CONTROL SYSTEMS AND MANAGEMENT FOR CONCRETE BATCHING PLANTS

MC 400 | MC 150 | MC 90 | MC 80

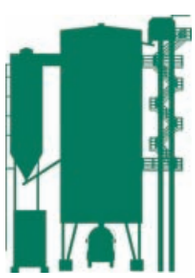
Stetter

SCHWING-STETTER MOVES CONCRETE. WORLDWIDE.

Wherever concrete is produced and moved is where you will find Schwing-Stetter machinery.

With plants in Germany, Austria, USA, Brazil, Russia, China and India as well as with more than 100 sales and service facilities, the group of companies is always close to the customer.

Our wide range of products with something for every application is what makes Schwing-Stetter the No. 1 system supplier for concrete machinery worldwide.



CONCRETE MIXING PLANTS

TRUCK MIXER

TRUCK-MOUNTED CONCRETE PUMPS

STATIONARY CONCRETE PUMPS

SEPARATE PLACING BOOMS

CONCRETE RECYCLING PLANTS

STETTER CONTROL SYSTEMS.
THE OPTIMUM SYSTEM FOR EVERY BATCHING PLANT.

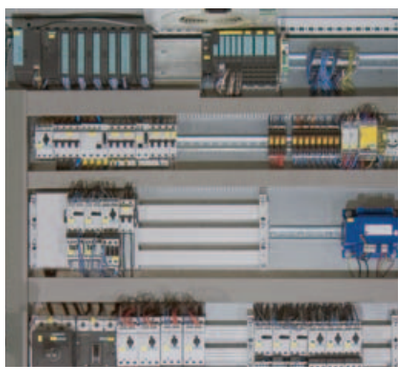
Stetter has wide experience gained over many years in the development of process control systems for concrete batching plants, and has become a market leader in plant and control configuration for just this very purpose.
To protect the customer's investment is our main duty and means that we at Stetter input a maximum in serviceability, functional reliability and professionalism into our plants and our control systems. After all, customer satisfaction is a premium and has been demonstrated in more than 1,000 Stetter plant controllers installed all over the world.

FLEXIBILITY AND RETENTION OF INVESTMENT

The architecture of the Stetter software, custom-developed in our own R&D departments, and the multiple configuration possibilities that arise from that, make it an easy task to adapt a plant control system to any existing production process.
Circuit arrangements, switchgear cabinets and the relevant circuit and wiring diagrams are all worked out in our own engineering division and are optimally adapted to Stetter batching plants. Our system flexibility even allows us to custom-build control systems for use in other makes of batching plants.

PROVEN IN PRACTICE

The commercial industrial production of concrete calls for more than just an elementary batching plant control system. A comprehensive package to satisfy the concrete producer and his customers covers a series of tasks ranging from the initial quotation to production planning, the production of the concrete itself and the management of mixer and pump fleets, right through to the issuing of the invoice for the concrete delivered. In addition, the correlation of various statistics for production and accounting management must be taken into account.
For companies that operate several batching plants in a company frame, it is essential to have a network running on a common database that can provide instant transparency for the management. This is exactly the point where Stetter offers customised, but also standardized, solutions.



QUALITY AND RELIABILITY

When choosing hardware components, we select only proven and high-grade material that is reliable enough for our requirements.
But whatever the brand or make of component, it must pass our stringent QC testing simulations even during the development stages.
Constant final acceptance tests are also essential for long-term product quality and reliability. Naturally always with ISO 9001 certification.

THE OPTIMUM CONTROLLER FOR EVERY BATCHING PLANT

Every Stetter plant control is available in various languages. MC 80 and MC 90 controllers, for example, are the solution for plants with batch sizes up to 1 m^3. For larger batching plants, networked plants, or plants with special requirements on "paperwork" and statistics, the MC 150 and MC 400 are the recommended controllers.

MC 400.

Overview.

THE MC 400 FAMILY

MC 400 is a family of software modules all built on the same software platform and with a common operator interface. Features to which we have attached priority importance to ensure perfect intercommunication performance.
Each module is designed and keyed to fulfil the customer's requirements and according to the registered operator rights. The hierarchy of operator rights determines who can view and process the operating data.
Each module can be run from any connected workstation to give optimum flexibility in personnel deployment.

MC 400 Batch	MC 400 Dispo	MC 400 FMS	MC 400 Faktura	MC 400 Sync
Dosing and Batch Control Unit	**Dispatching**	**Fleet Management**	**Invoicing**	**Database Synchronisation**
Order Management Production Statistics	Order Management Production Planning Truck Planning Pump Dispatching	Truck Tracking Street Maps Route Planning Navigation Service Function for Trucks	Invoices Offers Turnover Statistics	Synchronisation of Separated Databases

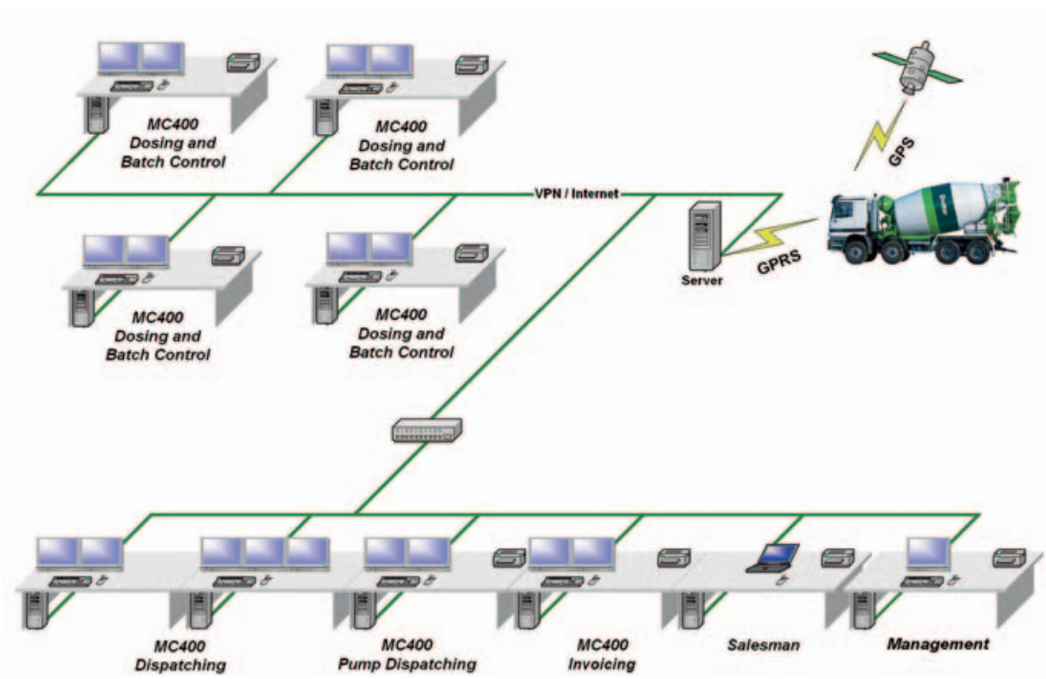
MC 400 Base
Database, Data Management, Data Permissions, Basic Functions

MC 400 IN NETWORK

MC 400 can be adapted to the user requirements either as a workplace solution or in an integrated network. Networking of individual workplaces is the solution to cope with increased work loads, or to connect several batching plants from one management desk.

DATA SECURITY INCLUSIVE

Our professional client/server database is the foundation for a multi-net and transparent data archive.
Other than with expensive solutions based on a central server, we install an individual database server on each production PC. Such local data archives are essential when networking several batch-plant controllers into a group management net.
In case of net failures (e.g. during servicing work) the production can still continue, thanks to an intelligent synchroniser module that caters for synchronisation of the databases.



AVAILABILITY ALWAYS AND EVERYWHERE

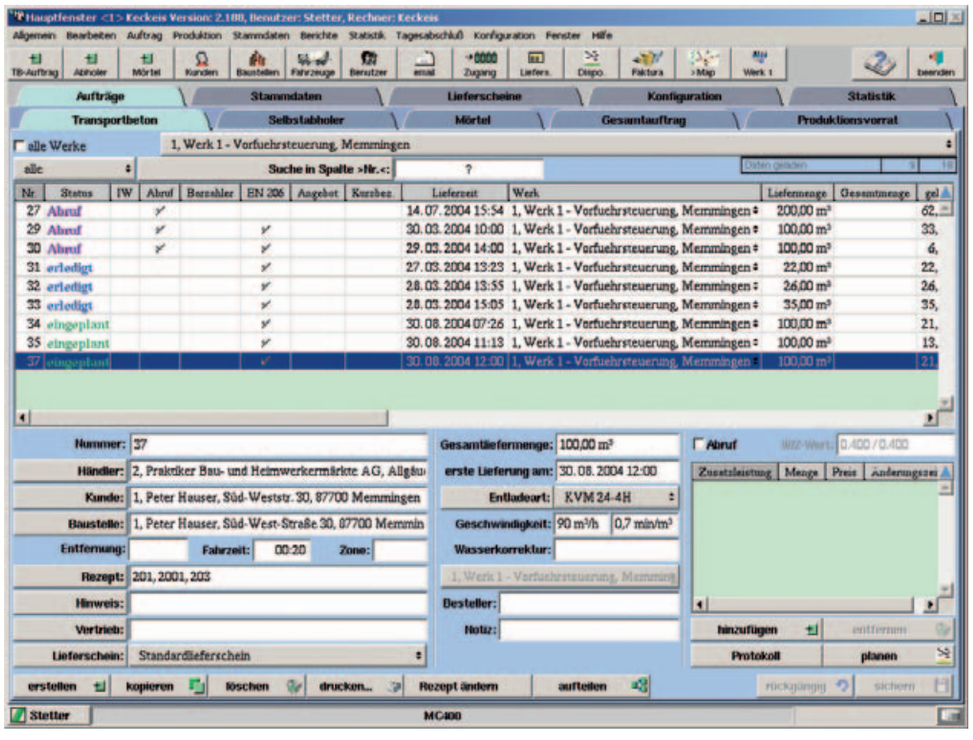
Our custom-designed synchronisation module uses a configuration table to determine which data sets need to be synchronised with the connected databases. We have taken this “lean approach” because it is not always necessary to have all data available at each and every workstation. In this way, we reduce communication expenses to a bare minimum and then with the option “immediate” or “time delayed”. An integrated DVD writer is provided for permanent data storage. An integrated DVD-writer module enables the back-up of the database with just a mouse click. Data storage and back-up can naturally also be run over the network to a separate server.

RECIPE MANAGEMENT

The mix design module contains all of the data inputs required according to EN206-1. The library of mix designs is archived on the main server but each can be adapted to the requirements of an individual batching plant if and when necessary.

ALWAYS IN THE PICTURE

Data from the selected record are shown immediately on the screen, which saves tedious opening and closing of individual dialogs. In addition, the data can be edited on-line.
When workstations are networked, any editing or change in data records is passed in real time to the other stations in the net.
Free arrangement of the spreadsheet columns makes it easy to match the tables to the plant’s requirements. Redundant columns in the sheet can be erased to give a clearer overview of essential information.
Another feature of MC 400 is its universal “Search” function, where each column in a data list can be used as a search criterion. As with standard desktop applications, each additional letter input reduces the number of found records to further reduce working time.



MC 400-BATCH.

Dosing and Batch Control Unit.

DAILY PRODUCTION

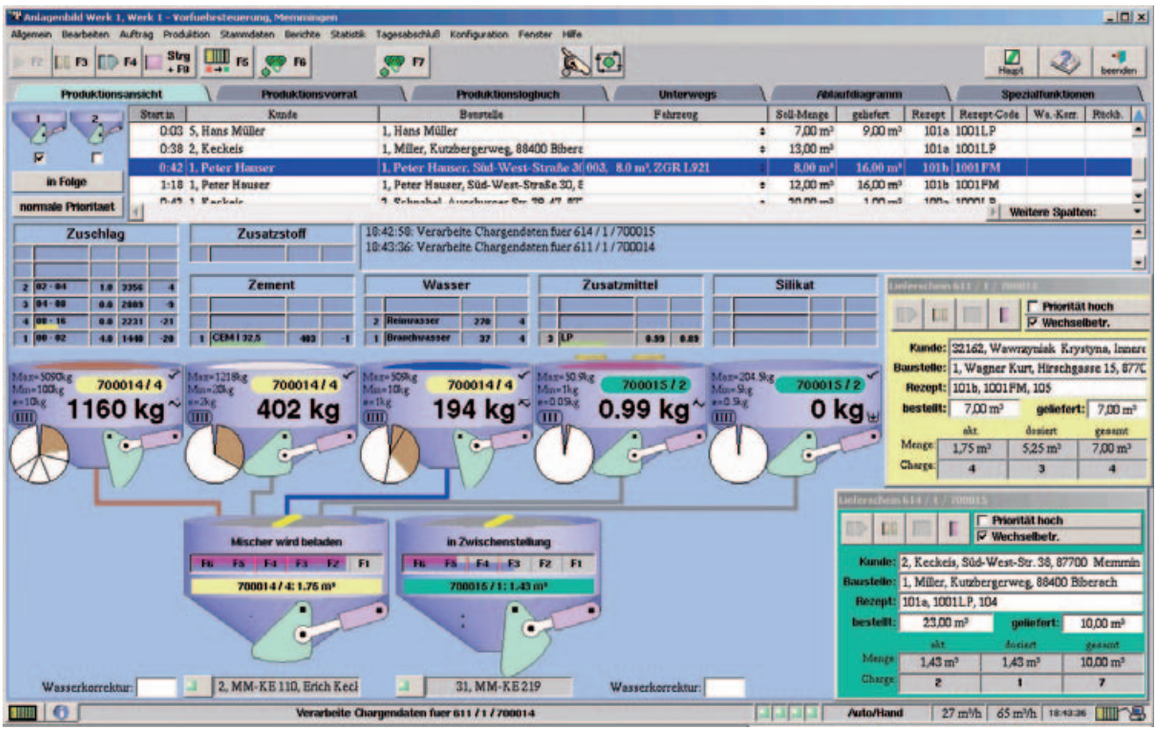
The day's planned production is listed in a table that can be extended at will or kept at just the one day. The same list is used as the basis for printing delivery notes and can also serve to select the requested truck mixer, the amount of concrete shipped out, or the amount returned to recycle.
Management of increased production rates is also an easy matter for those plants that have two mixers available.
Naturally, multi-mixer plants can run on parallel production of two different recipes. A great boost, especially when one mixer is occupied with special mix designs requiring extended mix cycles. The weighing system, however, will usually be free and can therefore be utilised by the second mixer. Production cycle commences as soon as a weighing system becomes available.
If a mixer has two discharge chutes, a priority batch can be mixed and loaded into a second truck mixer while the first one remains in position under its chute.
That proves a great advantage in plants that produce for readymix and for prefabrication plants.

ALTERNATE SILO

As soon as a binder silo runs empty (during production) a mouse-click is all that is needed to call up the next (alternate) silo so that production of concrete can continue without any interruption.

CONSISTENCY CONTROL (OPTIONAL)

Many applications, but epecially prefabrication plants, require exact compliance to predetermined concrete consistencies. The Stetter solution is to meter the consistency in the mixer at the very time of mixing the concrete and to add additional water in small quantities up to the required content.

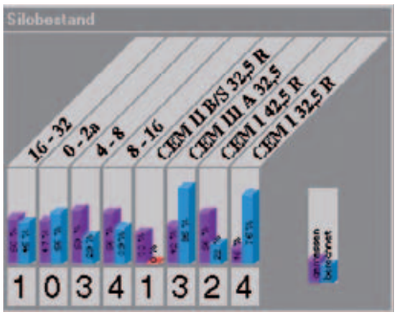


MOISTURE MEASUREMENT

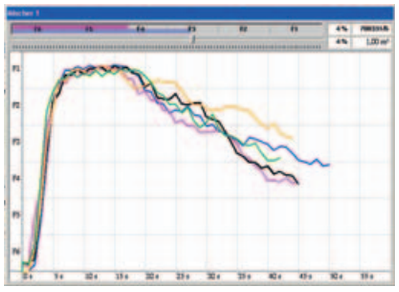
Optional moisture probes monitor the surface moisture of incoming aggregates and sand and compensate in realtime and within the actual quantities of water to be added to the mix.
The probes can be easily calibrated using the MC 400 software.

SERVICE WATCHDOG

Components with service and maintenance requirements give off signals at the appropriate time that are then compared with fixed maintenance schedules. The resulting messages are listed with the nature of service work and the time frame. That all helps to avoid sudden and unexpected component failure.

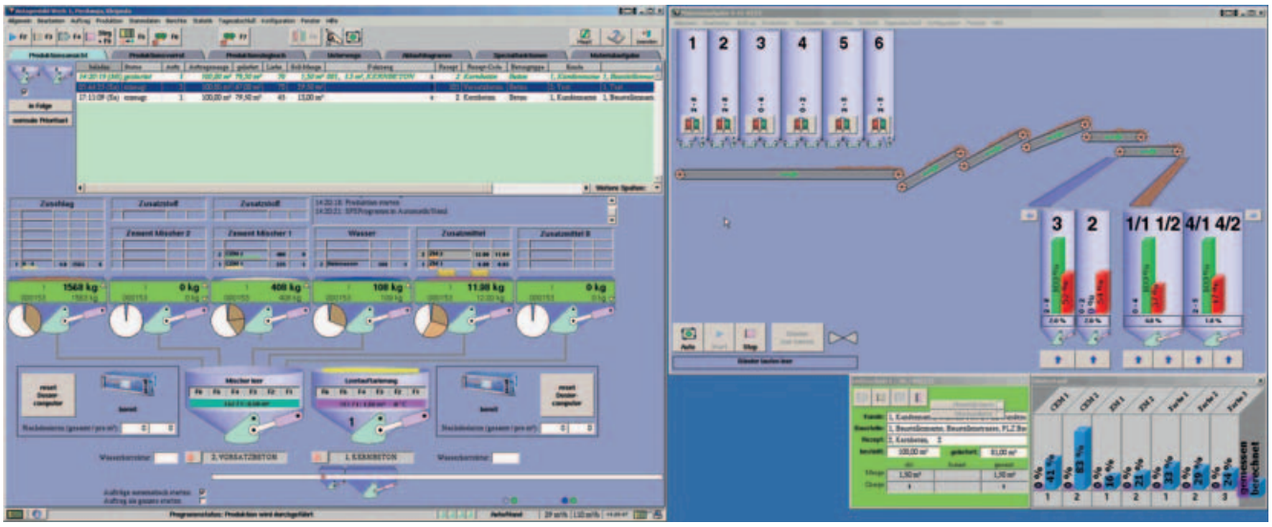


Raw material stocks
The graphic silo-level display gives a real-time check of measured and calculated silo stock levels.



Consistency record
The consistency of each mixer batch is shown in a different colour.

Manual mode
A manual control allows additional material to be run into the mixer. MC 400 records and marks every quantity of weighed material that goes into the mixer and marks them in the production spreadsheet as well as in the “consumption database”, so no material goes unrecorded or gets “lost in the system”.



Material management
The main processor monitors the stock levels in aggregate/sand bins and can even take care of automatic restocking if additional holding silos are available. That’s only one of the many possible configurations that we have available.

MC 400-BATCH.

Dosing and Batch Control Unit.

PRODUCTION LOGBOOK

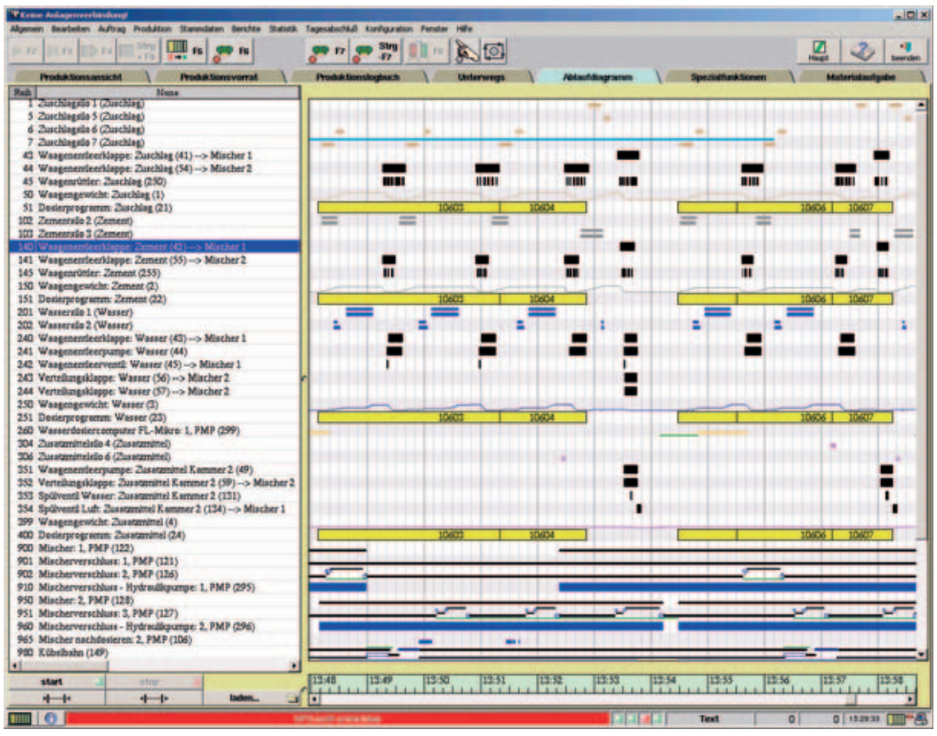
Every stage of production and any fault or failure event is strictly registered in the logbook to allow a detailed production analysis at any time.

DELIVERY NOTE

Delivery notes can be printed out in line with customer requirements. Regular customers can even be provided with their own customised notes for readymix concrete, mortar, etc.

TIMING DIAGRAM

A graphic display showing the step-by-step processes with the batching plant running in operating mode is especially useful during commissioning and when fine-tuning the plant's performance.
On demand, MC 400 records the process chain and maps them in a timesheet form. Various analysis functions can then be used to evaluate the processes and allow a subsequent optimisation of the operating parameters.



GREY WATER CONSISTENCY

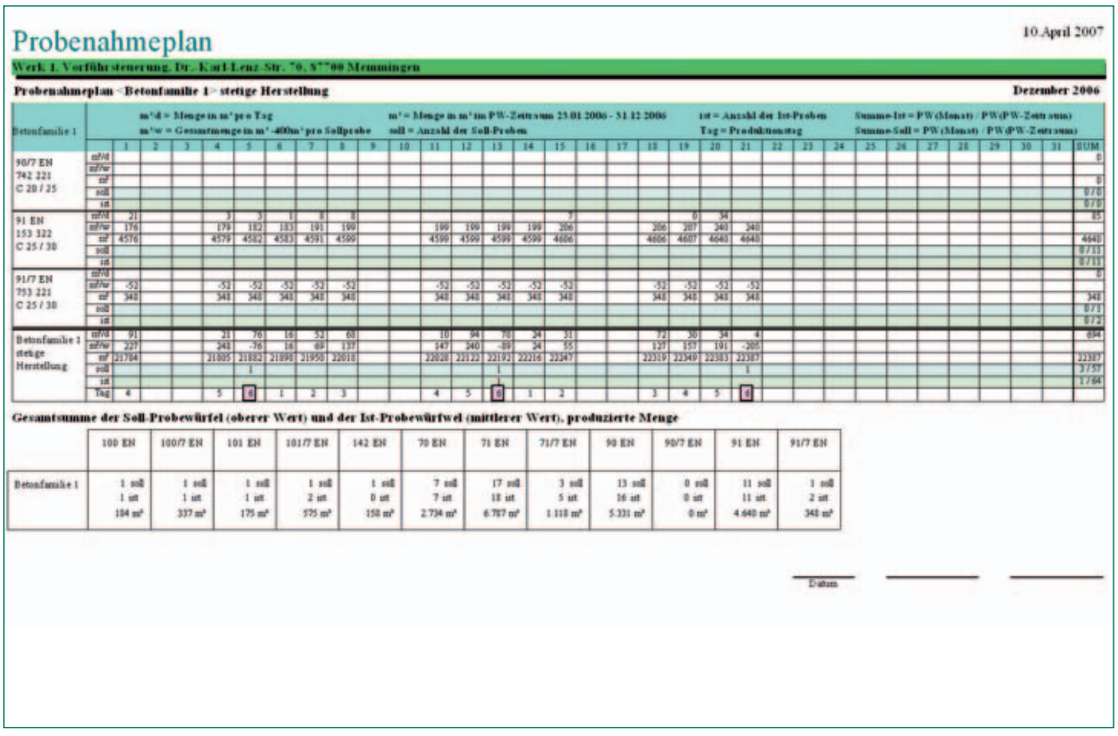
Another option is a consistency meter to monitor and compensate for the fines (cement) content in recycled “grey water”.
As an alternative, the required (permissible) consistency of grey water can be input manually.
The quality of the concrete produced in a batching plant depends on a whole range of influences.
Stetter has solutions for all possible problems.

SELF-ADJUSTING CORRECTION OF LAST RUNNINGS

The last runnings of material depend firstly on the material itself and the degree of filling of the aggregate or binder weighers. Our MC400 has a self-teaching program that registers the overrun for each binder silo and for three different weigher fillings.

SAMPLING SCHEDULE

The European standard EN206-1 stipulates precisely when concrete samples are to be taken and the number of samples required for a particular concrete “family”. MC 400 gives the operator a message that a sample needs to be taken. The message is generated from a background program that is continually updated after every single production batch and is therefore permanently up-to-date irrespective of the periods between production of one of the “family” mixes.
Such a facility is usually part of a separate laboratory software package, but with MC 400, it is already on board!



Probenahmeplan

10.April 2007

Werk 1, Verführsteuerung, Dr.-Karl-Lenz-Str. 70, 87700 Memmingen

Probenahmeplan - Betonfamilie 1 - stetige Herstellung — Dezember 2006

m³d = Menge in m³ pro Tag; m³w = Gesamtmenge in m³-400m³ pro Sollprobe; m³ = Menge in m³ im PW-Zeitraum 25.01.2006 - 31.12.2006; soll = Anzahl der Soll-Proben; ist = Anzahl der Ist-Proben; Tag = Produktionstag; Summe-Ist = PW(Monat) - PW(PW-Zeitraum); Summe-Soll = PW(Monat) - PW(PW-Zeitraum)

Betonfamilie 1		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	SUM
90/7 EN 792 221 C 20 / 25	m³/d																																
	m³/w																																
	m³																																0
	soll																																0 / 0
	ist																																0 / 0
91 EN 153 322 C 25 / 30	m³/d	21			3	3	1	8	8							7				0	34												85
	m³/w	176			179	182	183	191	199			199	199	199	199	206			206	207	240	240											
	m³	4576			4579	4582	4583	4591	4599			4599	4599	4599	4599	4606			4606	4607	4640	4640											4640
	soll																																7 / 11
	ist																																7 / 11
91/7 EN 753 221 C 25 / 30	m³/d																																0
	m³/w	-52			-52	-52	-52	-52	-52			-52	-52	-52	-52	-52			-52	-52	-52	-52											
	m³	348			348	348	348	348	348			348	348	348	348	348			348	348	348	348											348
	soll																																0 / 1
	ist																																0 / 2
Betonfamilie 1 stetige Herstellung	m³/d	91			21	76	16	52	68			10	94	70	24	31			72	30	34	4											694
	m³/w	227			243	-76	16	69	137			147	240	-89	34	55			127	157	191	-205											
	m³	21794			21805	21882	21898	21950	22018			22028	22122	22192	22216	22347			22319	22349	22383	22387											22387
	soll					1								1								1											3 / 57
	ist													1																			1 / 64
	Tag	4			5	6	1	2	3			4	5	6	1	2			3	4	5	6											

Gesamtsumme der Soll-Probewürfel (oberer Wert) und der Ist-Probewürfwel (mittlerer Wert), produzierte Menge

	100 EN	100/7 EN	101 EN	101/7 EN	142 EN	70 EN	71 EN	71/7 EN	90 EN	90/7 EN	91 EN	91/7 EN
Betonfamilie 1	1 soll 1 ist 104 m³	1 soll 1 ist 337 m³	1 soll 1 ist 175 m³	1 soll 2 ist 575 m³	1 soll 0 ist 158 m³	7 soll 7 ist 2.734 m³	17 soll 18 ist 6.787 m³	3 soll 5 ist 1.118 m³	13 soll 16 ist 5.331 m³	0 soll 0 ist 0 m³	11 soll 11 ist 4.640 m³	1 soll 2 ist 348 m³

Datum

MC 400-DISPO.

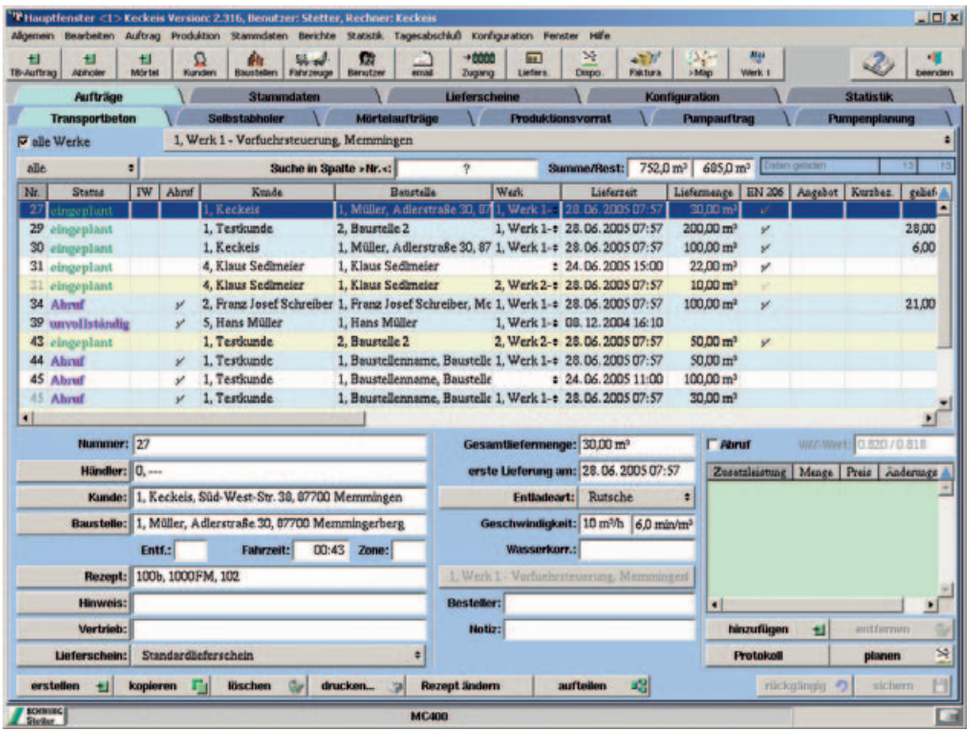
Disposition for Plants and Trucks.

MC 400-DISPO

MC 400-DISPO is the answer to production planning problems.
As soon as an order is received, it can be decided which batching plant is concerned. Colour coding in the spreadsheet then helps to keep everything transparent.
A single large order for concrete can even be split among several batching plants so as to achieve a better overall utilisation.
The truck mixers necessary to deliver the concrete are automatically planned in the background.

GRAPHIC DELIVERY PLANNER

The graphic overview shows all of the planned production batches. A mouse-click is sufficient to input any necessary alterations.
If one batching plant in a company network is temporarily overbooked, a single delivery (or even a whole order) can easily be shifted to one of the sister plants.

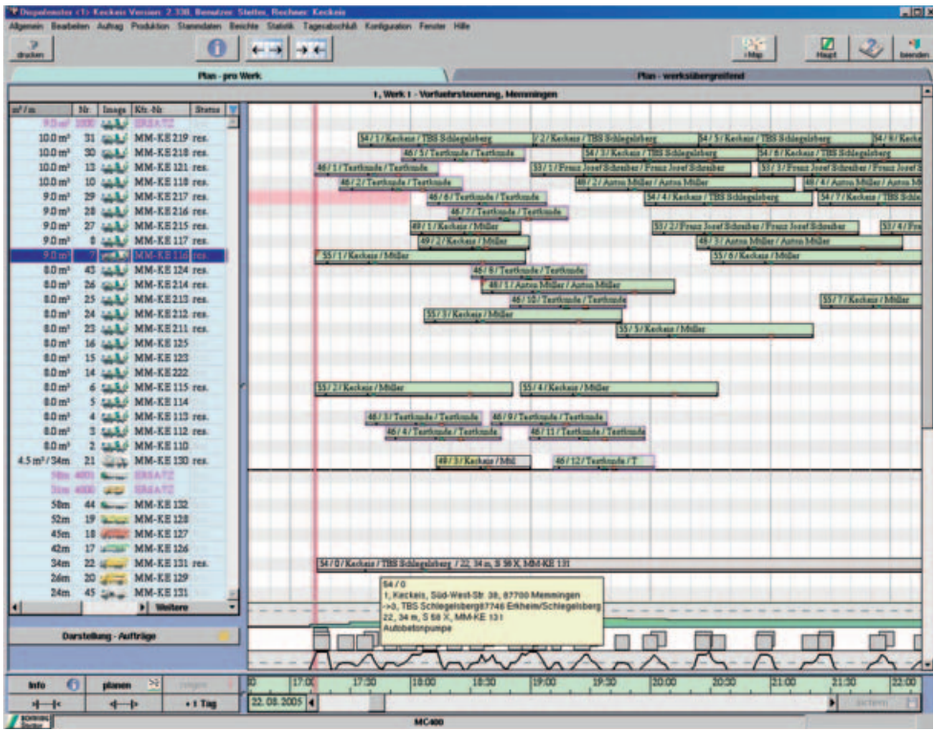


“NO-GO” MIXERS

The database automatically rules out truck mixers that are not suited to certain job sites. And it takes the drivers’ working hours into consideration as well.

INTEGRATED PUMP FLEET DISPATCHER

MC 400-DISPO not only acts as a plant and truck mixer manager. It can also be used as dispatcher for concrete pumps.
Pump orders can be booked individually or together with a job to deliver concrete. Any changes in mixer delivery schedules are immediately reflected in the time booked for the concrete pump.



MC 400-FMS.

Fleet Management System.

MC 400-FMS

An extremely useful addition to MC 400-DISPO is the module MC 400-FMS (Fleet Management System).
All of the plant's truck mixers are fitted with an on-board processor (MC 400-Navigator) with GPS link. MC 400-Navigator itself can also be fitted with a touch screen and several sensors for truck operational data which can then be transmitted to the central processor.
Permanent two-way communication is maintained via GPS receiver and a GSM module, whereby the actual data transfer can be via GPRS protocol or SMS message. With such a set-up, all relevant status reports (e.g. arrival at job site, start of unloading, arrival at base plant, etc.) can be sent automatically without any driver activity.
In other words, even a "new" driver does not need to go through a training programme.
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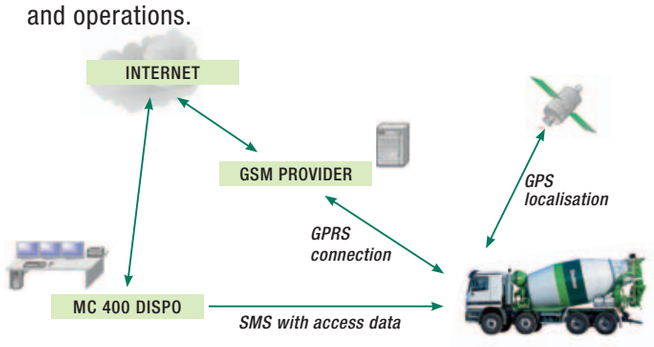
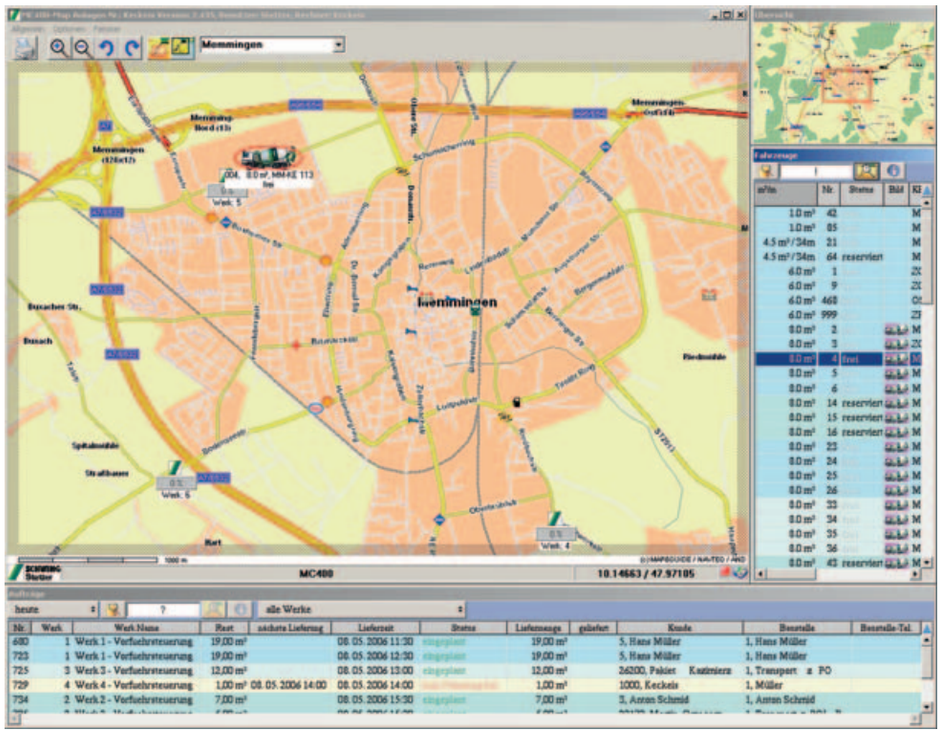
ADDITIONAL EXTERNAL SERVER NOT NEEDED

MC 400-FMS does not need an external server, which means no additional telecommunication expenses. MC 400-FMS itself is the server. All that is needed is an Internet connection and a SIM chipcard for each truck. The actual location of each mixer truck is shown on a digital street map. Using the information from the MC 400 Navigator, the central station translates and coordinates the operations of the mixer fleet. Incoming data also provides an instant "logbook" of truck mixer routes and operations.





STREET MAP

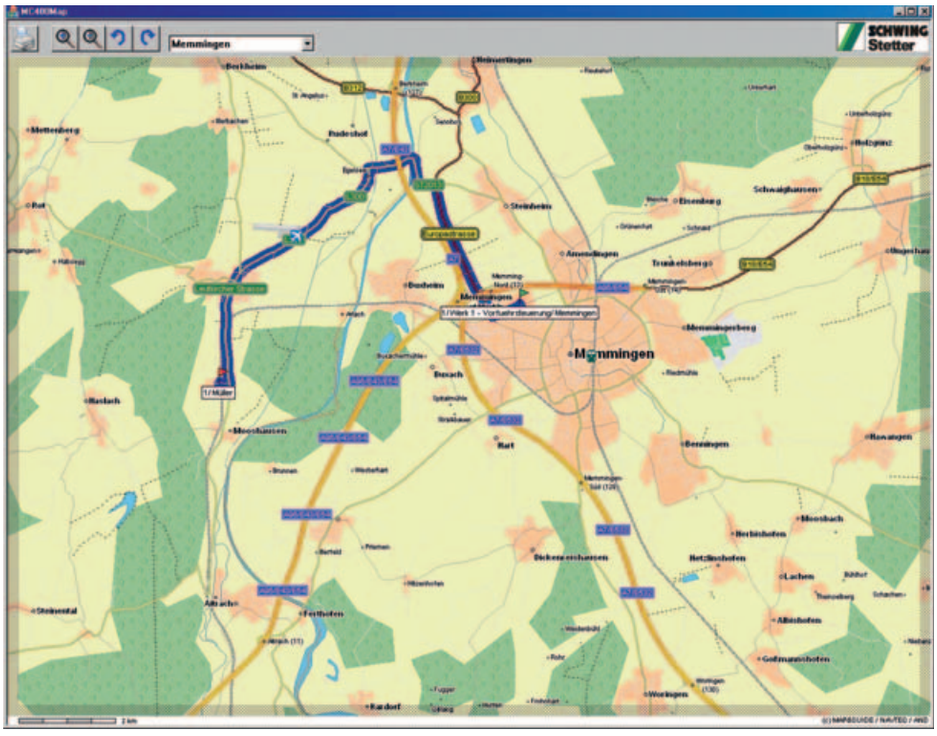
Zoom and Move features make it easy to select the optimum view mode on the street map. And background snapshots can be stored to give a run-through of map scales right down to the marker showing the actual position of the truck.
The Master screen makes it easy to maintain a general overview and as an overall navigation assistant.
Additional information, such as list of trucks and a table of drop-off points, is also available in realtime.

ROUTE PLANNER

The integrated Route Planner lists all of the road connections along the route and is linked automatically to the Street Map view.

MC 400-NAVIGATOR WITH INTEGRATED GPS NAVIGATOR

An optional 7" touch screen and a GPS navigation modem are available for trucks. Delivery data and the GPS coordinates of the job site are transmitted automatically to the truck and the on-board navigator guides the driver optically (3D display) and acoustically to the job site (or back to the batching plant for the next load).



MC 400-FAKTURA.

Invoicing.

MC 400-FAKTURA

MC 400-Faktura has been developed in cooperation with some of the leading suppliers in the readymix concrete industry. The result is a tool that is proven in practice and that reflects all of the day-to-day invoicing requirements of companies involved in the supply of readymix concrete and relevant concrete pump service.

QUOTATION MANAGEMENT

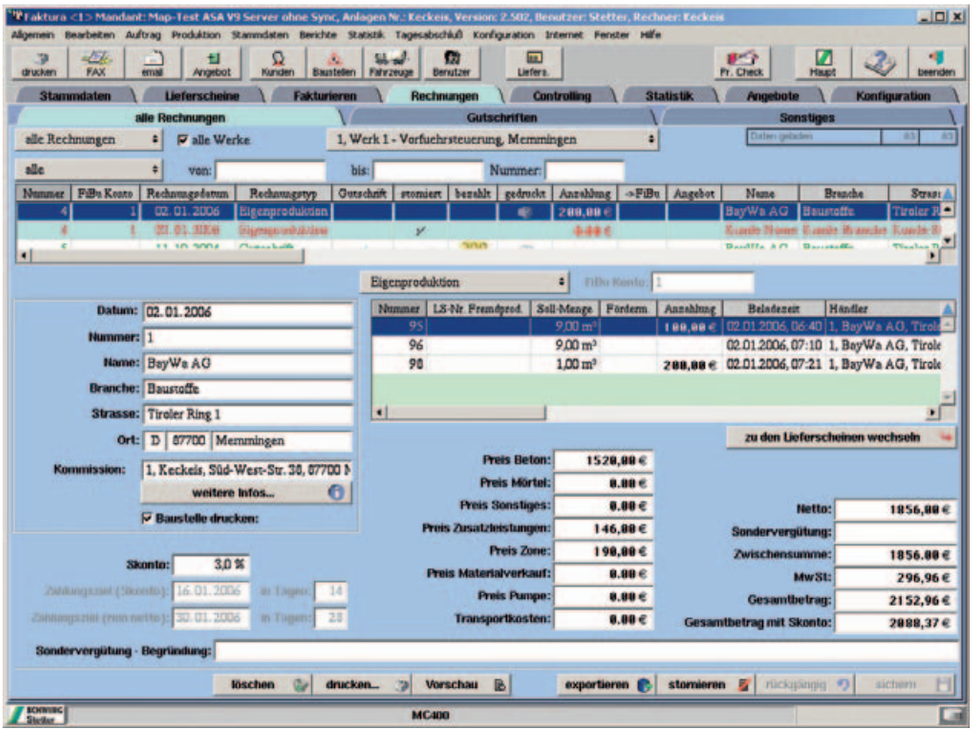
Quotation Management is an elementary tool to compile and follow up quotations.
It involves a complete chain of processes from quotation, through production to the delivery note and finally the invoice, taking the customer conditions and terms into consideration at all steps.

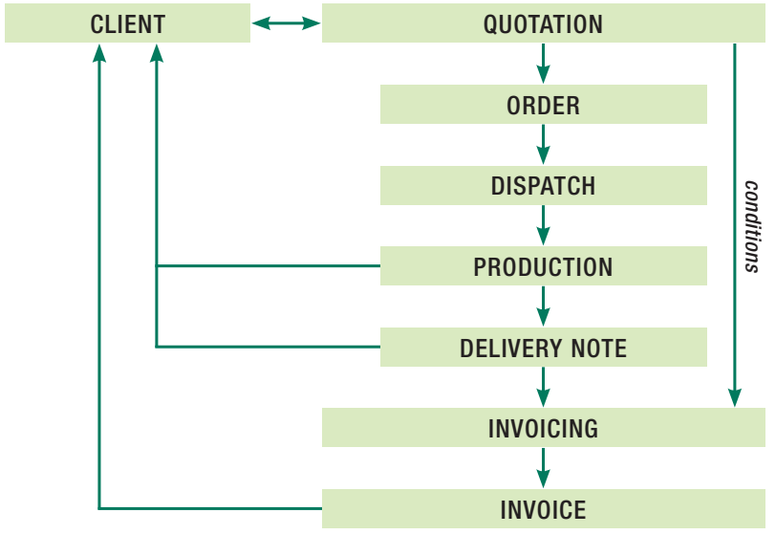
INVOICING

There are a multitude of ways to determine the terms and conditions for job sites and customers. Invoices can be compiled either singly or combound, depending on your customers' requirements.
There is also the means of issuing invoices for deliveries of concrete and for pump services either singly or compounded.

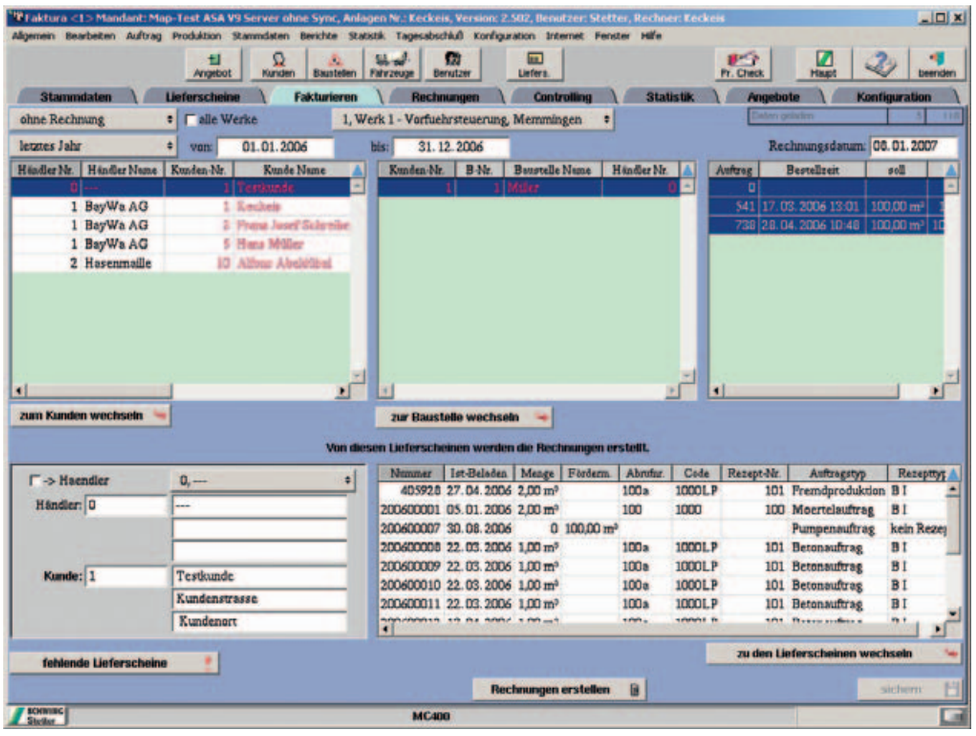
THE FULLY INTEGRATED SOLUTION

MC 400-Faktura is an optional add-on module to the MC 400 package. Because of its full integration, datasets do not need to be imported or exported from allied modules. Everything runs automatically.
Once prices and conditions have been established and archived, they are available to each and every workstation in the company net and can then be used by all of the authorised operators.





Saving time and without transmission errors from the quotation to the invoice.



MC 400.

Technical data.

MC 400-Database

- Data back-up saved to DVD (on-board DVD writer) or to a network server
- Printout of all data archived in the system
- Free selection of data to be printed; free arrangement of columns in overview lists
- Automatic formatting of columns in overview lists
- Each column with its own “search” properties
- All editing functions saved with operator name, date and time
- Logbook function for operator inputs

MC 400-Master Data

- Name file for dealers, customers, job sites, truck mixers, mixer operators, drivers, plant data, etc.
- Cross-reference of customers to dealers
- Cross-reference of job sites to customers
- Cross-reference of customers to salesmen
- Display of deliveries to dealers, customers and job sites
- Edit/erase dealers, customers and job sites after day of last delivery
- Warnings for dealers, customers, job sites and mix designs (with password release)
- Messages for customers, job sites, truck mixers and drivers when production commences
- Determination of travel times from plant to job sites
- Determination of peak traffic times (with influence on travel time to job sites)
- Determination of working hours of job sites and plants
- Determination of priority truck mixers for particular job sites
- Easy copying of address database from customer file
- Comprehensive import/export functions

MC 400-System Data

- Date input with operator boot
- Preparation of plant data
- Free selection of codings for weighers, materials, truck mixers, etc.

MC 400-Order Processing

- Free selection of sorting functions
- Display of total production for the particular day
- Order preparation for the next and the following days
- Order confirmation using dealer, customer or job site address database
- Printout of the delivery ticket depending on the order
- Correction of mix design depending on job site requirement (cement, additive, water) within limits dictated by EN “Family”
- Printout of orders and delivery notes for mortar
- Compilation of several mortar orders to one block order
- Automatic planning of the productions
- Printout and reprint of orders
- Parallel production of two orders with different mix designs and priorities
- Pump orders (singly or together with concrete order)

MC 400-Mix Design Management

- Free selection of mixing sequence for aggregates, cement, additives and water
- Volumetric calculations
- Grading curve function of mix designs
- Details for taking test cylinders/cubes
- Sampling schedule with details of time period
- Automatic message when sample necessary
- Plant’s own modification of mix designs
- High-strength concrete
- Free selection of mixing times for aggregate, cement, additives and water
- Data for DIN ENV 206-1
- Recipe families

MC 400-Printer Profile

- Free selection of data to be printed (lists, statistics, etc.)

MC 400-Text

- Input of units (kg, etc.), price and booking code for special services
- Input of special services, adverts, notes, warnings, etc.

MC 400-Statistics

- Archive (delivery notes, batch data, production logbook, etc.) of all data to allow statistics to be generated over any relevant time period
- Production statistics with details of average plant output
- Dealer, customer, customer mix design, truck and mix statistics possible with printout of all deliveries
- Production statistics for day, week, month, year or any other time-frame
- Number of trips for each truck mixer in respect of a set time-frame, including average load and in graphic form
- Actual and expected fuel consumption with deviation in % and in tons
- Material consumption in time-frame
- Material consumption in manual mode
- Quantity supplied to specific dealer, customer, job site, customer, truck mixer, etc.
- Other statistic call-ups also available

MC 400-User Management

- Individual or group users with password
- Any number of user groups
- Any number of users
- Authorisation clearance

MC 400-Available Languages

- German, English, French, Russian, Serbian, Croatian, Macedonian, Lithuanian, Icelandic, Polish, Flemish, others on request

MC 400-Control Computer – Technical Data

- Latest generation SIEMENS PC
- Two 19" TFT monitors
- Windows XP™
- Printer: Tally T2340/9 (delivery notes)
- Printer: HP LaserJet 1320
- Profibus DP
- ASI-Bus (depending on plant type)
- Digital weigher displays

MC 400-Raw Material Management

- Input for type of material and item no.
- Input of material density (for volumetric conversion)
- Determination of permissible moisture content
- Manual correction of moisture content
- Input of grading curve data for mix design calculations
- Determination of binders in silos
- Silo call-up sequence
- Limit points coarse/fine
- Tolerancing
- Automatic calculation of quantity of retarder for required delivery time
- Supplier and material management

MC 400-Dosing Program

- Production logbook (incl. all messages sent/received during production)
- Automatic tracing and calculation of grey water consistency and the result in running production
- Automatic switch-over of multi-range weighers
- Automatiic silo follow-on
- Automatic weigher monitoring
- Mixer double-charge inhibitor
- Automatic, self-teaching over-run correction
- Batch optimisation
- Shutoff flap monitoring
- Automatic skip pre-start
- Moisture metering of six components with sand moisture correction
- Air blow-out of additive lines
- Tolerancing in % of required value
- Water reduction when running additive
- Water pre-dosing
- Consistency graphic on display
- Monitoring of continuous silo levels
- Parallel production with priority list

MC 400-Option

- Manual operating tableau
- Dustproof housing
- Extension to four monitors
- Remote service (assistance for operation and configuration via ISDN to ensure fastest possible help reaction)

MC 400.

Technical data.

MC 400-DISPO – Order Processing

- Determination of production plant
- Splitting of orders over several plants
- Automatic planning of the productions
- Exchange of orders between plants without central server
- “Off-duty” times for trucks and drivers
- No-Go function for trucks on particular job sites

MC 400-DISPO – Disposition

- Graphic display of deliveries from one or all networked plants
- Easy planning using the mouse to shift orders on-line.
  A delivery can be booked to a particular truck in the home plant or in one of the allied plants
- Plant capacity statistic
- Truck capacity statistic
- Run-down timer to start of production
- Manual status editing of truck mixers
- Details of radio connection to trucks
- Automatic updating of travel times to job sites and plants

MC 400-DISPO – Pump Dispatcher

- Management of pump orders and pump delivery notes
- Interlinking of concrete deliveries and pump orders

MC 400-Sync – Database Synchronisation

- Free configuration of data to be synchronised between plants
- Minimum data transfer – only updates are transmitted
- Freely extendable
- Exchange of data between plants without central server
- Easy linking to further plants at a later date

MC 400-Navigator

- Housing approx. 140 x 110 x 45 mm
- Strong aluminium casing, IP54
- Modular design
- Xscale Intel processor 312 or 512 MHz, MMX
- RAM 64 MB
- Flash card 32 MB
- MMC card (up to 2 GB)
- GSM/GPRS Quad-Band module (850/900/1,800/1,900 MHz)
- SIM card accessible from outside
- GPS 12-channel receiver
- VGA graphic card (18-bit colour depth)
- Power supply 10–42 V DC (with low-voltage guard and PowerSave)
- Operating temperature –20 °C to +70 °C
- VGA touch screen monitor
- Port for external GSM+GPS antenna
- RJ45 Ethernet
- 16 switchable inputs (optic coupler, galv. isolated)
- 4 switchable outputs (optic coupler, galv. isolated)
- 2 analog inputs
- Connection for CAN-Bus (option)
- E1 certification (E13*10R00*3720*00 23503B)

MC 400-FMS

- GPS truck tracking with map display
- Map display of plants, job sites and truck mixers with selection of map scale and blow-up
- Extensive range of available maps
- Zoom and “grab-shift” functions
- Save function for regular maps and routes
- Printout of actual screen display
- Fully automatic transmission of truck status
- Display of trucks with actual status reports
- Display of routes travelled in time-frame by particular trucks
- Automatic job site search function with correction of geographic coordinates and address
- Manual saving of job site GPS position
- Status data saved with exact time and update of plan data
- Interpretation of truck position with signals “arriving job site”, “starting unload”, “leaving job site” and “return to plant”
- Interpretation of input signals depending on truck model

MC 400-FMS (optional upgrade in truck)

- 7" touch screens
- Integrated navigation system with automatic transfer of data from HQ server to truck
- 3D navigation
- Audible navigation instructions
- Connection for mobile phone with hands free

MC 400-Faktura – Base Data

- Customer discount (individual rate for every customer)
- Additional text to be printed into invoice
- Free selection of text modules, e.g. for Giro payments
- Price lists for dealers, customers, job sites and production plants
- Colour coding of dealers and customers without specific conditions
- Payment terms listed with and without discount and VAT

MC 400-Faktura – Price Structure

- Price lists with prices for mix design, special deliveries, travel zones, concrete pumps
- Free selection of price lists to dealers, customers, job sites
- Free selection of conditions to dealers, customers, job sites
- Free selection of discounts for mix designs, dealers, customers, job sites
- Pump prices (basic, minimum, bulk)
- Free selection of pump prices and discounts to dealers, customers, job sites
- Discounts to dealers, customers, job sites (with limitation)
- Input limitations for discounts
- Self-transporter prices
- Automatic calculation of production costs for particular mix design
- Delivery costs depending on truck and distance
- Cash discount in % for dealer, customer, job site

MC 400-Faktura – Quotation

- Generating of quotations
- Validity
- Automatic follow-up
- Generating of quotations from incoming quotations with cross-reference to agreed discounts

MC 400-Faktura – Delivery Tickets

- Import of delivery notes (formats: Stetter-600, others on request)
- Checking of special orders
- Checking of waiting time (extra price)
- Checking of concrete returned to plant
- Checking of cement and additive consumption
- Delivery notes for pump operations

MC 400-Faktura – Invoicing

- Compound invoice with individual recipient
- Customer with optional individual job site
- Individual job sites excluded from compound invoice
- Calculation of discounts for dealer, customer, job site
- Cross-reference to price lists
- Warning message when price list validity expired
- Invoice printout (printer, preview or fax)
- Invoice as export data file directly to bookkeeping (e.g. Datev or similar)
- Payment terms
- Credit note
- Sale of raw material
- Pump invoicing
- Other type of invoicing

MC 400-Faktura – Statistics

- List of issued invoices
- m^3 turnover per dealer, customer, job site
- Pump turnover statistics
- Pump statistics
- Further statistics on request

MC 150.

Dosing and Weighing Control.

MC 150 – BATCHING PLANT CONTROLLER

MC 150 has proven itself as a standard solution since 1997 and has all of the functions required for single-plant operation, although a second workstation can be connected if required.

EASE OF OPERATION

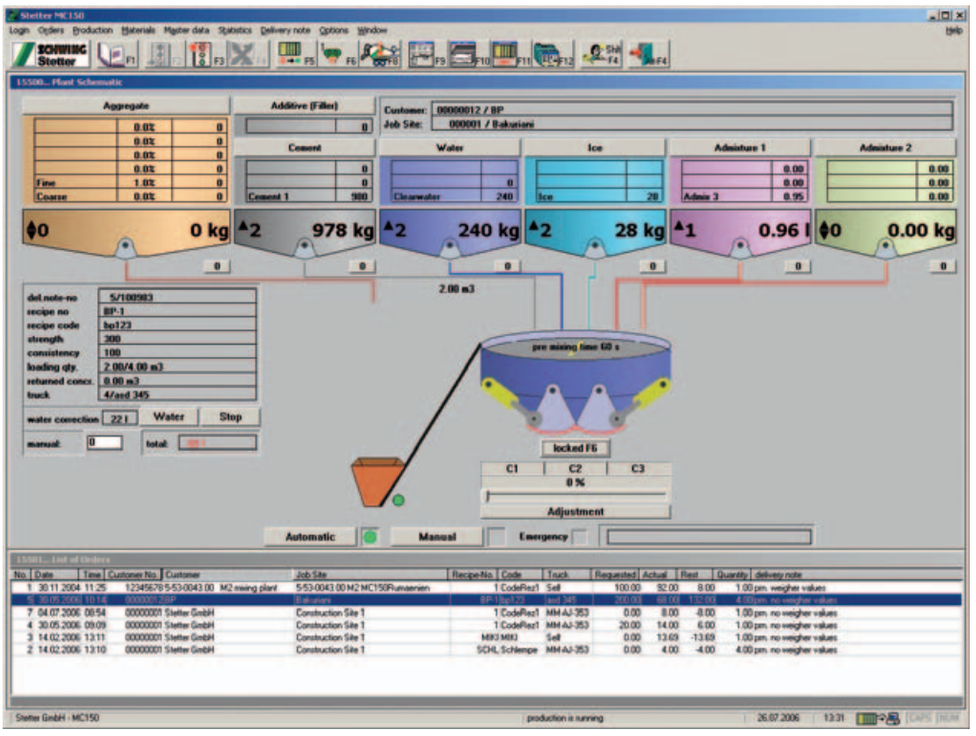
Our MC 150 is a controller in which high priority has been given to simplification and ease of operation.
Data access and authorisation is limited to five password-protected user groups. Data is managed in an MS Access™ database.
An integrated “Help” tool guides the operator through the data blocks on the monitor and calls up an assistant to the relevant question.
As with all Stetter control systems, the user interface can be in a variety of languages.

MC 150 – STATISTICS

All production data can be called up from a background statistics module. The most important values are for material consumption. This also runs in the case of manual production.
Further production statistics can be called up in respect of mix design, customer, job site or truck mixer.
All statistics can be arranged for a particular time (day, month, year) or for a freely determined period.

CONSISTENCY CONTROL (OPTIONAL)

Many applications, but epecially prefabrication plants, require exact compliance to predetermined concrete consistencies. The Stetter solution is to meter the consistency in the mixer at the very time of mixing the concrete and to add additional water in small quantities up to the required content.



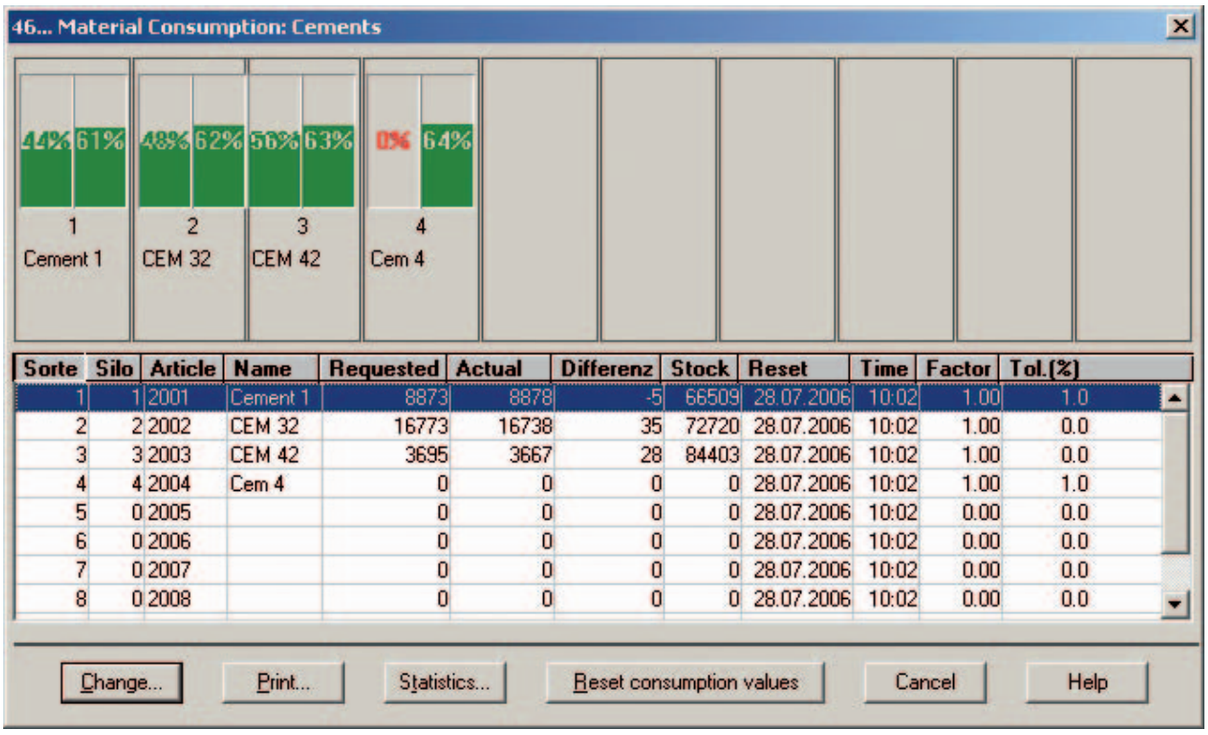
GREY WATER CONSISTENCY

Another option is a consistency meter to monitor and compensate for the fines (cement) content in recycled “grey water”.
As an alternative, the required (permissible) consistency of grey water can be input manually.
The quality of the concrete produced in a batching plant depends on a whole range of influences.
Stetter has solutions for all possible factors.

MOISTURE MEASUREMENT

Optional moisture probes monitor the surface moisture of incoming aggregates and sand and compensate in realtime and within the actual quantities of water to be added to the mix.
The probes can be easily calibrated using the MC 150 software.

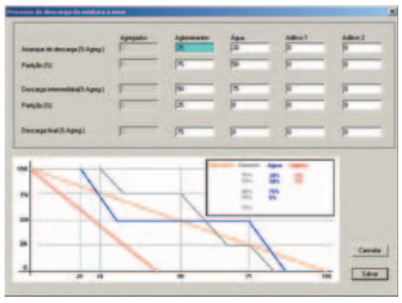
Manual mode
A manual control allows additional material to be run into the mixer. MC 150 records and marks every quantity of weighed material that goes into the mixer and marks them in the production spreadsheet as well as in the “consumption database”, so no material goes unrecorded or gets “lost in the system”.



Sorte	Silo	Article	Name	Requested	Actual	Differenz	Stock	Reset	Time	Factor	Tol.(%)
1	1	2001	Cement 1	8873	8878	-5	66509	28.07.2006	10:02	1.00	1.0
2	2	2002	CEM 32	16773	16738	35	72720	28.07.2006	10:02	1.00	0.0
3	3	2003	CEM 42	3695	3667	28	84403	28.07.2006	10:02	1.00	0.0
4	4	2004	Cem 4	0	0	0	0	28.07.2006	10:02	1.00	1.0
5	0	2005		0	0	0	0	28.07.2006	10:02	0.00	0.0
6	0	2006		0	0	0	0	28.07.2006	10:02	0.00	0.0
7	0	2007		0	0	0	0	28.07.2006	10:02	0.00	0.0
8	0	2008		0	0	0	0	28.07.2006	10:02	0.00	0.0

MC 150.

Dosing and Weighing Control.

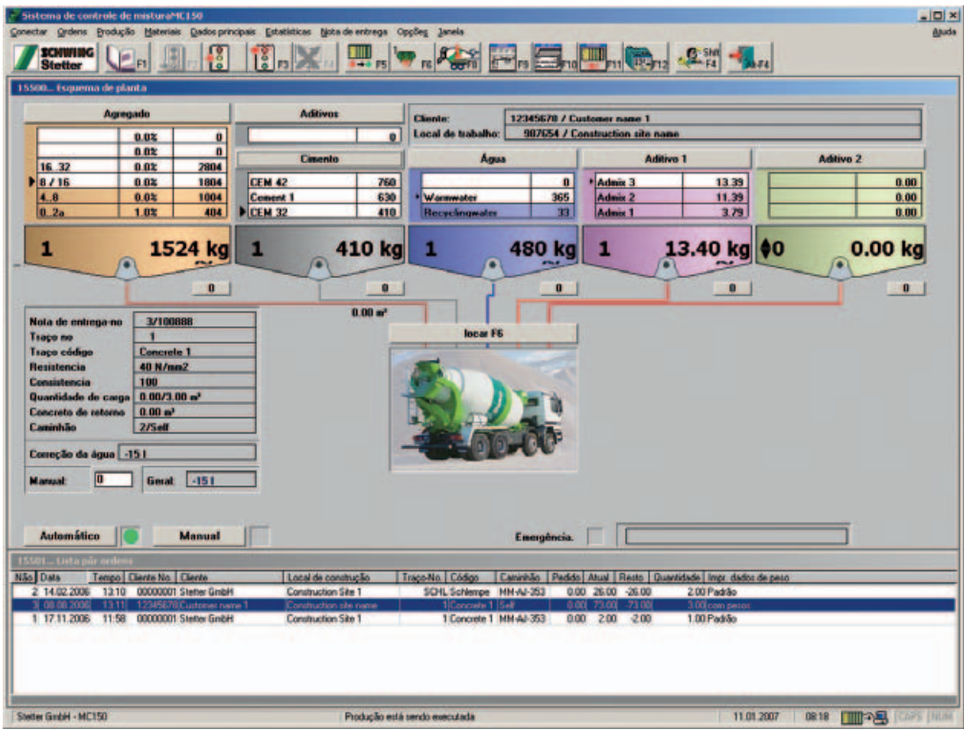


MC 150 – CONTROLLER FOR DRY-BATCH PLANTS

MC 150 DD is a variant of the MC 150 and has been specially designed for dry-batch plants. Basic functions are exactly as in the MC 150, the only differences are in the process schematic and in the manner of dosing and weighing the materials.

MC 150 – DOSING SEQUENCE

The method of weighing and feeding can be influenced in numerous ways. For example the materials can be weighed and fed in several stages so that an optimum pre-mixing effect can be achieved even while the materials are still in the plant.



MC 150.

Technical data.

MC 150-Dosing Program

- Production logbook (incl. all messages sent/received during production)
- Automatic tracing and calculation of grey water consistency and the result in running production
- Automatic switchover of multi-range weighers
- Automatic weigher monitoring
- Automatic water dosing
- Mixer double-charge inhibitor
- Automatic, self-teaching in-air correction
- Batch optimisation
- Shutoff flap monitoring
- Automatic skip pre-start
- Moisture metering of six components with sand moisture correction
- Air blow-out of additive lines
- Tolerancing in % of required value
- Water reduction when running additive
- Water pre-dosing
- Consistency graphic on display
- Monitoring of continuous silo levels

MC 150-Mix Designs

- Free selection of dosing sequence for each weigher
- 6 of 20 aggregates/sand
- 4 of 10 binders (incl. filler)
- 3 water
- 3 of 20 additives (system I)
- 3 of 20 additives (system II)
- Ice (optional)
- Various mix types (concrete, mortar, blended aggregate, slurry)
- 12-digit mix code
- Max. batch for particlar mix

MC 150-Delivery Note

- Customized printout
- Export of delivery note (Format Stetter-600, or other options)
- Reprint of delivery tickets

MC 150-Control Computer – Technical Data

- SIEMENS ESPRIMO PC
- 19" TFT monitor
- Windows XP™
- Printer: Tally T2340/9 printer: HP LaserJet 1320
- Profibus DP
- ASI-Bus (depending on plant model)
- Digital weigher display

MC 150-Statistics

- Material stock
- Material consumption and comparison with ideal
- Statistics for day, week, month, year, etc.
- m^3 per mix, customer, job site, truck mixer

MC 150-Raw Material Management

- Manual input of moisture content
- Input for type of material and item no.
- Tolerancing
- Silo call-up sequence
- Supplier and material management

MC 150-Basic Data

- Customers, job sites, mix designs, truck mixers

MC 150 – Available Languages

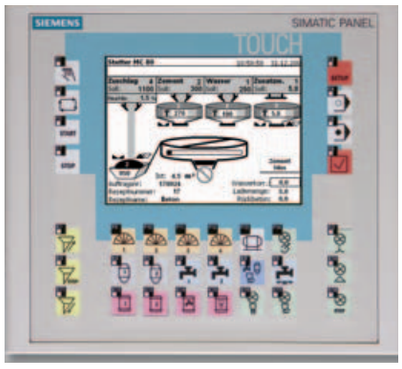
- German, English, French, Russian, Swedish, Polish, Hungarian, Romanian, Serbian, Polish, Portuguese, Spanish, Chinese, others on request

MC 150-Option

- Manual operation tableau
- Dustproof housing
- Remote service (assistance for operation and configuration via ISDN to ensure fastest possible help reaction)

MC 80/MC 90.

Dosing and Weighing Control.



MC 80/MC 90 CONTROLLER

The MC 80/MC 90 series of controllers are the starter models for concrete batching plants and work in a fully automatic mode. They are a combination of reliable and proven systems (hardware and software) at an attractive price. The main processor is a SIENENS model that ensures data processing with high performance and robust reliability.
The operating module is a SIEMENS-OP 177B that works without any moving parts (e.g. hard disk), thereby increasing even more operational reliability.
The complete cycle of concrete production – from weighing, through mixing to discharge – runs completely automatically. Optimised, self-teaching in-air compensation modules ensure a constant concrete quality from batch to batch.
Sand moisture content is metered during dosing and compensated immediately during running production.
The computer-controlled coarse/fine dosing allows a considerably higher accuracy in material flows.
Any fault occurring in the sequence is immediately indicated by a “Fault signal” on the operator’s monitor.

ANIMATED GRAPHICS FOR A CLEAR OVERVIEW

The most important parts of the batching plant (dosing flaps, weigher discharges, etc.) are shown in an animated monitor graphic.
That helps enormously in localising any component that may be in difficulty.

Protocol printer
- *Batch protocol*
- *Mix designs*
- *Operational status*

Moisture probe

MC 80/MC 90.

Technical data.

MC 80/MC 90 Input and Display Panal

- Menu-controlled for easy operation
- Dustproof switch tableau
- Touch screen

Input possibiliities:

- Mix designs (99)
- Production data
- Manual water correction
- Returned concrete

Output possibilities:

- Actual and required values
- Mixer status (graphic)
- Mixing and discharge times
- Fault display
- Silo stock levels
- Protocol printer (optional)
- Manual operation

MC 80/MC 90-Dosing Program

- Fault indicator
- Mixer double-charge inhibitor
- Automatic, self-teaching over-run correction
- Batch optimisation
- Shutoff flap monitoring (only MC 90)
- Automatic skip pre-start
- Moisture metering of two components with sand moisture correction
- Air blow-out of additive lines
- Consistency graphic on display
- Cement silo filling level meter
- Monitoring of silo stock levels

MC 80-Control
Basic configuration for:

- Batching plants up to 30 m^3/h (CP30)
- Combined binder/water weigher
- Aggregates/sand: 4 bins (skip weigher)
- Binder: 2 screws
- Additive: additive tank, 2 pumps

Others:

- Consistency meter (Ampere Meter) in display
- Optional manual run via push-buttons in cabinet door

MC 80/MC 90-Languages

- German
- English
- French
- Russian
- Spanish
- Bulgarian
- Romanian
- Polish
- Others on request

MC 80/MC 90-Material management

- Limits for coarse/fine dosing
- Manual input of aggregate moisture
- Tolerancing

MC 80/MC 90-Recipes

- Free selection of weighers
- 6 of 6 aggregates/sand
- 4 of 4 binders (incl. filler)
- 2 water
- 3 of 3 additives
- Various mix design types (concrete, mortar, preblended aggregates, slurry)
- 3-digit mix design key
- Max. batch size for mix design

MC 90-Control
Basic configuration for:

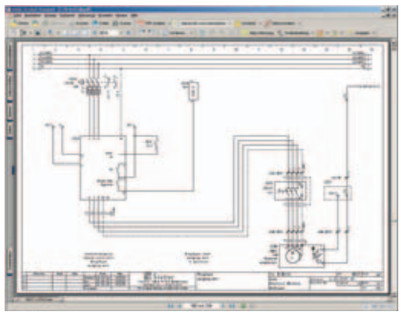
- Batching plants up to 90 m^3/h
- Aggregates/sand: M-plants max. 6 bins
  H-plants max. 6 bins
- Binder: 4 screws
- Water: 2 types
- Additive: 2-bin weigher, 4 additives

Others:

- Consistency meter (electrical power meter) in display
- Optional manual run via push-buttons in cabinet door

ELECTRICALS.

For safe operation.



HIGH-VOLTAGE CABINET

At Stetter, we develop and make our own HV modules in consideration of all of the relevant international, national and safety standards.
Circuit and current-flow diagrams are generated on our CAD system and are supplied as hard copy or in .pdf format.

CONTROL

The batching plant controller program runs independently of the main processor on its own SPS (programmable logic system). Such systems have proven their value not only in the concrete industry but also in many other industries.
The clear separation of “jobs” makes it possible to keep the systems easily “up to date” and make use of the latest technological developments.
The result is a family of hardware and software that is on the one hand reliable and robust, on the other easily extendable to future needs.
Following our concept, the main processor runs only the backbone functions of the plant. The “real-time” jobs are undertaken in the SPS controller which is easily accessible but protected inside the main switch cabinet.
Stetter MC controls use exclusively the SIEMENS S7-300 SPS processor, thereby ensuring a maximum level of quality in a state-of-the-art form and with easy exchangeability. All for the benefit of the customer in long years of plant operation.

PROFIBUS AND ASI-BUS FOR MODULAR FLEXIBILITY

We make extensive use of BUS systems not only with comply to today's requirements, but also to maintain the flexibility required for tomorrow's tasks.
The difference to other systems is that the BUS does not have each signal line running from limit switches, etc., through the whole plant and into the controller area.
The BUS registers the signal on the spot and then transmits through the main BUS line. That greatly reduces the complexity and expense of the overall plant wiring system and therefore greatly reduces the number of potential errors or faults that might occur. It also allows easy upgrading and extension to cover more tasks.
We use 2 BUS systems.
One is a Profibus-DP on the control level to connect the weigher modules and the analog/digital input/output cards.
The more robust ASI-BUS links the sensors and actuators back to the controller.
Whatever the purpose, this solution allows the optimum configuration.

SCHWING-STETTER ALWAYS CLOSE TO THE CUSTOMER.

- Parent plant
- Production subsidary
- Own/independent sales and serviec company

Subject to technical and dimensional modifications.
Photos are not binding.
The exact scope of the delivery is listed in the offer.

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