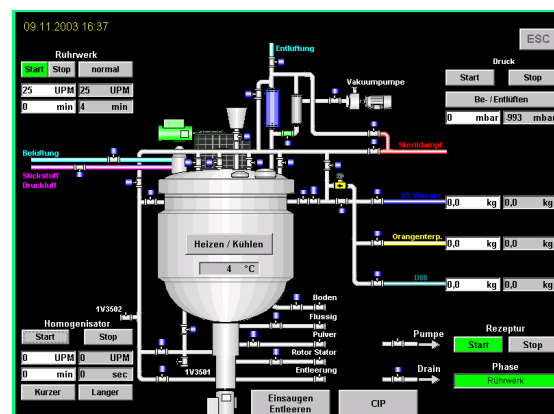


The *simply* **BATCH** Scheduler is a component of the Batch Server. With the Batch Scheduler, the production is planned and batches are generated that can be carried out with the formulae available. The batch receives a name, a quantity and the date required. After storage and release, the batch is dispatched to the machine.

Execution of the Batch




The Execution of the *simply* **BATCH** is a component of the Batch Client. This module starts the batch. The visualization shows all machine conditions, the operating condition of the Batch System and the current phase.




During the execution of the batch, the *simply* **BATCH** Documentation stores all process variables transmitted by the SPS. After the completion of the batch, a batch documentation including all data may be printed.

Batch Documentation



Bohneneceder Industrie-Technik GmbH



Batchnachweis 20031020_04

Rezept-Nr.: 1333
Menge: 1333,00
Anlagen-Nr.: 1
Kocher-Nr.: 678

Batch-Start: 18.10.2003 15:13:28 / 05V
Batch-Ende: 18.10.2003 15:21:08 / 05V

Rezept

ID	Bezeichnung	Maschine	Kurzbeschreibung/Anmerkung
1333	1	678	rezept

Maschine

ID	Kurzbeschreibung/Anmerkung
678	Reisplattmaschine Reisplattkonditionierung run. reist. dez. dez. einleiten Reisplattkonditionierung reist.

Quoten

ID	Kurzbeschreibung	Menge
1	rezept	1333,00
2	Reisplattmaschine	233,00
4	Reisplattmaschine	100,00

Verlauf

ID	Kurzbeschreibung/Anmerkung	Zeitpunkt	Zeit
1	Reisplattmaschine	18.10.2003 15:13:31 - 18.10.2003 15:14:38	
	Parameter		
	START	Menge: 1333,00 kg	18.10.2003 15:13:31
	stop	rezept	18.10.2003 15:13:31
	run	Menge: 100,00 kg	18.10.2003 15:13:45
		237,26 kg	18.10.2003 15:13:55
		374,00 kg	18.10.2003 15:14:06
		484,00 kg	18.10.2003 15:14:17
		482,01 kg	18.10.2003 15:14:26
		589,00 kg	18.10.2003 15:14:37
	stop	Menge: 1333,00 kg	18.10.2003 15:14:38
	stop	rezept	18.10.2003 15:14:38
2	Reisplattmaschine	18.10.2003 15:14:41 - 18.10.2003 15:14:58	
	Parameter		
	START	anzahl: 1000000	18.10.2003 15:14:41
	action	ein	18.10.2003 15:14:41
	methode	normal	18.10.2003 15:14:41
	stop	anzahl: 1000000	18.10.2003 15:14:58
	action	ein	18.10.2003 15:14:58
	methode	normal	18.10.2003 15:14:58
3	Reisplattmaschine	18.10.2003 15:14:52 - 18.10.2003 15:15:15	
	Parameter		
	START	targetzeit: 00 c	18.10.2003 15:14:52
	vorlauf	140 c	18.10.2003 15:14:52
	action	1	18.10.2003 15:14:52
	methode	moden	18.10.2003 15:14:52
	stop	targetzeit: 02 c	18.10.2003 15:15:03
		01 c	18.10.2003 15:15:07
		01 c	18.10.2003 15:15:15
	vorlauf	00 c	18.10.2003 15:15:15
		00 c	18.10.2003 15:15:15
		00 c	18.10.2003 15:15:15
		00 c	18.10.2003 15:15:15
	stop	targetzeit: 01 c	18.10.2003 15:15:16
		00 c	18.10.2003 15:15:16
	action	1	18.10.2003 15:15:16
	methode	moden	18.10.2003 15:15:16
4	Reisplattmaschine	18.10.2003 15:15:18 - 18.10.2003 15:16:06	
	Parameter		
	START	Menge: 233,00 kg	18.10.2003 15:15:18
	stop	Reisplattmaschine	18.10.2003 15:16:06

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