WELCOME TO THE NEXT GENERATION OF TABLET COMPRESSION.

See the NexGen Press® 45 at ACHEMA 2024.

ADD BETTER
Resource efficient solution

GEA Engineering for a better world.

GEA.com

STEP INTO THE ERA OF ADVANCED TABLET MANUFACTURING.

Designed to align with GEA's initiative to "drive product innovation with digitalization and a focus on the environment," the NexGen Press® range represents the future of tablet compression for the pharmaceutical industry.

GEA Pharma & Healthcare has long been recognized as a trusted supplier of cutting-edge tableting technology, with innovations that include

- EXTENDED DWELL TIMES
- a unique DUAL CONTROL system that independently and simultaneously measures and regulates both tablet weight and hardness
- the patented Exchangeable Compression Module (ECM) for rapid changeovers — with Wash Offline capability for high containment applications.

Now, GEA experts have combined the very best aspects of the MODUL and PERFORMA tablet compression lines into a new range: NexGen Press®.

Every aspect of each machine has been deconstructed, analyzed, upgraded and reassembled to represent the best-in-class solution for the widest range of tableting applications.

THE ECM CONCEPT: FAST CHANGEOVERS.

Based on more than 20 years of industry expertise, the patented FAST CHANGEOVER Exchangeable Compression Module (FCO ECM) provides at-source containment and has at least a 50% smaller product-contact area compared with other models on the market.

Much more than a conventional exchangeable turret, the ECM is a sealed unit that's isolated from the remainder of the tablet press and not only contains the turret and compression tooling, but all the press's product-contact parts as well. At the end of a production run, the ECM can be removed from the machine in just 15 minutes. A duplicate, clean ECM can then be installed in the machine in another 15 minutes.

The ECM facilitates fast changeovers and enhanced operator and product safety, making the NexGen Press® range both efficient and versatile. It also benefits from multiple compression modes and a small footprint.

FCO ECM Construction
Made from a US FDA-approved solid surface composite, the FCO ECM is easy to clean, has no visible seams and boasts antibacterial properties. As such, it's hygienic, durable and robust.

Typical Applications
The standard FCO ECM is suitable for a wide range of applications such as high volume generics, analgesics, anti-inflammatories, beta blockers, nutraceuticals and vitamins, antibiotics, orodispersible tablets, MUPS and bilayer tablets, etc.

THE ECM CONCEPT: FAST CHANGEOVER AND CONTAINMENT.

Responding to the increasing market demand for containment solutions for OEB3 products, the NexGen Press® range offers a flexible, cost-efficient solution.

To improve the inherent containment features of the standard FCO ECM, it can easily be upgraded with an OEB3 pack.

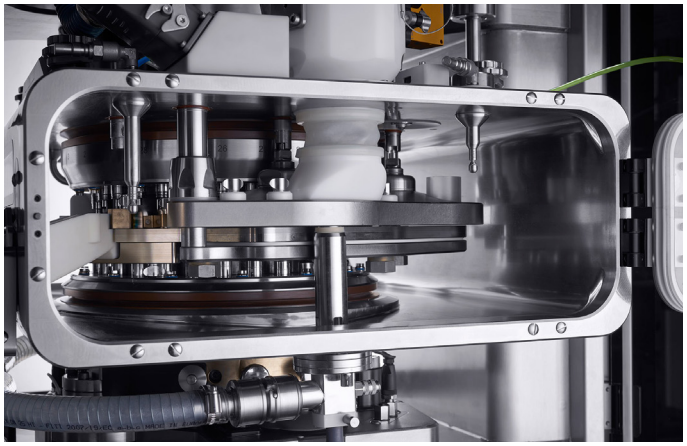
The OEB3 pack includes

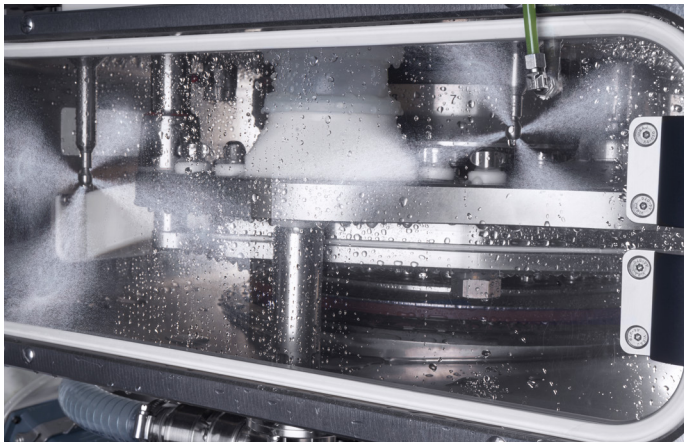
- pressure decay testing
- automatic airflow regulation for dust extraction
- contained emptying of the feeder
- provisions for layflats
- Lugaia sealing pinch

The implementation of the OEB3 pack will allow you to produce OEB3 and/or significantly diluted highly potent products. The OEB3 pack can be further extended with a Wet Down pack (Offline or Inline).

To complete the offering, any associated peripheral equipment can be adapted to suit this level of containment, ensuring that the whole line is a cost-efficient solution for OEB3 production.

THE ECM CONCEPT: FAST CHANGEOVER AND HIGH CONTAINMENT.





For high-containment applications, a stainless-steel version of the ECM (FCO HC-ECM) is available with a WOL or WIL pack, depending on customer requirements. This FCO HC-ECM is intended for OEB4–5 products such as oncology drugs and hormones.

Washing Concepts: WIL or WOL

When production is finished, the FCO HC-ECM Wash Inline (WIL) version allows for immediate washing of the tablet press and peripherals in the production room. When all the components have been washed inline, they can be removed from the machine for final manual cleaning (in a dedicated cleaning room). GEA's new WIL concept perfectly complements the fast changeover philosophy of the FCO ECM technology and could be referred to as a Fast Changeover Wash Inline (FCO WIL) solution.

The well-established WOL concept enables contained disconnection and ensures that the production room is immediately ready for the next batch when a dedicated washing room is available. In all regimes, a pre-dry cleaning step is possible if/when required.

Safety, Productivity and Sustainability

In summary, there's a smaller area to clean, less time and water is required for washing and high levels of productivity are maintained with minimum downtime.

Furthermore, the NexGen Press® range is fully compatible with GEA's new BUCK® Digital Canary continuous real-time monitoring system that detects product leaks at source and, most importantly, protects your operators.

Flexibility Comes as Standard

With the availability of both the FCO ECM and FCO HC-ECM, as well as the wide range of optional packs and washing choices, GEA can provide a cost-efficient solution to fit your specific application and infrastructure.

FLEXIBILITY COMES AS STANDARD.

Modular by design, every NexGen Press® can be configured to fit specific applications — for now or the future — with predefined option packs.

A number of standard packages have been defined by our process specialists.

The **High Yield Pack** includes a small hopper, high yield paddle and an insert for a second paddle chamber, allowing you to work with small quantities of product. Optionally, a reduced volume paddle feeder and a mixed turret can be added to the High Yield Pack.

The **Poor Flow Pack** contains a vertical agitator to maintain product flow in the in-feed tube and two spaghetti paddles to feed the dies. Optionally, a vibrator can be added to activate a Vibroflow discharge device (available with GEA material handling).

The **Bilayer Pack** includes the mechanical and electrical add-ons for the machine (tamping station, motors and a second constant level system) as well as FCO ECM bilayer parts (single paddle feeders, exhaust parts and dedicated scraper and recuperation finger).

The **UL Certification Pack** comprises an electrical cabinet, built to comply with UL508A, and all the relevant cabling.

The **Microtablets Pack** comprises a modified tablet chute and tablet ejection system. Optionally, specific peripherals (deduster/metal checker with stainless steel spirals) can be included.

The **OEB3 Pack** contains adapted seals for improved containment performance of the FCO ECM, layflats and a Lugaia sealing pinch. Pressure decay test provision, contained emptying of the feeders and automatic airflow regulation with underpressure monitoring of the FCO ECM OEB3 is also included. Optionally, intermittent dry cleaning and an OEB3 Wet Down Pack can be added.

Similarly, the **OEB4-5 Pack** — designed for use with the stainless steel FCO HC-ECM — contains the same contents as the OEB3 Pack and delivers the highest levels of containment performance on the NexGen Press® range.

The **OEB3 Wet Down Pack** (Offline or Inline) can be added to the OEB3 pack and provides pre-Wetting of the product and contact parts in the FCO ECM OEB3 with water (Offline or Inline) prior to final cleaning. Optionally, the peripherals can be supplied in Wet Down execution as well.

The **OEB4-5 Wash Pack** (Offline or Inline) provides a full solution to wash the FCO HC-ECM OEB4-5 and peripherals (Offline or Inline) prior to final cleaning. Optionally, intermittent dry cleaning and a GEA wash station can be added to the OEB4-5 Wash Pack.

A number of MUPS packages are also available, including

- The **MUPS Functional Pack** features a powder dosing valve and a modified paddle feeder
- The **MUPS Prime Pack** includes a continuous dosing and blending rig to prevent segregation

Additional features such as punch face lubrication (iSpray), A2D tooling for increased capacity and PAT integration are also available.

BUILDING ON A LEGACY OF SUCCESS.

When designing the NexGen Press®, the best features of the previous ranges were kept as they have proven to be invaluable in terms of enhancing productivity and flexibility.

Force Control and More with the Air Compensator
Made possible by GEA's unique Air Compensator technology, every machine in the NexGen® Press range of tablet presses will be equipped with six compression modes.

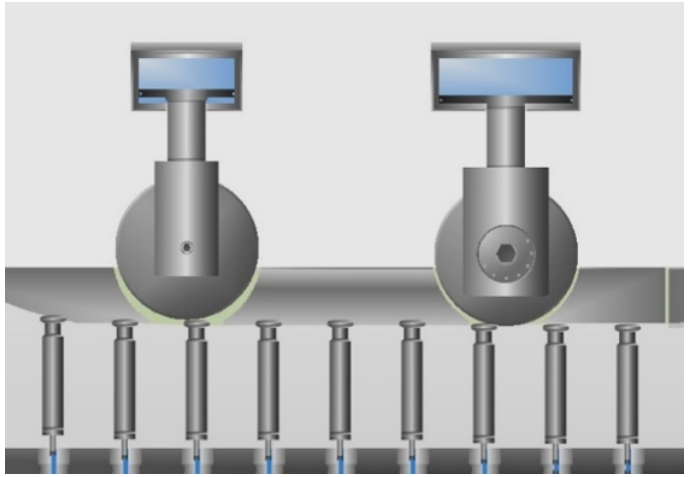
In addition to the industry standard force control, this unique device — fitted to the pre- and main compression stations — allows you to select five other tableting modes. Depending on how the Air Compensator is used during pre- and main compression, this helps to reduce capping, sticking and overcome other common production issues.

The Air Compensator is a unique device that comprises a piston-mounted roller that can move within an air cylinder. The air pressure inside the cylinder is kept constant by the tablet press control system. This feature allows for numerous advantages during compression:

- extended dwell times at pre- and main compression up to 250%
- constant dwell times regardless of machine speed
- Dual Control: automatic rejection of out-of-specification tablets (incorrect weight or hardness)
  - high-sensitivity weight control
  - every tablet compressed to the same hardness

In-Feed System
The standard GEA in-feed system uses a rotary valve to ensure a constant powder level and, thus, a constant pressure on the material in the feeder. This results in a more uniform tablet weight and the ability to run the press at higher speeds. Depending on the application (poorly flowing products, MUPS, continuous manufacturing, etc.), the rotary valve can easily be exchanged with a vertical agitator or powder dosing valve.

A2D Tooling
This type of tooling consists of a D-size die with two A-tooling tablet shapes in a standard A-turret. Using this type of tooling allows for increased capacity of the press by increasing the number of punch positions in a cost efficient way — compared with BBS tooling, which can make the same tablet sizes. Both dies and punches are easily exchangeable to allow maximum flexibility.

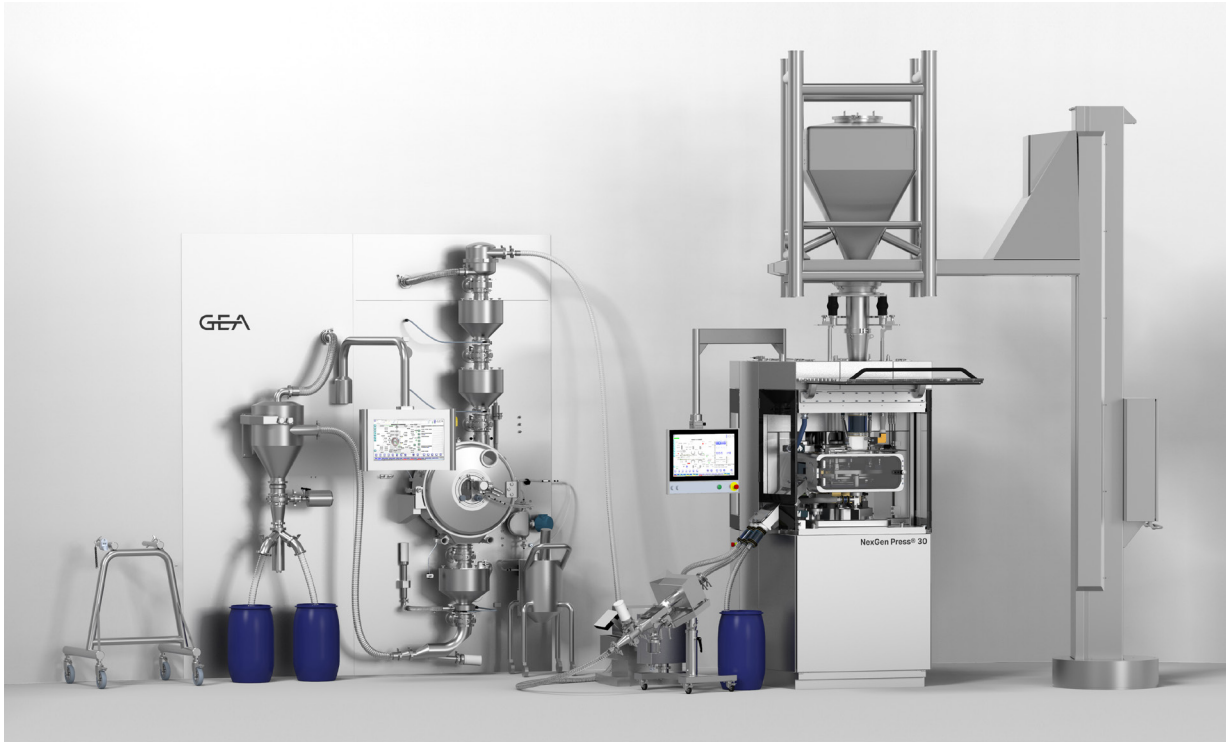


Industry standard force control + five additional compression modes are available on the entire NexGen Press® range.

Compatible with all types of tooling, the NexGen Press® range offers higher productivity levels at lower costs.

DESIGNED FOR CONTINUOUS OPERATION.

The NexGen Press® range is fully compatible with GEA's ConsiGma® continuous manufacturing portfolio and will become the standard press in any continuous tableting setup.



Built to cope with extensive production campaigns, the NexGen Press® is designed to be fully integrated into continuous manufacturing lines, as well as operate in flexible batch mode.

As both the NexGen Press® and ConsiGma® lines are "contained by design" technologies, they make a perfect "match" when it comes to implementing a processing solution that protects both the product and the operator. Of course, we also implemented a universal cleaning concept, but independent WIL or WOL options are available on demand.

As tablet compression is inherently a continuous process, the press is the logical first step to look at when considering continuous operations. The NexGen Press®, when integrated with a GEA coater, immediately offers you the benefits of continuous production: scaleless rapid process development and improved production quality with a smaller footprint.

Depending on your requirements, such a line can be extended with continuous dosing and blending capabilities, as well as continuous granulation options to form a fully continuous production line.

All members of the NexGen Press® range can be integrated into continuous lines, depending on the throughputs required.

A PERFECT BLEND OF PHYSICAL AND DIGITAL.

To respond to present and future market demands, manufacturers are looking for flexible and multifunctional solutions.

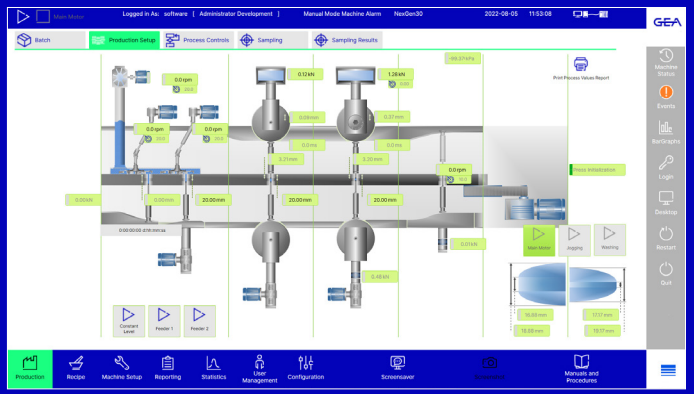
GEA has taken a performance-driven approach to the machine's software. There is a whole new look and feel to the human-machine interface (HMI) and an app gives customers easy access to all the information they need. The NexGen Press® range is Industry 4.0 ready and also includes an interactive 3D model of the tablet press.

With the newly introduced e-catalog, customers can navigate their way through the different compartments of the machine and click on individual parts to assess wear-and-tear and/or order spare parts. There are also interactive digital manuals, online project documents, 2D drawings and exploded diagrams; everything you need to automatically generate a quotation request!

Furthermore, each machine features GEA's most advanced process control system and can accommodate all the GEA compression modes. Designed with the user in mind, the MC5i interface is easy to use, intuitive and highly visual, enabling flawless communication between machine and operator. Furthermore, it's 21 CFR Part 11-compliant and designed according to GAMP 5 norms.

Created to ensure full data and recipe management, all the traditional functionalities of Multi Control are still in place, so current users of earlier systems won't have to start from scratch. In addition, all critical process parameters (CPPs) can be captured using OPC UA.

And, for ongoing peace of mind, out-of-the box training and support is always on hand. GEA offers immersive tuition via virtual reality, support via a two-way remote package and a QR code system for spare parts. It's more than just tableting, it's engineering for future generations.



Multi Control MC5i

The MC5i interface is easy to use, intuitive and highly visual, enabling flawless communications between machine and user.

Key features include:

- The 21.5" screen uses multi-touch gestures and motions for menu navigation, zooming and scrolling.
- A uniform look and feel throughout the entire application provides textual and graphical context.
- Integrated input and navigation methods eliminate the need for an external keyboard or mouse.
- Realistic tablet production overview.
- Compliant with 21 CFR Part 11 and GAMP 5.

BETTER TOGETHER: INNOVATION AND SUSTAINABILITY.

THE ADD BETTER LABEL: RECOGNIZING EXCELLENCE.

To comply with the stringent requirements of ISO 14021 — and with defined criteria from TÜV Rheinland — the NexGen Press® 30 has been externally audited to qualify for GEA's newly introduced Add Better label.*

The Add Better label showcases GEA solutions that are significantly better than their predecessors when it comes to operational excellence and environmental impact. They represent the organization's most resource-efficient solutions and demonstrate in a tangible way that a specific model is more cost-effective and planet-friendly to run than its predecessor.

To examine the energy saving potential of the NexGen Press® 30, for example, the machine's total electricity consumption was measured at the three-phase power supply inlet. Factors such as current, voltage and power were monitored as the press was operated at different speeds and compression forces, and compared with its predecessor, the PERFORMA P rotary tablet press (base machine).

The results showed that the power consumption for the base machine (equipped with an AC motor) was up to 6 kW whereas the servo motor-driven NexGen Press® 30 only consumed up to 4.8 kW. With a 94% efficiency level at all speeds, the average power saving was calculated to be 21% compared with the base machine configuration.

Why take these additional steps? Because GEA engineers wanted to get their evaluation processes right and let stakeholders know that transparency is an absolute priority.

* The Add Better label relates to the serial product GEA NexGen Press® 30, released in August 2022.

Environmental Benefits

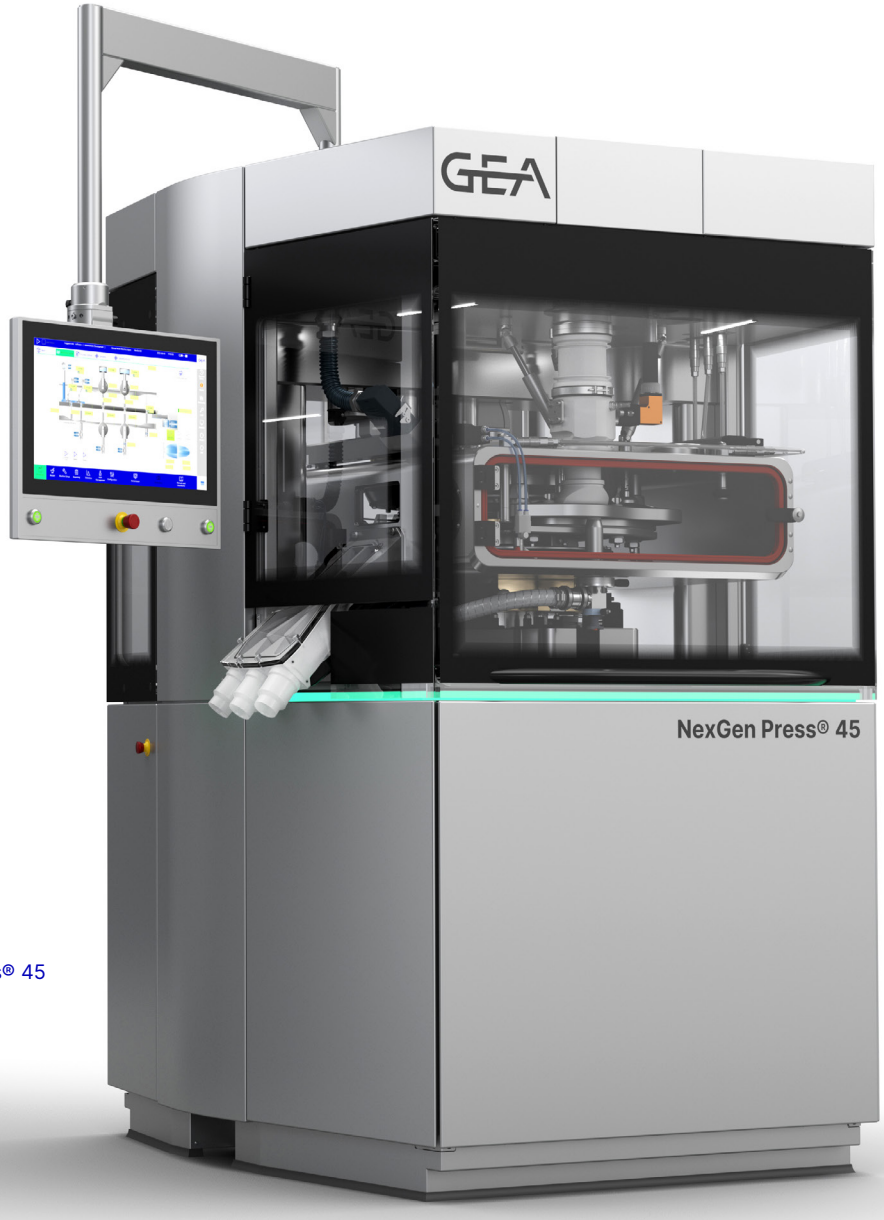
With a circular economy in mind and the future welfare of the planet to consider, the NexGen Press® range has been created to have a smaller footprint (4.7 m² compared with the 11.9 m² of the MODUL P) and use less energy, water and materials. For GEA and the pharmaceutical compression market, a new benchmark has been set.

4.7 m²
NexGen Press® 30 open doors

21%
Less energy usage

60%
Footprint reduction

NexGen Press® 30



NexGen Press® 45

BETTER TOGETHER: THE NEXGEN PRESS® RANGE.

Technical Data

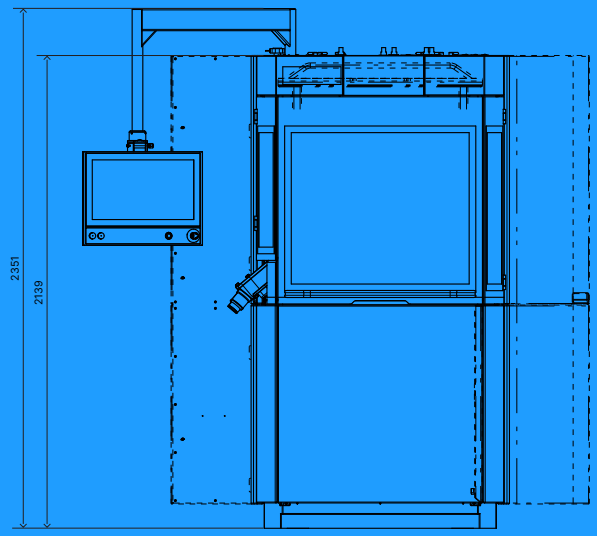
NexGen Press® 30 Specifications

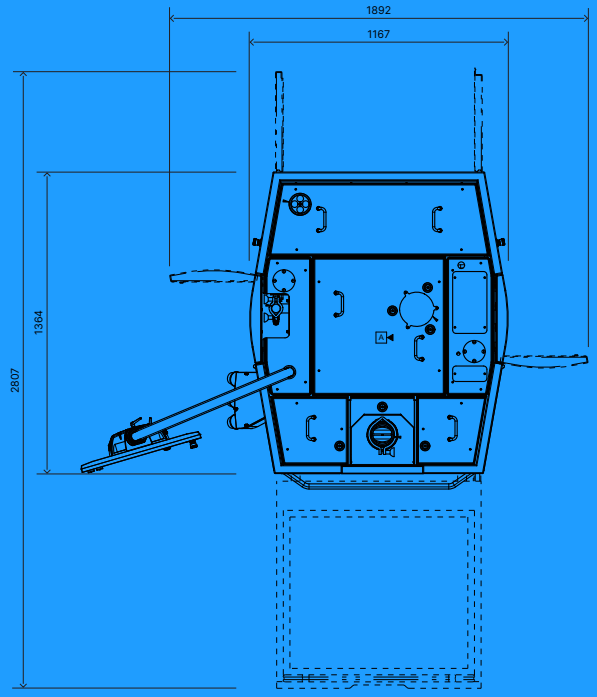
Tooling (EU or TSM)	**D**	**B**	**BB**	**BBS**	**A2D / A**
Maximum tablet diameter / length [mm] – dies	25	16 (L=19)	13 (L=14,3)	11	11 (A2D)
Maximum tablet diameter / length [mm] – segments	25	18 (L=19)	not applicable	not applicable	11 (A)
Punch body diameter [mm]	25.4	19	19	16	12
Outside die diameter [mm]	38.1	30.16	24	22	38.1
Die height [mm]	23.81	22.22	22.22	22,22	23.81

Number of Punch Positions (Dies/Segments)	**23/27**	**28/33**	**32**	**36**	**46/48**
Maximum fill depth [mm]	20	19	19	19	19
Top punch penetration [mm]	1 to 4	1 to 4	1 to 4	1 to 4	1 to 4
Maximum precompression force[1] [kN]	10	10	10	10	10
Maximum compression force	100	100	100	100	100
Output capacity [tab/h] - dies	**124,200**	**201,600**	**230,400**	**259,200**	**331,200**
Output capacity [tab/h] - segments	**145,800**	**237,600**	**-**	**-**	**345,600**

Machine Specifications / Requirements	
Electrical requirements	3 phase + PE: 380–480 V 50/60Hz nominal consumption 6 kW; installed power = 11.9 kVA
	1 phase + PE: 200–240 V 50/60Hz nominal consumption 0.5 kW; installed power = 1.4 kVA
Compressed air requirements	Clean & dry; 7-8 bar; 500Nl/min peak – 100Nl/min average
Dust extraction requirements	150 m^3/h at 15 mbar
Operating conditions	Temperature 15 – 40 °C, relative humidity < 60%
Machine dimensions (doors closed) & weight	W = 1167 mm x D = 1364 mm x H = 2351 mm – 2800 kg

[1] Higher pre-compression forces are possible, please contact GEA Process Engineering nv (Halle) if required.





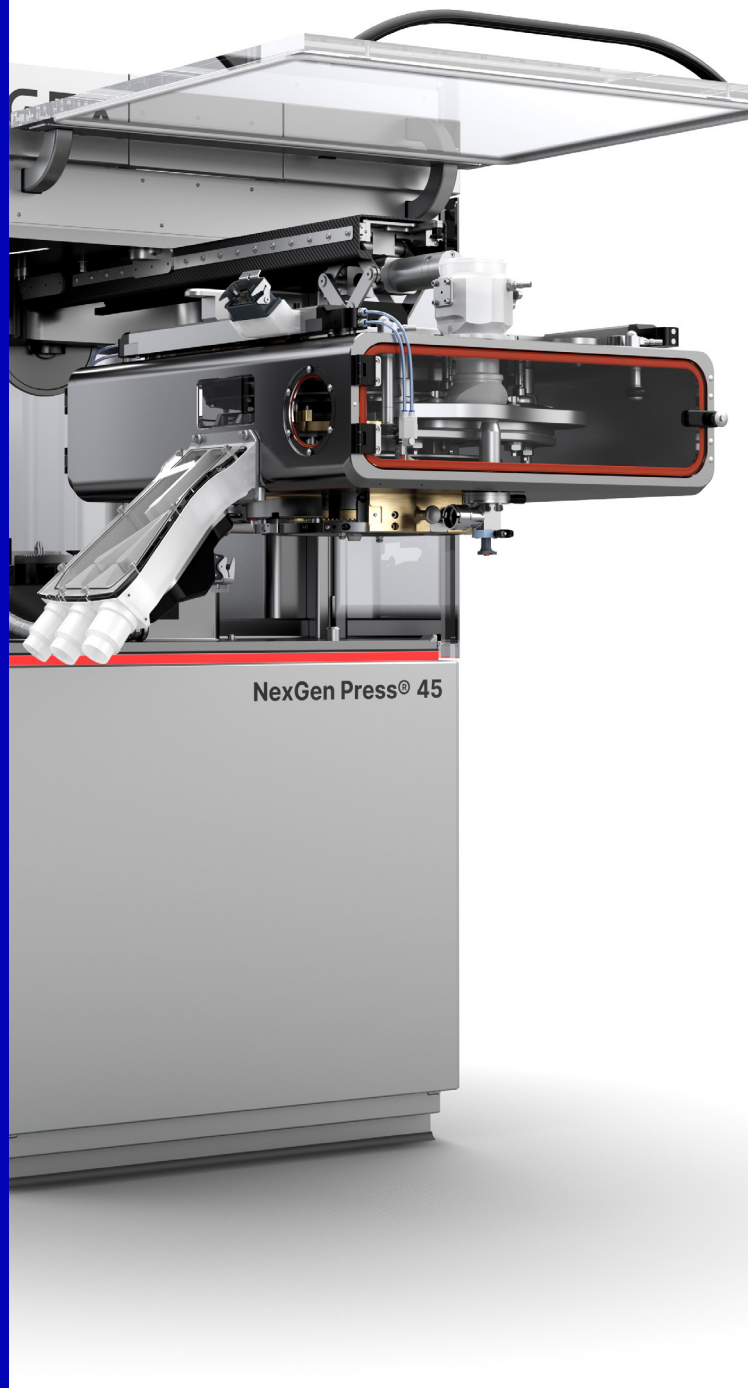
Technical Data

NexGen Press® 45 Specifications

Tooling (EU or TSM)	**D**	**B**	**BB**	**BBS**	**A2D / A**
Maximum tablet diameter / length [mm] – dies	25	16 (L=19)	13 (L=14,3)	11	11 (A2D)
Maximum tablet diameter / length [mm] – segments	25	18 (L=19)	not applicable	not applicable	11 (A)
Punch body diameter [mm]	25.4	19	19	16	12
Outside die diameter [mm]	38.1	30.16	24	22	38.1
Die height [mm]	23.81	22.22	22.22	22.22	23.81
Number of Punch Positions (Dies/Segments)	**34/39**	**42/51**	**48**	**54**	**72/72**
Maximum fill depth [mm]	20	19	19	19	19
Top punch penetration [mm]	1 to 4	1 to 4	1 to 4	1 to 4	1 to 4
Maximum precompression force[1] [kN]	10	10	10	10	10
Maximum compression force	100	100	100	100	100
Output capacity [tab/h] – dies	**183,600**	**302,400**	**345,600**	**388,800**	**518,400**
Output capacity [tab/h] – segments	**210,600**	**367,200**	**-**	**-**	**518,400**

Machine Specifications / Requirements	
Electrical requirements	3 phase + PE: 380–480 V 50/60Hz nominal consumption 7 kW; installed power = 13 kVA
	1 phase + PE: 200–240 V 50/60Hz nominal consumption 0.5 kW; installed power = 1.4 kVA
Compressed air requirements	Clean & dry; 7-8 bar; 500Nl/min peak – 100Nl/min average
Dust extraction requirements	150 m^3/h at 15 mbar
Operating conditions	Temperature 15 – 40 °C, relative humidity < 60%
Machine dimensions (doors closed) & weight	W = 1474 mm x D = 1364 mm x H = 2390 mm – 3800 kg

[1] Higher pre-compression forces are possible, please contact GEA Process Engineering nv (Halle) if required.



AT A GLANCE.

Performance
- Intuitive, safe and simple to use
- Back to basics design philosophy
- Plug and play functionality for a wide range of applications
- Higher productivity levels and superior tablet quality
- Cost-effective operation
- ECM offers fast changeovers and high containment
- A2D tooling

Modular
- Dust-tight to OEB5 containment on a single platform
- The first press range to offer both Wash Offline (WOL) and Wash Inline (WIL) functions
- Fully customizable to accommodate MUPS, orodispersible, bilayer tablets and more

Digital
- Digitalized and Pharma 4.0-compatible
- Delivered with GEA's latest control system (MC5i)
- Compatible with the Digital Canary product leak detection system
- Virtual training, app-based support and online assistance available

Environmental
- Small footprint
- Planet-friendly operation

Future Perfect
- Easy to integrate into continuous manufacturing lines
- **the NexGen Press® 45 will be launched at Achema 2024**
- **Coming soon: R&D-scale version and a larger NexGen Press® 75.**

One Machine. Many Applications.

Examples include high-volume generics, analgesics, anti-inflammatories, metformin, ibuprofen, paracetamol, effervescents, nutraceuticals and vitamins, antibiotics and penicillin, orodispersible tablets, MUPS and bilayer tablets, hormones and oncology products, orphan drugs and new chemical entities (small volume/high yield), microtablets, poorly flowing powders, heat- and moisture-sensitive products and those that require capping and/or antisticking solutions.

For more information
GEA Pharma & Healthcare
pharma@gea.com
gea.com/contact

Engineering for a better world.

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ADD BETTER
Resource efficient solution