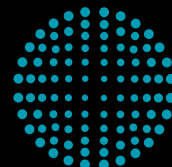


Next Generation Tableting Technology

# FEE Series



**CONTAINMENT  
GUARD**



**FETTE  
COMPACTING**  
be efficient

# How do you decide...

**... when you want your tablet production facility's equipment to be future-proof?  
Putting it another way: do you already know all the demands that will be placed on  
your production department in the next few years?**

**Expiring patent protection for blockbuster medicines, shorter product life-cycles,  
rocketing growth in the new markets, a highly regulated environment, and rising  
cost pressures – the pharmaceutical industry has many challenges in front of it.  
Succeeding over international competition means that companies must produce  
more flexibly, more quickly and above all more cheaply than before. In one word:  
hyper-efficiently.**

**The machines in the FE Series are our answer to these challenges. Thanks to  
the Fette Compacting TRI.EASY design, they combine maximum performance  
with uniquely easy operation, setting high standards for tableting efficiency.**

**Discover the next generation of tableting technology.**



reddot design award  
winner 2013



product  
design award  
2013



German  
Design Award  
WINNER 2014

## FE35 – The fastest for product changeover

- + Only 10 components have to be dismantled toolless to replace the turret
- + Plug-and-play connection for process equipment
- + Flexible and toolless vacuum cleaning system for short cleaning cycles
- + Unique filling system for easy, reliable feeding, even of demanding product mixtures

## Innovative Features of the FE Series

- + Innovative filling system for easy, reliable feeding, even of demanding product blends
- + Internal tablet discharge for guaranteed uninterrupted production
- + Identical compression rollers for easy handling
- + 360 degree accessibility
- + Powerful modern direct torque-drive for zero-maintenance operation
- + Electrical cabinet optionally external or internal for maximum flexibility
- + Electrical cabinet with innovative cooling design
- + Faster, easier turret changeover including cams and punches
- + Coded tablet scraper
- + One central multi-function connector for oil, air and electricity
- + All product contact components are made of stainless steel, cleaning is fast and efficient
- + 19" "touch only" screen for maximum overview
- + Win10® embedded operating system
- + Visual 8 operating software from Fette Compacting



reddot design award  
winner 2012

## FE55 – The standard for efficiency in tableting

- + With up to 50 percent higher production output thanks to unique ratio of punch stations to footprint (up to 87 punch stations on 1.6 m<sup>2</sup>)
- + Separate lubrication systems for punch head and shaft and a closed cam system reduce cleaning work
- + The only machine of this size for the production for single- and bi-layer tablets as well as offering the possibility of direct compression
- + Pneumatically adjustable compression roller for the first layer

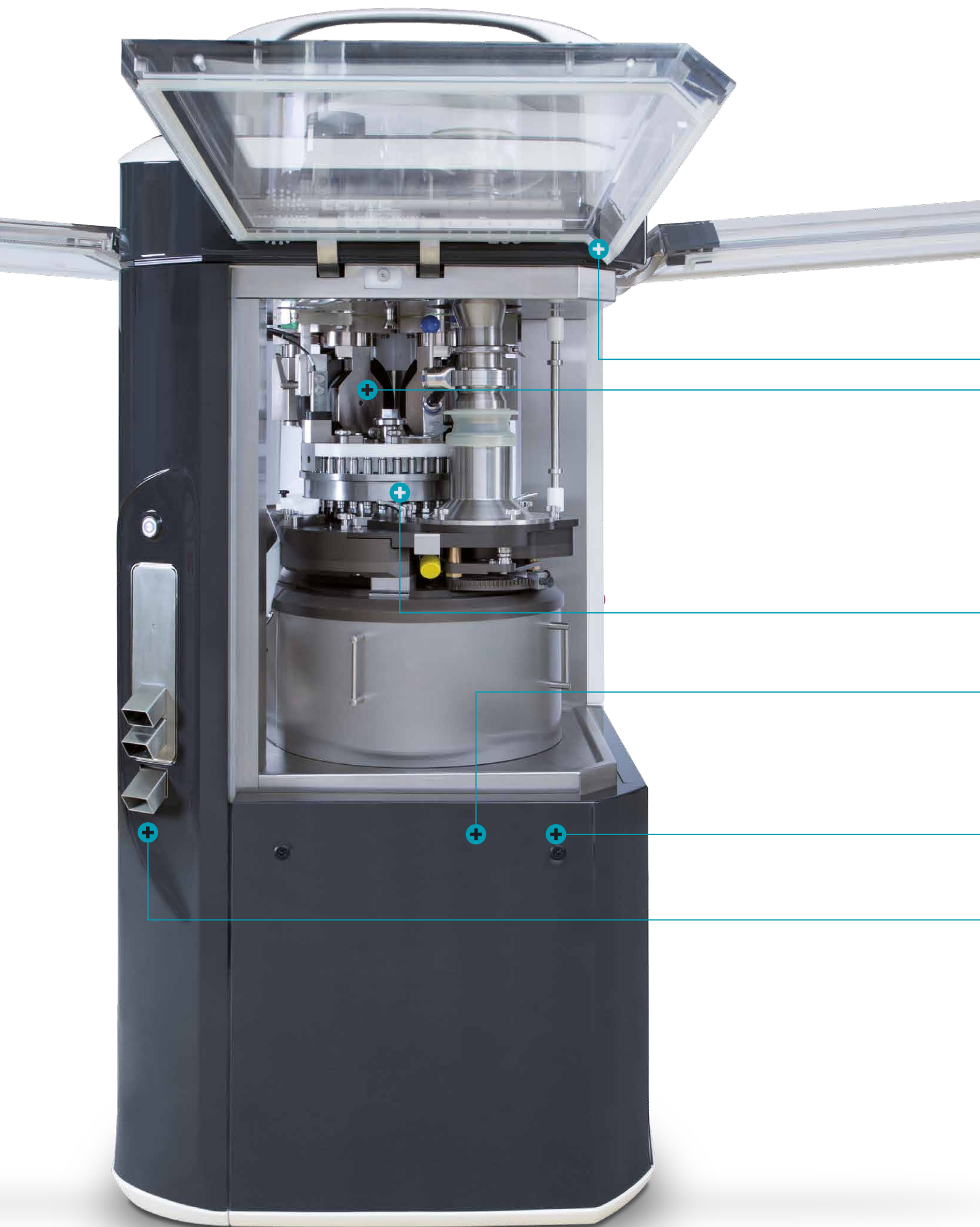


reddot award 2015  
winner



## FE75 – The standard for the production of large batches

- + Up to 166 % longer at dwell time pressure
- + The only double-sided rotary tablet press of its size and class for the production of single- and bi-layer tablets, as well as the capacity for direct compression
- + Innovativ patented method for easy, fast turret exchange
- + Closed cam system
- + Compression rollers can be moved quickly to a parking position for easy turret exchange





#### Innovative compression stations

- + Smooth-running compression rollers for ultra-simple handling
- + Compression rollers can be moved quickly to a parking position for easy turret exchange
- + Extremely easy load cell exchange during product changeovers

#### Machine design

- + Housing of FDA-certified, high-performance plastic
- + Geometrically optimized surfaces for the easiest possible handling and fast cleaning
- + All product contact parts are made of stainless steel or FDA/GMP certified materials
- + 360 degree accessibility
- + Window flaps can be opened without disconnecting Process Equipment

#### Innovative turrets

- + Faster, easier turret changeover including cams and punches
- + Segments permit rapid refitting
- + Coded tablet scraper
- + Coded filling cam detection
- + One central, multi-function connector for oil, air and electricity
- + Flexible use also of segment or die turrets

#### Modern Torque-drive

- + Powerful, modern, direct torque drive
- + Zero-maintenance and energy-efficient
- + Electrical cabinet can be integrated or separated for maximum flexibility
- + Power and control sections are separated
- + Electrical cabinet with innovative cooling design
- + All Process Equipment and machine connections on a single panel

- + Dust-proof and hermetically-sealed electrical cabinet – therefore no contact with ambient air

#### Unique tablet discharge

- + Easy handling
- + Fast, reliable tablet sorting
- + Minimum space requirement thanks to tablet discharge through the column
- + 360 degree accessibility
- + Compact unit without cables or hoses
- + Dust-proof design
- + Since all product contact parts are made of stainless steel, cleaning is fast and efficient





### Innovative compression stations

- + Smooth-running compression rollers for ultra-simple handling
- + Three compression rollers for the ultimate flexibility
- + Single, direct compression and bi-layer compression
- + Direct compressing using a third compression roller
- + Bi-layer tableting with identical compression rollers and filling devices
- + 83 % longer compression dwell time in combination with FS19® punches
- + Patented system allows sampling of the first layer in less than four seconds during production
- + Compression rollers can be moved quickly to a parking position for easy turret exchange
- + Extremely easy load cell exchange during product changeovers

### Machine design

- + Housing made of FDA-certified high-performance polymer
- + Optimal geometric surfaces for easy handling and fast cleaning
- + All product contact parts are made of stainless steel or FDA/GMP certified materials
- + 360 degree accessibility
- + Window flaps can be opened without disconnecting Process Equipment

- + Dust-proof and hermetically-sealed electrical cabinet – therefore no contact with ambient air

### Unique tablet discharge

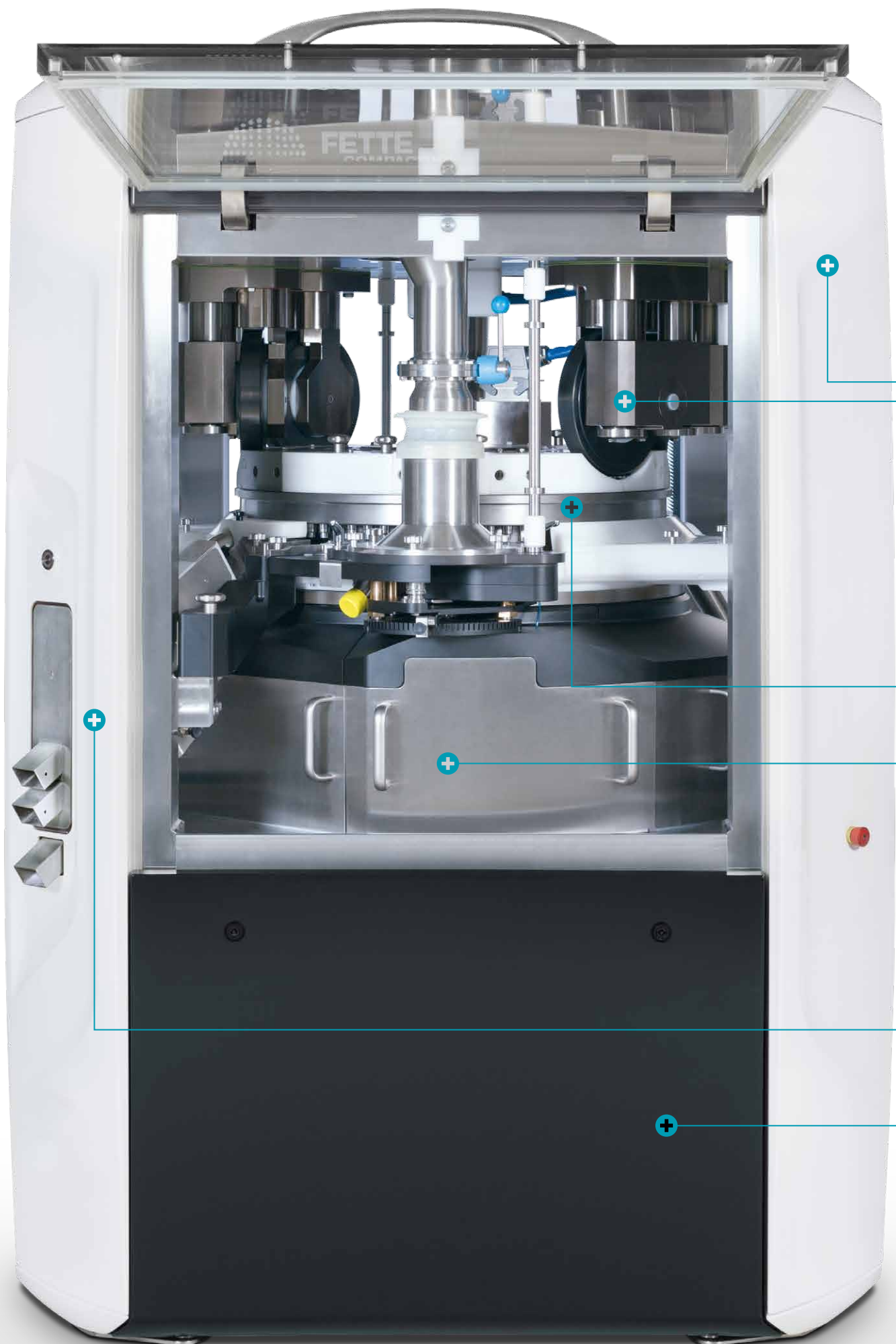
- + Easy operation
- + Fast and safe tablet sorting and sampling for maximum product security
- + Significantly less floorspace thanks to innovative tablet discharge through the column
- + 360 degree accessibility
- + Compact unit without cables or hoses
- + Dust-proof design
- + All product contact parts are made of stainless steel, cleaning is fast and efficient

### Modern Torque-drive

- + High-performance, direct torque drive
- + Maintenance-free and energy-efficient
- + Alternatively external or integrated electrical cabinet for maximum flexibility
- + Power and control sections are separate
- + Electrical cabinet with innovative cooling concept
- + All Process Equipment and machine connections on a single panel

### Innovative turret

- + Unique ratio of punch count to footprint guarantees maximum flexibility
- + Compression rollers can be driven into parking position for easy turret change
- + Turret options for all applications
- + Easy turret exchange with cams and segments
- + Fast format changeover thanks to segments installed
- + Coded tablet scraper
- + Turret featuring coding ring for avoiding assembly errors
- + One central, multi-functional connector for oil, air and electricity
- + Flexible use also of segment or die turrets





### Innovative compression stations

- + Smooth-running compression rollers for ultra-simple handling
- + Four identical compression rollers
- + Single, direct compression and bi-layer compression
- + Direct compression with intermediate pressure of the compression stations 2 and 3
- + Compression with identical compression rollers and filling devices

- + Up to 166 % more dwell time utilizing FS19® punches
- + Patented system allows sampling of the first layer in less than four seconds during production
- + Compression rollers can be moved quickly to a parking position for easy turret exchange
- + Extremely easy load cell exchange during product changeovers

### Machine Design

- + Housing of FDA-certified, high-performance polymer
- + Geometrically optimized surfaces for the easiest possible handling and fast cleaning
- + All product contact parts are made of stainless steel or FDA/GMP certified materials
- + Process Equipment Interface
- + Window flaps can be opened without disconnecting process equipment

### Modern Torque-drive

- + High-performance torque direct drive
- + Maintenance-free and energy-efficient
- + External and integrated electrical cabinet for maximum flexibility
- + Power and control sections are separate
- + Electrical cabinet with innovative cooling concept
- + All process equipment and machine connections on a single panel

### Innovative turrets

- + Patented turret changeover
- + With up to 115 punch stations in a footprint under 2 m<sup>2</sup>
- + Turret options for all applications
- + Easy turret exchange with cams and punches installed
- + Turret featuring coding ring for avoiding assembly errors
- + Fast format changeover thanks to segments
- + Coded tablet scraper
- + One central, multi-functional connector for oil, air, and electricity
- + Patented pneumatic product scraper
- + Separate lubrication systems for punch head and shaft and a closed cam system reduce cleaning work
- + Flexible use also of segment or die turrets

### Unique tablet discharge

- + Easy operation
- + Significantly less floorspace thanks to novel tablet discharge through the column
- + 360 degree accessibility
- + Compact unit for swift and fast cleaning
- + Dust-proof design
- + Innovative and safe tablet sorting and sampling for maximum product security
- + Compact unit without cables or hoses
- + All product contact parts are made of stainless steel

- + Dust-proof and hermetically-sealed electrical cabinet – therefore no contact with ambient air

# Optional Containment Package



Maximum operative protection is the key feature of Fette Compacting's containment concept. The need for the highest possible operative safety during tableting can only be achieved through the right technological solutions and tablet manufacture that is largely automated. A tablet press has to compress powders and granulates securely and efficiently.

The tableting process is fully automated. The containment is never interrupted – from filling the machine right through to the removal of the tablets. In the event that the machine stops it must be possible for the operative to access the tablet press manually from all sides without breaking the containment.

Glove ports and rapid transfer ports in window flaps are the most important techniques for achieving this. The containment system from Fette Compacting has been developed for maximum operative safety and system security. All the glove ports and window flaps are linked into the safety control system, from where they are monitored. Incorrect operation is almost impossible.

## 1 Product feed through a containment flap system

- + Receiving frame for decoupling vibrations from the product feed and the flap valve
- + HEPA H13 supply air filter
- + Pressure sensor for continuous, real-time monitoring of the positive pressure for maximum safety
- + Sensor-monitored, switchable vacuum system for preliminary manual cleaning by means of a hand vacuum hose and standard vacuum extraction for production operation

## 2 Compression chamber optimally designed for cleaning

- + Reduced dust exposure through optimum compression chamber design
- + Maximum operative protection
- + No dust outside the machine
- + All parameters adjustable from the HMI
- + The compression chamber is dust-proof

## 3 Rapid Transfer Port

- + The rapid transfer port (RTP) allows material to be introduced to and removed from a containment system
- + Tools, punches and filling cams can be introduced under containment conditions

## 4 Glove ports

- + Safety sensor in every glove port for maximum operative safety
- + Ergonomic design
- + The whole of the interior of the compression chamber can be reached
- + Tools and/or filling cams can be introduced under containment conditions

## 5 New window flaps

- + Double safety barrier system
- + Window flap sensors for opening, closing and pneumatically locking the window flaps
- + The individual window flaps are monitored, and their status displayed, at the HMI



FE55 with optional  
Containment Package



FE75 with optional  
Containment Package

# Fette Compacting HMI – Easy and safe operation guaranteed



## HMI software to support the operation

New Visual 8 operating software from Fette Compacting

- + New 19" "Touch Only" machine operation
- + Country-specific keyboard layouts possible, unique tactile feedback
- + Touch sensitive keys for start, stop and special functions with feedback for easy operation
- + Ultra Vision screen display for maximum contrast even in difficult lighting conditions
- + Microsoft Windows embedded operating system, future-proof operating system
- + SQL Server database, Real-time intelligence
- + Dust-tight USB port, no mechanical drives
- + All surfaces easy to clean, no ventilation slots or openings, ergonomic operator height

## FEATURES

- + Clear process graphics showing all necessary parameters
- + New Visual 8 operating software
- + Individually configurable parameter lists
- + New 19" "Touch Only" machine operation
- + Terminal made of FDA-certified high-performance polymer
- + HMI and software identical for the entire FE Series

## BENEFITS

- + Easy, intuitive operation through self-explanatory pictograms
- + Direct access to Fette Compacting presses
- + Fast, easy machine operation
- + Country specific keyboard layouts possible
- + Smooth, easily cleaned surfaces
- + Intuitive operation of the FE Series for the user



FE35								
Segments (S) / Dies (D)		S	S	S	S	D	D	D
Number of punch stations		51	33	27	24	35	28	23
Punch type		FS12®	FS19®/ EU19 FS®/ EU19 TSM19	EU1" TSM1"	EU1"-441	FS19®/ EU19 FS®/ EU19 TSM19 BB	FS19®/ EU19 FS®/ EU19 TSM19 B	EU1"/ EU1"-441 TSM1"  D
Tablet output units/h	min.	45,900	29,700	24,300	21,600	31,500	25,200	20,700
	max.	367,200	237,600	145,800	129,600	252,000	201,600	124,200
Max. compression force 1*	kN	34	80	80	80	80	80	80
Max. compression force 2*	kN	34	80	80	80	80	80	80
Max. tablet diameter	mm	11	18	25	25	18	18	25
Max. filling depth**	mm	20	20	20	20	18	18	18
Pitch circle diameter	mm	325	325	325	325	325	325	325
Turret rotation speed min.	min <sup>-1</sup>	15	15	15	15	15	15	15
	max.	120	120	90	90	120	120	90
Segment / Die height	mm	25	25	25	25	22.225	22.225	23.8
Die diameter	mm					24	30.16	38.1
Punch shaft diameter	mm	12	19	25.35	25.35	19	19	25.35
Punch length Upper/lower punch	mm	133.6	133.6 (133.35)	133.6 (133.35)	133.6	133.6 (133.35)	133.6 (133.35)	133.6 (133.35)
Upper punch insertion depth	mm	1–4	1–4	1–4	1–4	1–4	1–4	1–4
Dimensions	mm	1,026 × 1,042 × 2,043 without integrated switch cabinet 1,336 × 1,042 × 2,043 with integrated switch cabinet						
Weight		Tablet press 2,800–3,000 kg, operating terminal 100 kg, switch cabinet 350 kg						
Electrical supply parameters		Operating voltage 400–480 V, 50/60Hz, power consumption 14 kW						

Theoretical values or technical limits: These can vary in practice, according to product and application.

Tablet thickness is a size dependent on product and can strongly vary.

\* limited by punch properties

\*\* special filling depth available on request

# Technical Data

FE55							
Segments (S) / Dies (M)		S	S	S	D	D	D
Number of punch stations		87	60	45	58	47	39
Punch type		FS12®	FS19®/ EU19 FS®/ EU19 TSM19	EU1"/ EU1"-441 TSM1"	FS19®/ EU19 FS®/ EU19 TSM19 BB	FS19®/ EU19 FS®/ EU19 TSM19 B	EU1" EU1"-441 TSM1"  D
Tablet output units/h	min.	78,300	54,000	40,500	52,200	42,300	35,100
	max.	626,400	432,000	243,000	417,600	338,400	210,600
Max. compression force 1*	kN	34	100	100	100	100	100
Max. compression force 2*	kN	34	100	100	100	100	100
Max. compression force 3*	kN	34	100	100	100	100	100
Max. tablet diameter	mm	11	18	25	18	18	25
Max. filling depth 1st layer**	mm	20	20	20	18	18	18
2nd layer	mm	8	8	8	8	8	8
Pitch circle diameter	mm	550	550	550	550	550	550
Turret rotation speed min.	min <sup>-1</sup>	15	15	15	15	15	15
	max.	120	120	90	120	120	90
Segment / Die height	mm	25	25	25	22.225	22.225	23.8
Die diameter	mm				22	30.16	38.1
Punch shaft diameter	mm	12	19	25.35	19	19	25.35
Punch length Upper/lower punch	mm	133.6	133.6 (133.35)	133.6 (133.35)	133.6 (133.35)	133.6 (133.35)	133.6 (133.35)
Upper punch insertion depth	mm	1–4 (8***)	1–4 (8***)	1–4 (8***)	1–4 (8**)	1–4 (8**)	1–4 (8**)
Dimensions	mm	1,306 × 1,306 × 2,048 without integrated switch cabinet 1,306 × 1,626 × 2,048 with integrated switch cabinet					
Weight		Tablet press 3,700–3,900 kg, operating terminal 100 kg, switch cabinet 350 kg					
Electrical supply parameters		Operating voltage 400–480 V, 50/60Hz, power consumption 16 kW					

Theoretical values or technical limits: These can vary in practice, according to product and application.  
Tablet thickness is a size dependent on product and can strongly vary.  
\* limited by punch properties  
\*\* special filling depth available on request  
\*\*\* 2-layer-operation



FE75							
Segments (S) / Dies (D)		S	S	S	D	D	D
Number of punch stations		115	75	55	75	63	51
Punch type		FS12®	FS19® EU19 FS® EU19 TSM19	EU1" EU1"-441 TSM1"	FS19® EU19 FS® EU19 TSM19 BB	FS19® EU19 B	EU1" EU1"-441 TSM1" D
Tablet output units/h	min.	207,000	135,000	99,000	135,000	113,400	91,800
	max.	1,656,000	1,080,000	594,000	1,080,000	907,200	550,800
Max. compression force 1*	kN	34	100	100	100	100	100
Max. compression force 2*	kN	34	100	100	100	100	100
Max. compression force 3*	kN	34	100	100	100	100	100
Max. compression force 4*	kN	34	100	100	100	100	100
Max. tablet diameter	mm	11	18	25	18	18	25
Max. filling depth 1st layer**	mm	20	20	20	18	18	18
2nd layer	mm	8	8	8	8	8	8
Pitch circle diameter	mm	710	710	710	710	710	710
Turret rotation speed min.	min <sup>-1</sup>	15	15	15	15	15	15
max.	min <sup>-1</sup>	120	120	90	120	120	90
Segment / Die height	mm	25	25	25	22.225	30.16	23.8
Die diameter	mm				22	30.16	38.1
Punch shaft diameter	mm	12	19	25.35	19	19	25.35
Punch length Upper/lower punch	mm	133.6	133.6 (133.35)	133.6 (133.35)	133.35	133.6 (133.35)	133.6
Upper punch insertion depth	mm	1–4 (8***)	1–4 (8***)	1–4 (8***)			
Dimensions	mm	1,463 × 1,463 × 2,046 without integrated switch cabinet 1,463 × 1,778 × 2,046 with integrated switch cabinet					
Weight		Tablet press 5,300–5,500 kg, operating terminal 100 kg, switch cabinet 350 kg					
Electrical supply parameters		Operating voltage 400–480 V, 50/60 Hz, power consumption 16 kW					

Theoretical values or technical limits: These can vary in practice, according to product and application.

Tablet thickness is a size dependent on product and can strongly vary.

\* limited by punch properties

\*\* special filling depth available on request

\*\*\* 2-layer-operation

# SmartInterface – Real-time data, at all times, and independent of location



## Machine monitoring in real time

The SmartInterface is a server based application enabling the monitoring of tablet press production parameters and HMI settings via mobile devices (Laptop, Tablet, Smartphone etc.). The user can obtain an overview of the current production and machine status **at any time and independent of location**, and download data and protocols, for example. This helps everyone involved in production to maintain full control of the manufacturing process. Operators can react faster to deviations as they are informed of the current status at all times. The application is available on all standard web browsers via the company's network. Accordingly, only the user's own IT security guidelines apply.

## KEY BENEFITS

- + Retrieve data at any time and from anywhere, even in editable formats such as Excel, without blocking the machine or impacting production
- + Process acceleration through easy and fast access to production parameters and HMI settings
- + Data update <1s (dependent on the customer network and capacity utilization)
- + Less ways to the machine and personal protective equipment required
- + Access subject to the customer's IT security guidelines
- + Access rights also based on HMI access rights
- + No validation-relevant change in case of a later upgrade



## Process graphic

The process graphic offers in-house monitoring of production parameters in real time.

## Monitoring all process data

The monitoring functions can be used to record and export all process values and utilize them for analyses.

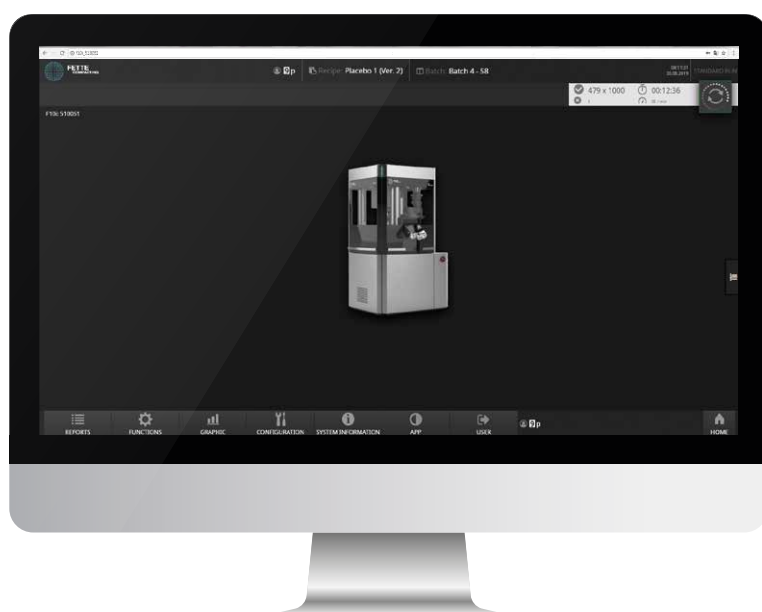
## KPI dashboard

The KPI dashboard provides an overview of the current production and machine status.



## TECHNICAL REQUIREMENTS

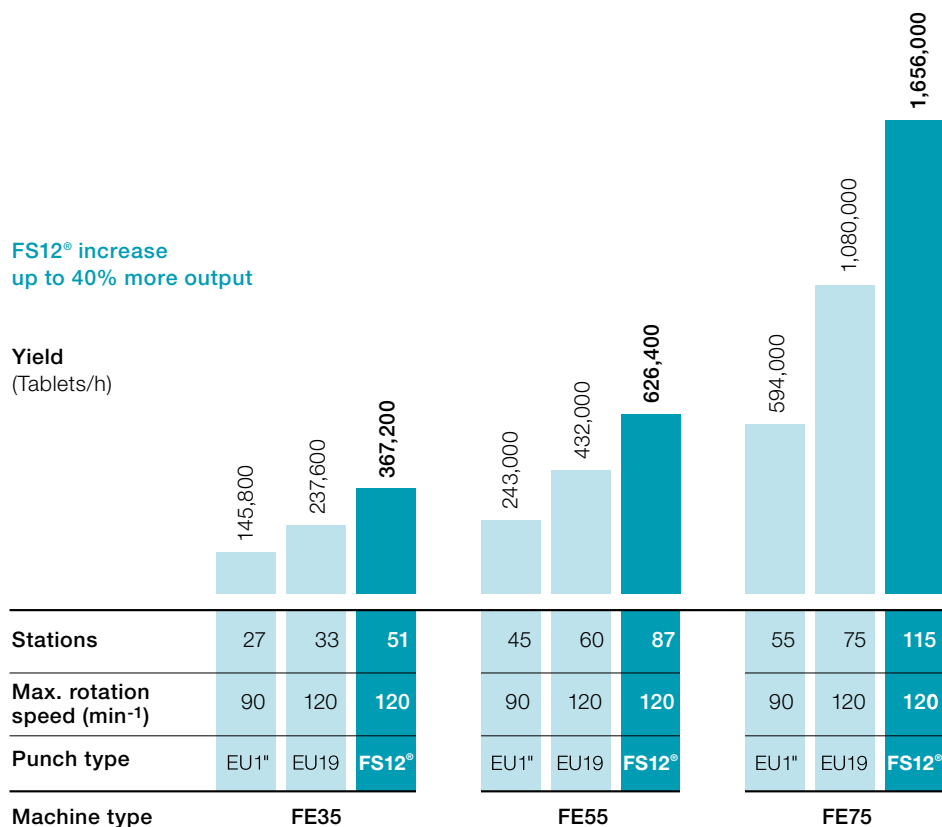
- + Compatible machine types with HMI software level Visual 7 or higher (FE Series, new i Series, FE CPS)
- + FE Series: Using or upgrading to an APC910 unit enables full functionality and performance
- + FE Series: When using an APC810 unit test operation is possible
- + The machine must be integrated in an IT network (TCP/IP)
- + The mobile device must be within the machine network or communication (e.g. via network routes) must be possible
- + The appropriate firewall rules must be entered connection specific



# Pmax<sup>®</sup> turret – more production capacity without higher investments

FS12<sup>®</sup> increase  
up to 40% more output

Yield  
(Tablets/h)



## FEATURES

- + Optimized punch head
- + Higher number of punches per compression
- + More punches at the same time under the compression station
- + No further machine investments necessary
- + Production parameters and characteristics stay unchanged
- + Single tablet rejection of bad tablets
- + Single compression force measurement even with small tablet diameters

## BENEFITS

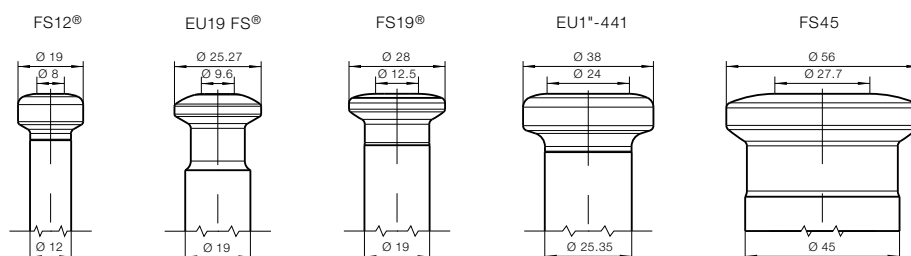
- + Long dwell times
- + Up to 40 % higher output
- + Smooth machine running
- + Higher return on investment
- + No further machine adjustments necessary
- + 100 % quality assurance through in-process-control
- + Approved alternative to multi-tip tooling

Whether round tablets, special shapes, relief moldings, concavities or break lines – Fette Compacting can handle the full range of customer requirements. To ensure maximum output and flexibility, we offer punches in all sizes and types. For customers with special demands on their production, we particularly recommend the FS® products.

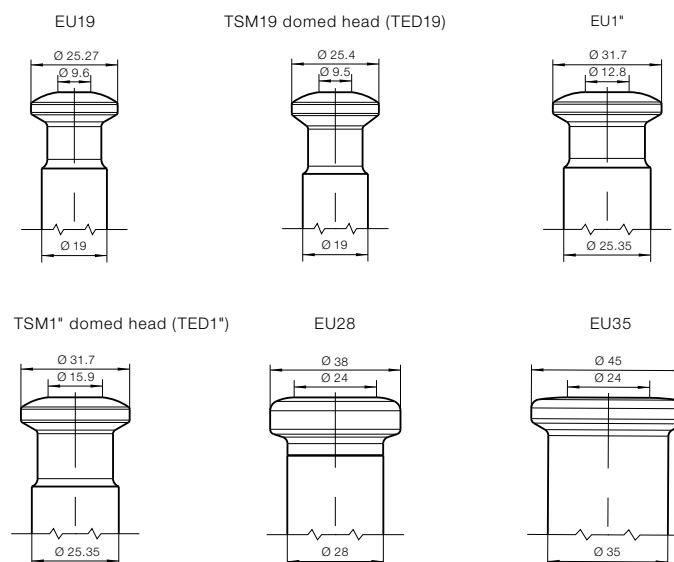
It is not just the diameter of the contact area that is critical; but furthermore the optimised transition geometries into the head radius which are featured by our FS® technology transmit the compression forces in an optimum way.

## Fette Compacting – Punch head types

### FS Technology®



### Standard



All measurements are in mm

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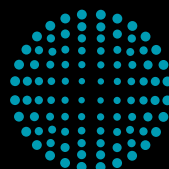
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**FETTE**  
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be efficient