



102*i* Laboratory Tablet Press

Galenic

Direct Scale-Up

Single/Double/Triple Layer



The principal advantages at a glance - 102*i*

The innovative advantages	Your benefits
■ Galenic works under production-like conditions →	■ Direct scale-up
■ All production-relevant data is registered → → → →	■ Data can direct be applied to production presses
■ Process-oriented development press → → → → →	■ Reduced scale-up costs
■ Pitch circle and compression roll diameter identical to production presses → → → → → → → → → →	■ Transferable dwell times
■ Compacting with only a single pair of punches → →	■ Determination of singular data
■ Two and three layers can also be pressed → → →	■ Galenic techniques also applicable to double and triple rotary presses
■ Only very small quantities of pressing material are needed → → → → → → → → → → → → → → → →	■ Saving of expensive materials during pre tests
■ Manual filling possible → → → → → → → → → →	■ Very easy preparation
■ A variety of filling gear can be used → → → → →	■ Can be adapted to any Galenic or production tasks
■ Production press for clinical samples and small batches → → → → → → → → → → → → → → → →	■ Wide range of applications
■ User interface like that of production presses → →	■ User already familiar with operation



Galenic work is of the greatest importance for the entire pharmaceutical industry. Nevertheless it is just this work that must be done rapidly and with close focus, so that products can be transferred as quickly as possible from the development to the industrial production phase. The scale-up must proceed rapidly to achieve an early market presence.

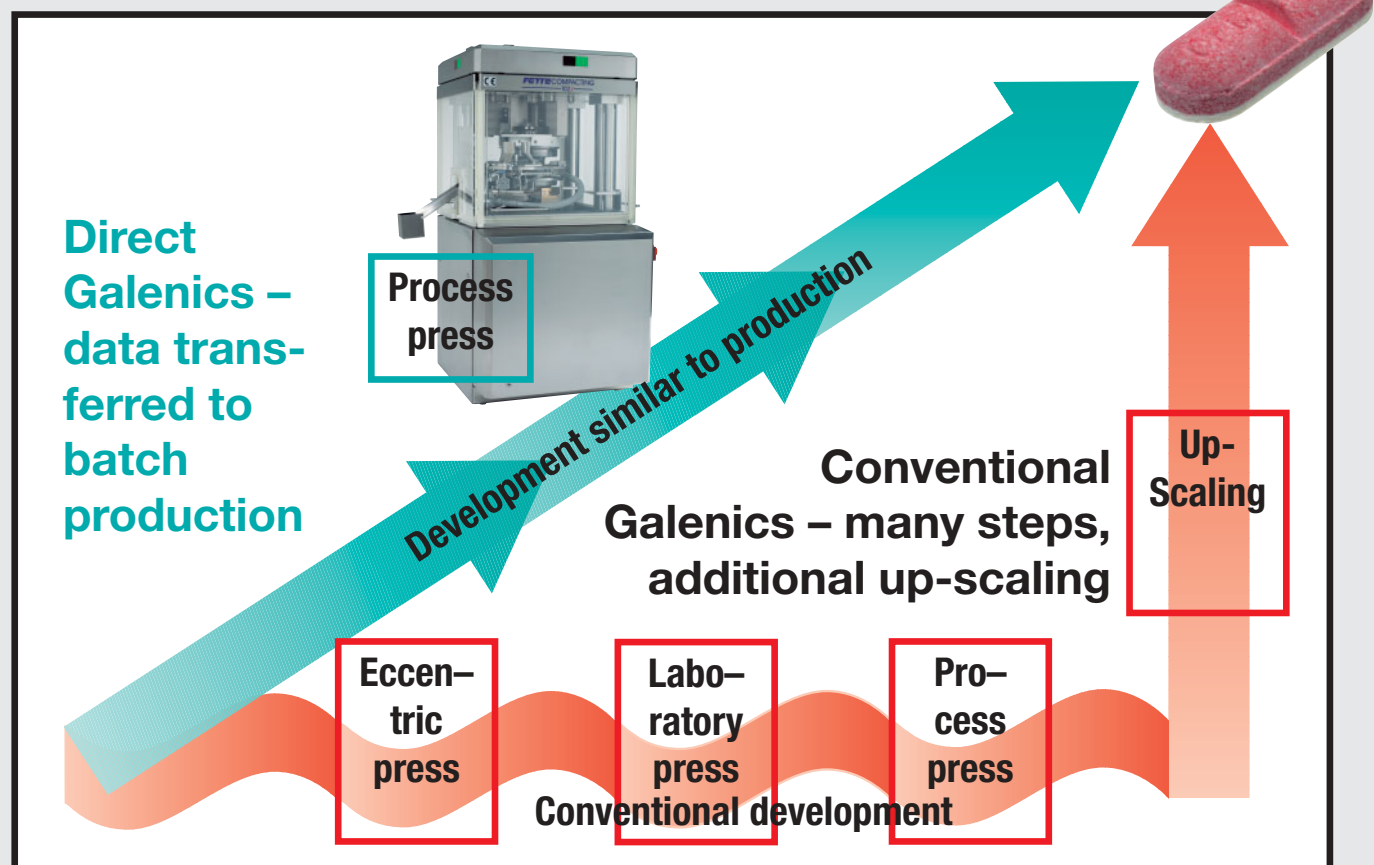
At FETTE we have recognized this problem. Our close contact with pharmaceutical companies also gives us an insight into the cost aspect. With this knowledge at the back of our minds, we have now developed a research and development press that satisfies the wishes of both developers and marketers. The 102*i* works with Galenic precision under production-like conditions, yet with foreseeable costs.

Wherever high-precision Galenic production needs to be transferred quickly and immediately to production presses, the 102*i* will now be the first choice – with the best possible results, transferable to production, and economical.



Care about health is complex. Tableting technology is our contribution. FETTE COMPACTING.

Galenic control under production-like conditions replaces scale-up - 102i



Direct Galenic on production press reduces the time to market

Data of production-like Galenic for all types of production presses

- Production-style Galenic work is oriented from the very beginning towards industrial production. It exploits the properties of the production press, and transfers the data that is determined in batch production to the highly productive rotary presses.
- Conventional Galenic work often takes classical steps, demanding a great deal of time and resources, without having the primary aim of industrial production in view from the beginning.

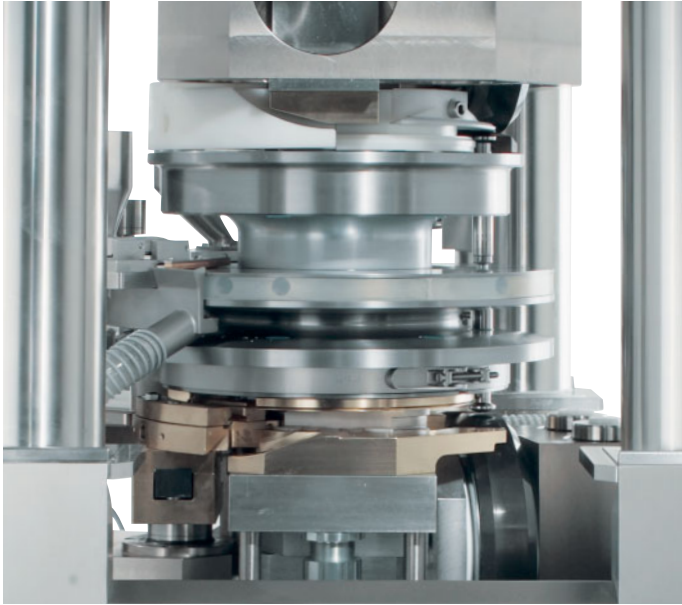
- Production-like Galenic determines data which can be adopted on all FETTE Production presses. This applies also to single, double and triple rotary presses.





A production press, designed for the particular requirements of Galenic work

- Pressing technology reduced to the function is important for Galenic scale work
 - highly economical design
- 102*i* tablet press with the functions of a production press
 - this means that data from the pressing procedures can be transferred to production presses
- 6 different turrets with between 6 and 32 punch stations
 - turrets can be used for development quantities, very small-scale production such as clinical batches and for production
- Tablet press can be selected with exchangeable die or segmented turret
 - maximum flexibility and optimum time-saving
- A variety of filling features can be chosen
 - ideally adaptable to any development or production requirements
- Access and cleaning from four sides through wide-opening window flaps
 - fast, time-saving refitting
- Special, user-friendly operating panel with integrated 15" touch-screen
 - screen-driven operation with clear structure for intuitive learning
 - a standard operating panel and wireless versions are optionally available



Production process identical to that of high-performance rotary presses

- Feeding and filling equipment of the same type can be used
 - the granulate is supplied and filled under the same conditions
- The turret has a wide pitch circle
 - high circumferential speed
- Compression roll diameter the same as that of production presses
 - identical dwell time
- Highly transferable data determined
 - fast application to production presses



Alternative reduction to extremely small quantities while nevertheless maintaining the same pressing behavior

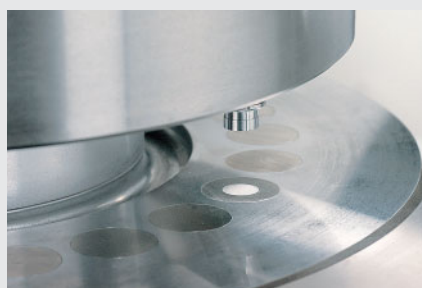
- The turret can be fitted with a single pair of punches
 - very small quantities need to be pressed
- The turret can be fully or partially fitted out, or the fitting may be mixed
 - any product quantity can be specified
- Full comparability of the data determined
 - all data relevant to development and production is obtained quickly

The special scale-up functions – 102i



Data evaluation under production-like conditions

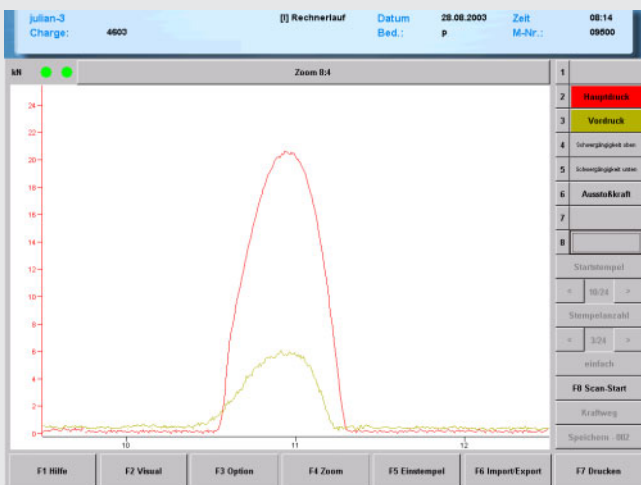
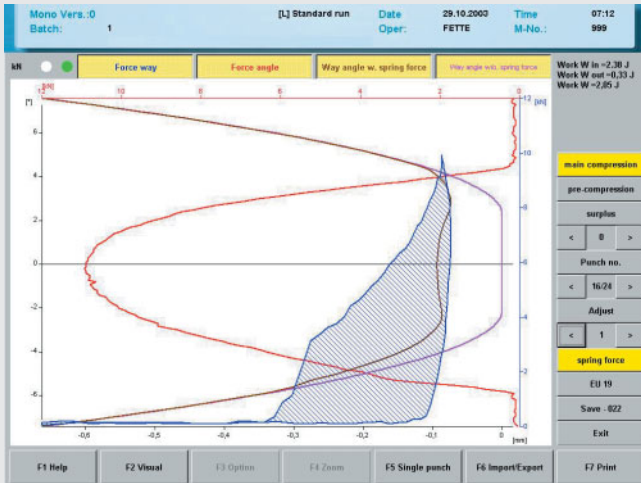
- Geometry of the compression rolls is the same on all FETTE tablet presses.
 - the path information for the vertical position is therefore always the same
- Simplified up-scaling
 - through uniform geometries across all FETTE presses
- Measurement of the main compression force the same on all FETTE machines
 - values can be adopted directly
- Patented measurement of angular position using encoder
 - unambiguous acquisition of values
- Single-tablet pressing with manual filling
 - minimum consumption of granulate
- Single-tablet pressing with all standard functions
 - determination of full data with just a single pair of punches
- If only one pair of punches is fitted, it is, optionally, possible for upper and lower punches to be fitted directly with force sensors for data acquisition
 - data is transferred over a wireless telemetry system
- The press can be fully upgraded in stages, all the way to a production press
 - high flexibility of application
- Can optionally be fitted with a sensor holder for NIR
 - for determining the quantity of content uniformity, contained in each single tablet
- Preparation of tablets for NIR calibration models under real production conditions
 - improved results from the determination of content uniformity, transferable to production



The Galenic package – 102i

Convenient Galenic control

- Up to 8 measuring channels can be incorporated, currently 5 channels are fitted: display of force progression for
 - main compression force, pre-compression force, ejection force, upper and lower punch tightness
- Display of all punches in a full rotation
 - comprehensive, punch-specific summary
- Optional punch graph and statistics for each individual punch
 - comprehensive information about each individual punch and the associated forces
- Force progressions accurately assigned to each punch by means of encoder and calculation of the horizontal and vertical punch positions
 - precisely comprehensible values
- Force-way diagram of main and pre-compression force for each punch and for each rotation of every punch
 - detailed display of values
- Calculation of the mechanical work per tablet
- Zoom function for x and y displays
 - examination of values in detail
- Evaluation tool stores all desired data from the measuring channels over a rotation in the form of a csv file
 - optimum data analysis and user-specific evaluation in customized graphs and tables that can be extended by the customer
- Optional data export and import via storage media or network
 - improved supplementary data evaluation
- Automatic encoder null position adjustment
 - easy operation
- Printing via external printer
 - all results, tables and graphs can be output in text form

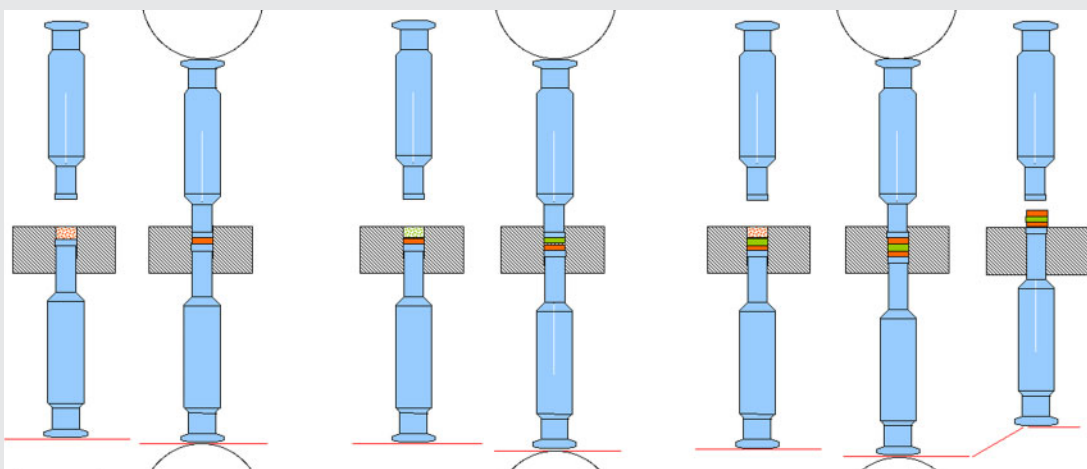


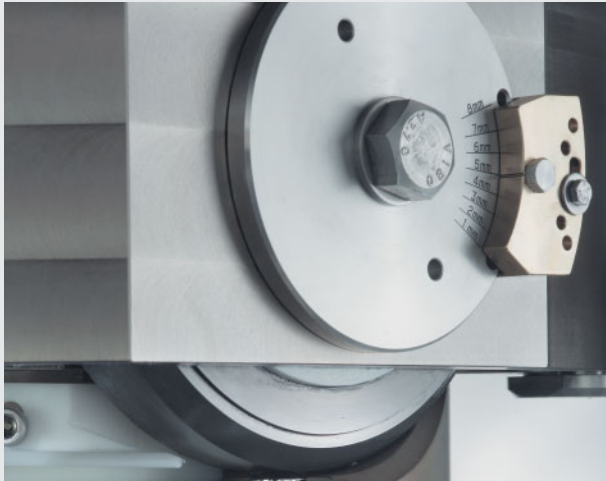
Optimized filling equipment, 1, 2 and 3-layer compression products – 102i



World-wide unique multi-layered pressing

- Optional fitting with a Galenic-Fill-O-Matic, with the proven three-chamber system, reducing volume by up to 50%
 - automatically press small quantities
- Fill-O-Matic with sealing segments that can be changed without tools for different tablet diameters
 - easier refitting
 - minimized product loss
- Pressing double and triple layer tablets with automatically rotating filling wheel
 - small quantities can be pressed automatically
 - the only equipment in the world offering this feature
- On multi-layer tablets, the ejection cam is automatically positioned before the last pressing procedure
 - complete procedure for multi-layer tablets patented
 - automatic ejection, even of multi-layer tablets
- Single-tablet pressing with manual filling
 - very small quantities can be pressed under conditions similar to production





Proven and reliable technology, integrated control – 102*i*

Standards and optional fitting adopted from production presses

- Adjustment of main pressure via an eccentric unit above and a servo motor below
 - easy adjustment
- Upper pre-compression set through manually adjusted cam segment
 - improved tablet properties
 - visible setting
- Optional pre-compression station for a development process identical to production
- Optional dust extraction unit
- Optional tablet outlet with reject gate
- Optional lubrication pump with drive
- Can be fitted with almost all features of a 1200*i*
 - can be upgraded to a production press
- Optional Fill-O-Matic with proven three-chamber system
 - easily dismantled
 - easily cleaned
 - exchangeable filling, dosing and distribution wheels
 - loss of product minimized through exchangeable sealing segments
 - optionally made of stainless steel (AISI 316) and washable
- Optional punch saving system
 - protects punch from damage

Reliable integrated control unit

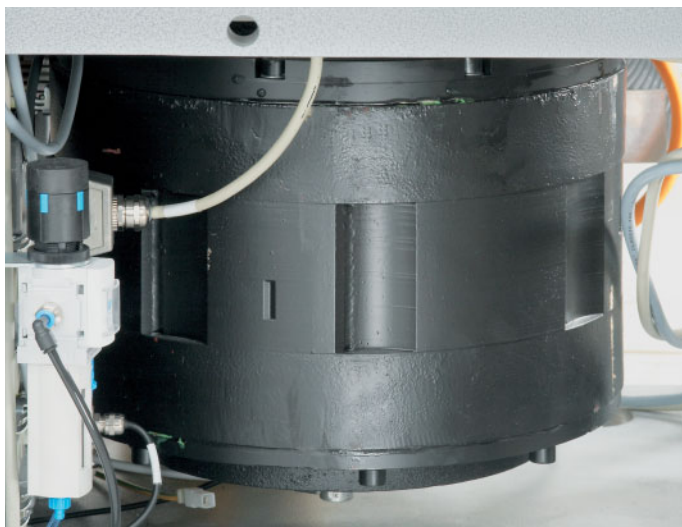
- Hermetically sealed switch cabinet integrated into the press, controller in the press
 - no extra switch cabinet required
 - very low space requirement
 - dust-proof setup, GMP-conform
- Direct control of all motor driven adjustments on the press
 - fast reaction
- Highly sensitive measurement points
 - extremely precise data acquisition
 - high-speed data transfer to the evaluation unit and operator interface via TCP/IP

The Structure – 102*i*



Modular mechanical construction

- Complete basis of this press match with a serial production press
 - everything needed for fitting as a 1200*i* is provided
- Optimized mechanical strength
 - calculated with FEM
- Ease of access
 - large window flaps on all four sides
- Precision turret mounting
 - exchangeable turret principle retained for dies and segmented turret
- Encapsulated compression area
 - reduced noise and dust
- Modular design with separation into four sections
 - head section
 - compression compartment
 - middle section
 - drive area
- Smooth surfaces
 - easily cleaned
- A height proportion of components can be exchanged with those from other FETTE presses
 - minimization of spare part stocks
 - reduction of spare part costs



Torque direct drive

- Torque drive assembled directly on the drive shaft
 - no gear
 - maintenance-free
- High rotation speeds possible
 - permits short dwell times, as in production, to be simulated
- Power consumption reduced up to 50%
- Optional, integrated water cooling system for extreme production requirements
- Reduced noise emission
- Low space requirement
- Economical operation
- Very compact construction

Number of Stations		6	6	6	6	8 + 8	8 + 8	32	30	24	20	20	30	24
Punch type		EU 19 B	EU1" D	TSM 19 (IPT 19) B	TSM 1" (IPT 1") D	EU 19/EU1" B/D	TSM19/TSM1" (IPT 19/IPT 1") B/D	EU 19 TSM 19 BBS	EU 19 TSM 19 BB	EU 19 TSM 19 B	EU1" TSM 1" D	EU1"-441 D	EU 19 TSM 19 Segment	EU1"-441 TSM 1" Segment
Tablet output/h	min. max.	Laboratory operation	Laboratory operation	Laboratory operation	Laboratory operation	Laboratory operation	Laboratory operation	48,000 288,000	45,000 270,000	36,000 216,000	30,000 120,000	30,000 120,000	45,000 270,000	36,000 144,000
Max. compression force	kN	80	80	80	80	80	80	80*	80	80	80	80	80	80
Max. tablet diameter	mm	16	25	16	25	16/25	16/25	11	13	16	25	25	18	25
Max. filling depth	mm	18	22	18	22	18/22	18/22	18	18	18	18 (22)	18 (22)	18	18 (22)
Max. tablet thickness	mm	8.5	8.5 (11)	8.5	8.5 (11)	8.5 (11)	8.5 (11)	8.5	8.5	8.5	8.5 (11)	8.5 (11)	8.5	8.5 (11)
Pitch circle diameter	mm	280	280	280	280	280	280	280	280	280	280	280	280	280
Turret rotation speed	min ⁻¹	25-150	25-100	25-150	25-100	25-150/100	25-150/100	25-150	25-150	25-150	25-100	25-100	25-150	25-100
Die diameter	mm	30.16	38.1	30.16	38.1	30.16/38.1	30.16/38.1	22	24	30.16	38.1	38.1	-	-
Die height	mm	22,22	23.8	22.22	23.8	22.22/23.8	22.22/23.8	22.22	22.22	22.22	23.8	23.8	-	-
Punch shaft diameter	mm	19	25.35	19	25.35	19/25.35	19/25.35	19	19	19	25.35	25.35	19	25.35
Punch length	mm	133.6	133.6	133.35	133.35	133.6	133.35	133.6/133.35	133.6/133.35	133.6/133.35	133.6/133.35	133.6	133.6/133.35	133.6/133.35
Upper punch pen. depth	mm	1-4 (8)	1-4 (8)	1-4 (8)	1-4 (8)	1-4 (8)	1-4 (8)	1-4 (8)	1-4 (8)	1-4 (8)	1-4 (8)	1-4 (8)	1-4 (8)	1-4 (8)
Weights		Tablet press approx. 2500 kg - Operator terminal max. 100 kg												
Power supply data		Operating voltage 400-480V, 3Ph, 50/60Hz, Total fusing 35 A, Power consumption 4,5 kW												

*Tools only permit up to 70 kN

Because of the technical progress we reserve the right of alteration.

**Technical data –
102!**

Floor plan -
102i

