

A detailed close-up photograph of a Syntegon GKF 2600 capsule filling machine. The machine is constructed from polished stainless steel, featuring a complex arrangement of vertical and horizontal components. A prominent vertical column supports a horizontal arm with a white control box and multiple nozzles. Below, a rotating carousel holds several white capsules, some of which are being filled with a green substance. The background is a soft, out-of-focus grey, emphasizing the machine's intricate design and industrial precision.

SYNTEGON

PROCESSING & PACKAGING

Capsule Filling Machine GKF 2600.

Pharma Solid.

6.100

employees

64.000

machines in the installed base

Count
on it.

30

locations

50

years in business

1.3 billion

euros annual sales

1.100

service specialists

2.000

patented inventions

Syntegon Technology is your reliable partner for process and packaging technology in the global pharmaceutical and food industries. Whether you are an aspiring start-up or a global market leader, we offer intelligent and sustainable solutions for everyone.

Individual machines, systems or services – as a full-service provider, we take responsibility right up to fully integrated end-to-end solutions. Fields of application in the pharmaceutical industry are the production, processing, filling, inspection and packaging of liquid and solid active ingredients in all common

packaging materials. In the food industry, we offer solutions for the primary and secondary packaging of dry, liquid and frozen food as well as process technology for the production of confectionery.

We are at your side from project planning, development and implementation to comprehensive digitization, qualification and validation services. In addition, you always have access to our worldwide network of service specialists who support you throughout the entire machine life cycle.

One platform

for all your requirements, based on more than 50 years of experience in capsule filling.

The modular GKF 2600 series fulfills the increasing requirements for large batch production, thanks to its great flexibility in regard of dosing and inspection technologies. The capsule filling machine can be tailored to your product specifications and quality control (QC) requirements within no time.



The cGMP-compliant capsule filling machine meets all demands for the highest pharmaceutical safety. Besides robust pharmaceutical processes we put a special focus on the reduction of product losses – over the entire batch run.

The GKF 2600 ensures optimal capsule handling and dosing. For example the automatic troubleshooting (ASB) sorts out jammed capsules, and the 100 % detection of not opened capsules reliably discovers and removes unopened capsules.

GKF 2600 – the highly flexible machine platform for the high-performance sector

YOUR BENEFITS

- ❑ Output up to 156 000 capsules per hour
- ❑ Proven GKF machine technology
- ❑ Versatile dosing technologies
- ❑ Flexible use for different products, also in combination
- ❑ Intuitive operation via HMI
- ❑ Fast and easy change of dosing technology
- ❑ Containment concept OEB4 (option)
- ❑ Good accessibility from all sides
- ❑ Cleaning concept for fast and easy but thorough cleaning
- ❑ Various PAT technologies for QC available (option)
- ❑ High yield/high OEE
- ❑ Reliable single capsule rejection
- ❑ Low-maintenance operation

Dosing applications

Equipped with the respective filling station, the GKF 2600 achieves precise filling results from free-flowing to cohesive powders, pellets and (micro-) tablets as well as for products of a liquid or pasty nature. We offer customized solutions for critical product properties and product combinations.

POWDER/PELLETS

Dosing station with optimized slide-gate technology for the filling of powders, granules and pellets. For powders, the proven tamping pin method is used; with pellets the exact dosing is achieved using a height-adjustable dosing disc.



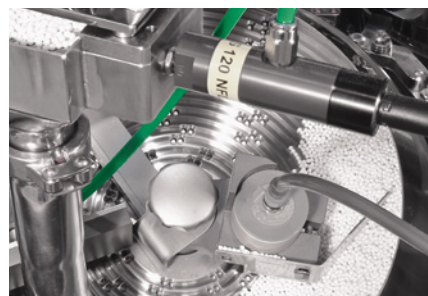
PELLETS

The pellet station is a gentle, precise, and compact option for the volumetric dosing of pellets with different characteristics.



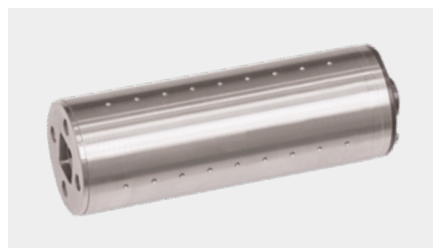
(MICRO-) TABLETS

The tablet station is a gentle and precise solution for the dosage of single and multiple tablets into capsules – from big oblong/capsules to micro-tablets.



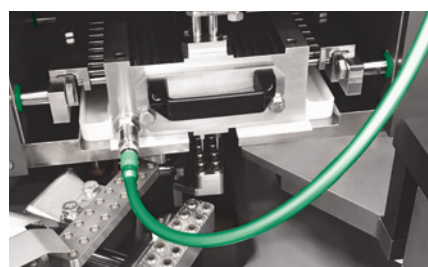
VACUUM-WHEEL DOSING

Highly accurate, agglomeration-free dosing of powders (e.g. micro dosing of inhalable products or pure APIs).



LIQUIDS

The liquid station with its integrated drop retraction feature enables the precise volumetric dosing from hydrophilic to thixotropic liquids. It also has the ability to control the temperature of the product during the filling process. Two independent heating/cooling circuits secure gentle product handling in the system.



COMBINATIONS

A wide array of product combinations is possible on the GKF series, thanks to its modular assembly. Many successful projects prove our expertise.



Integrated inspection technology

Sampling or 100 % monitoring with inspection systems.

The integrated and fully automated capsule-weighing unit IPC (In-Process Control) provides the user with a statistical overview of the capsule gross and net weight. The entire process takes place within the machine cycle and does not need an operator-induced interruption of the production process. The system supports/enables the statistical fill weight evaluation during a pharmaceutical production, as well as a cross reference check of system integrated inspection technologies, such as our Net Weight Detection System (NWDS).



- ❑ The weighing process is automated and performs without influence on the production speed of the GKF
- ❑ The integrated gravimetric load cell provides a weighing accuracy of 0.05 mg
- ❑ Sampling cycles can be set via recipe or independently by the user on the HMI
- ❑ All recorded data are fully integrated in the batch protocol

FILLING AND WEIGHING IN ONE SYSTEM

Syntegon provides complete line solutions, tailored exactly to your requirements and designed to meet your individual needs.

 GKF 2600 and the checkweigher KKE 2600 are the ideal duo for capsule filling and weighing.

For further details regarding our checkweighers, please refer to our KKE flyer.

YOUR BENEFITS

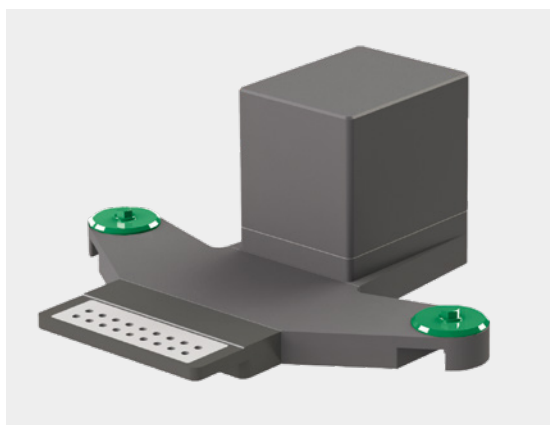
- ❑ Precise 100 % weighing of all capsules
- ❑ Integrated automatic troubleshooting (ASB)
- ❑ Automatic rejection of deformed capsules
- ❑ Available for all dosing technologies
- ❑ All data documented in batch report
- ❑ Easy and fast cleaning



GKF 2600 with combined KKE 2600 checkweigher

Net Weight Detection System (NWDS)

The integrated capacitive weight monitoring station automatically detects deviations in the filling process and controls it accordingly. Calibrated measurement data provided by the integrated IPC allow the capacitive and gravimetric weighing results to be compared and validated at regular intervals.



YOUR BENEFITS

- Inspection of up to 156 000 capsules per hour
- Identification of process-relevant data in real time
- Precise net weight control
- All data documented in batch report

Process Analytical Technology (PAT Classic)

HIGH-PRECISION QUALITY ASSURANCE WITH PAT CLASSIC

The process analytical technology PAT Classic provides quality assurance during the entire filling process.

POWDER BED DETECTION

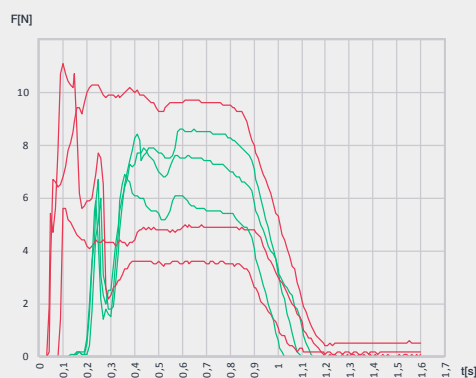
The height of the powder bed is scanned to within ± 2 mm to achieve highest dosing accuracy and lowest residual waste at end of batch.

TRANSFER FORCE DETECTION

System will stop machine in case of rising transfer forces to avoid mechanical damages.

CLOSING FORCE DETECTION

100 % supervision of capsule closing forces. These force profiles are used to evaluate possible capsule defects such as capsule breakage/cracking/splicing and deformation.



YOUR BENEFITS

- Inspection of up to 156 000 capsules per hour
- Identification of process-relevant data in real time
- Residual waste minimized
- Capsule length control
- Enhanced product quality
- All data documented in batch report
- Optimization of Yield and OEE

GKF 2600 with enhanced barrier system

Containment solution for highly potent pharmaceutical products

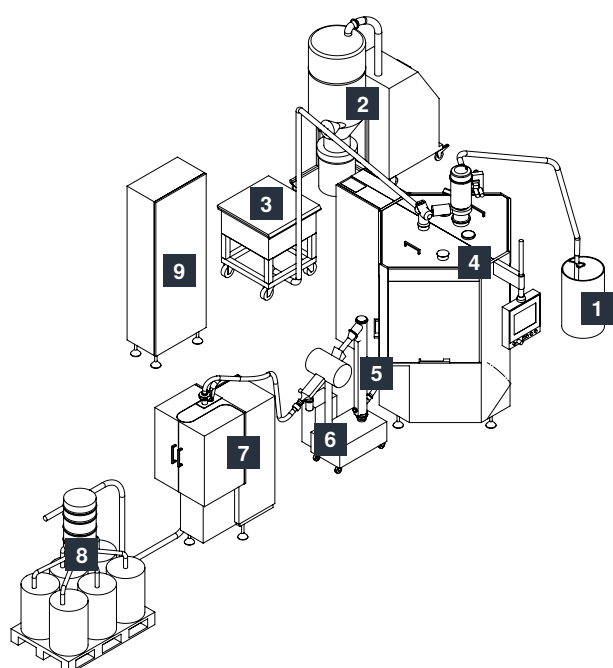
Safety is a top priority in the pharmaceutical production. Especially when you are using highly potent substances in your production processes. A reliable containment system minimizes operators' exposure to active ingredients.

STANDARD VERSION

- Robust and tight doors with safe sealing
- Reduced dust formation thanks to optimized dust suction
- "No body no fill" / "No cap no fill" system
- Mechanical rejection of faulty capsules without compressed air
- Easy cleaning concept

CONTAINMENT UPGRADE

- Easily interchangeable machine attachments
- Underpressure system
- Upgrade to OEB 4 prepared
- Wetting function to bind airborne particles (option)



Line competence

More than just a machine: Syntegon provides complete line solutions, tailored exactly to your requirements and designed to meet your individual needs. As your competent partner, we offer in-depth project and integration experience, as well as comprehensive qualification and validation, backed by extensive after-sales services including training programs and test capacities in our new OSD customer center.

GKF 2600 AND KKE 2600

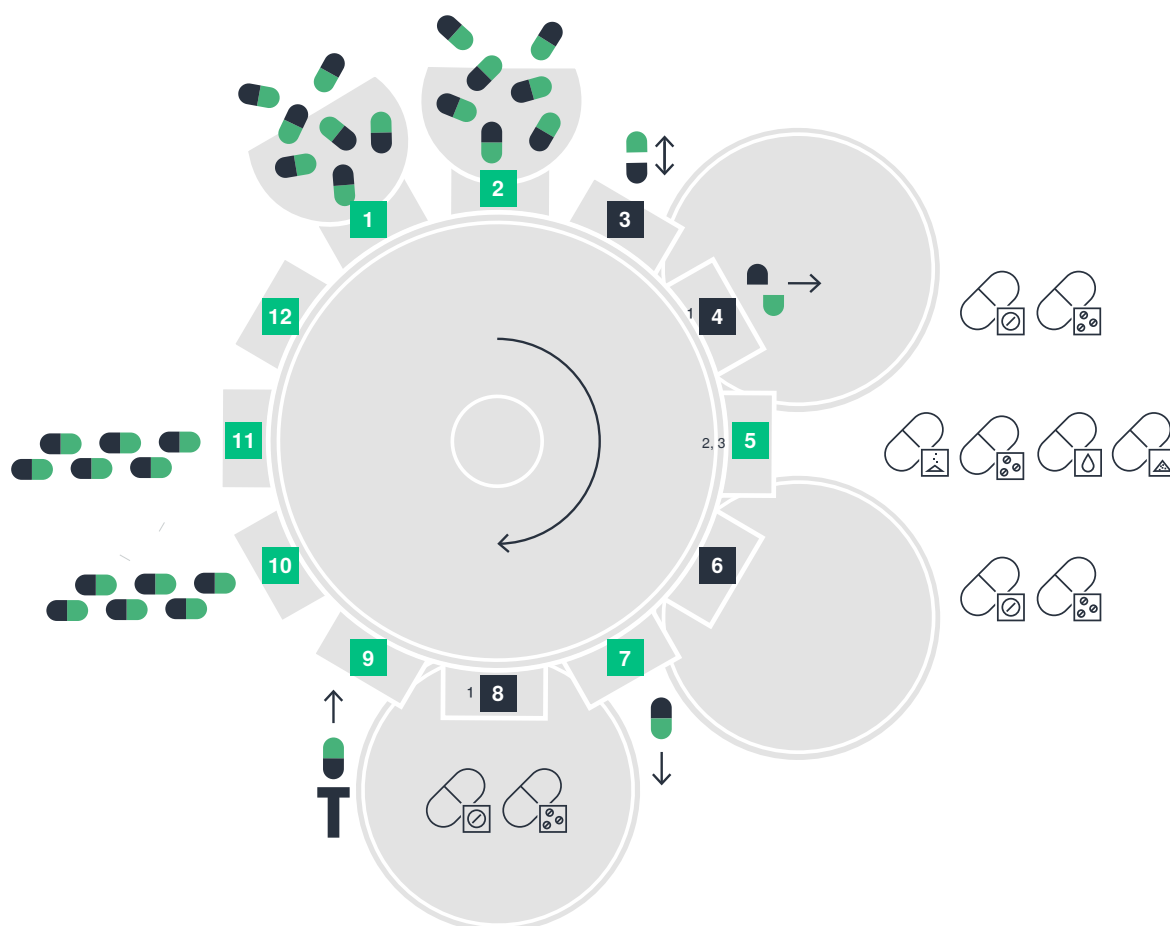
The ideal duo for capsule filling and weighing.

- 1 Product feeder
- 2 Vacuum cleaner for dust suction
- 3 Empty capsule feeder
- 4 GKF 2600
- 5 Capsule deduster
- 6 Metal detector
- 7 KKE 2600
- 8 Drum distribution system
- 9 Control cabinet

Filling technologies and dosing options at a glance

The flexible platform of the GKF 2600 enables the user to dose powders, pellets, (micro-) tablets and liquids, as well as combinations reliably and precisely. The platform can meet your specific requirements.

FUNCTIONAL DESCRIPTION



- | | |
|---|--|
| <p>1 Capsule alignment and separation</p> <p>2 Capsule alignment and separation</p> <p>3 IPC and capsule body scanner, or capsule cap and body scanner, optional sampling</p> <p>4 Capsule cap scanner (with IPC), or tablet/pellet station
¹ optional capacitive weighing (NWDS)</p> <p>5 Dosing station for powder or pellets with fixed or height-adjustable dosing disc, liquid station or vacuum wheel dosing station
² optional PAT classic sensor for powder slug transfer force detection
³ optional PAT classic sensor for powder bed height detection</p> | <p>6 Empty station – optional tablet or pellet station</p> <p>7 Faulty capsule rejection</p> <p>8 Empty station – optional tablet or pellet station
¹ optional capacitive weighing (NWDS)</p> <p>9 Capsule closing station with presence verification of PAT classic sensor for closing force detection of capsule cap and body</p> <p>10 Individual capsule rejection</p> <p>11 Individual capsule rejection</p> <p>12 Segment cleaning with compressed air. Optional sampling (if no IPC is applied)</p> |
|---|--|

Technical data

Based on many years of experience, we have designed a future-proof platform that consistently adapts to your production requirements. The cGMP-compliant machine meets all demands for the highest pharmaceutical and operator safety standards, also convertible into containment.

OUTPUT

- Max. 156 000 capsules per hour, depending upon in-feed, quality and flow properties of the product and capsules

WEIGHT

- approx. 2000 kg

CONNECTIONS

- Compressed air supply Ø 13 mm
- Vacuum connection Ø 30 mm
- Main electrical connection

IN-FEED SYSTEMS

- Powder in-feed Triclamp DN 150 DIN, 32676
- Pellet/tablet in-feed Triclamp DN 100 DIN, 32676
- Empty capsule in-feed Triclamp DN 100 DIN, 32676

ELECTRICAL CONNECTION

DUST COLLECTORS

- 200/220/380/400 V, 50 Hz, 2x4 kW
- 220/380/400/460/480 V, 60 Hz

CONVEYING VOLUME

DUST COLLECTOR

- Up to 820 m³/h, free suction

AVAILABLE DOSING STATIONS

- Powder dosing station
- Pellet dosing station
- (Micro-) tablet dosing station
- Liquid dosing station
- Vacuum wheel dosing (fixed and volume adjustable dosing wheels)
- Dosing station for specials (for example soft shells)
- Customized solutions are possible

STANDARD EQUIPMENT

- Basic machine with separate electrical cabinet
- HMI control panel
- 21.5" touchscreen on swivel arm
- Machine control system based on industrial PC
- Empty capsule supply hopper with minimum and maximum level control
- Dosing station with product supply hopper
- Capsule closing station
- Capsule ejection station
- Segment cleaning station
- Energy monitoring:
 - Electrical process data (energy consumption, production and standby times, etc.)
 - Control of compressed air consumption
- Simple plug-in of capsule segments

CAPSULE TYPES

- Hard gelatin capsules, HPMC capsules

OPTIONAL

- Capsule cap and body detection scanner
- ASB function (automatic trouble-shooting)
- "No body no fill" / "No cap no fill" on all filling stations
- Height adjustable dosing disc
- Integrated gravimetric scale for In-Process Control (IPC), including sampling
- NWDS (Net Weight Detection System) for 100 % net weight inspection
- Tablet counting system
- Feedback loop
- Single capsule ejection
- Enhanced segment cleaning
- PAT technology

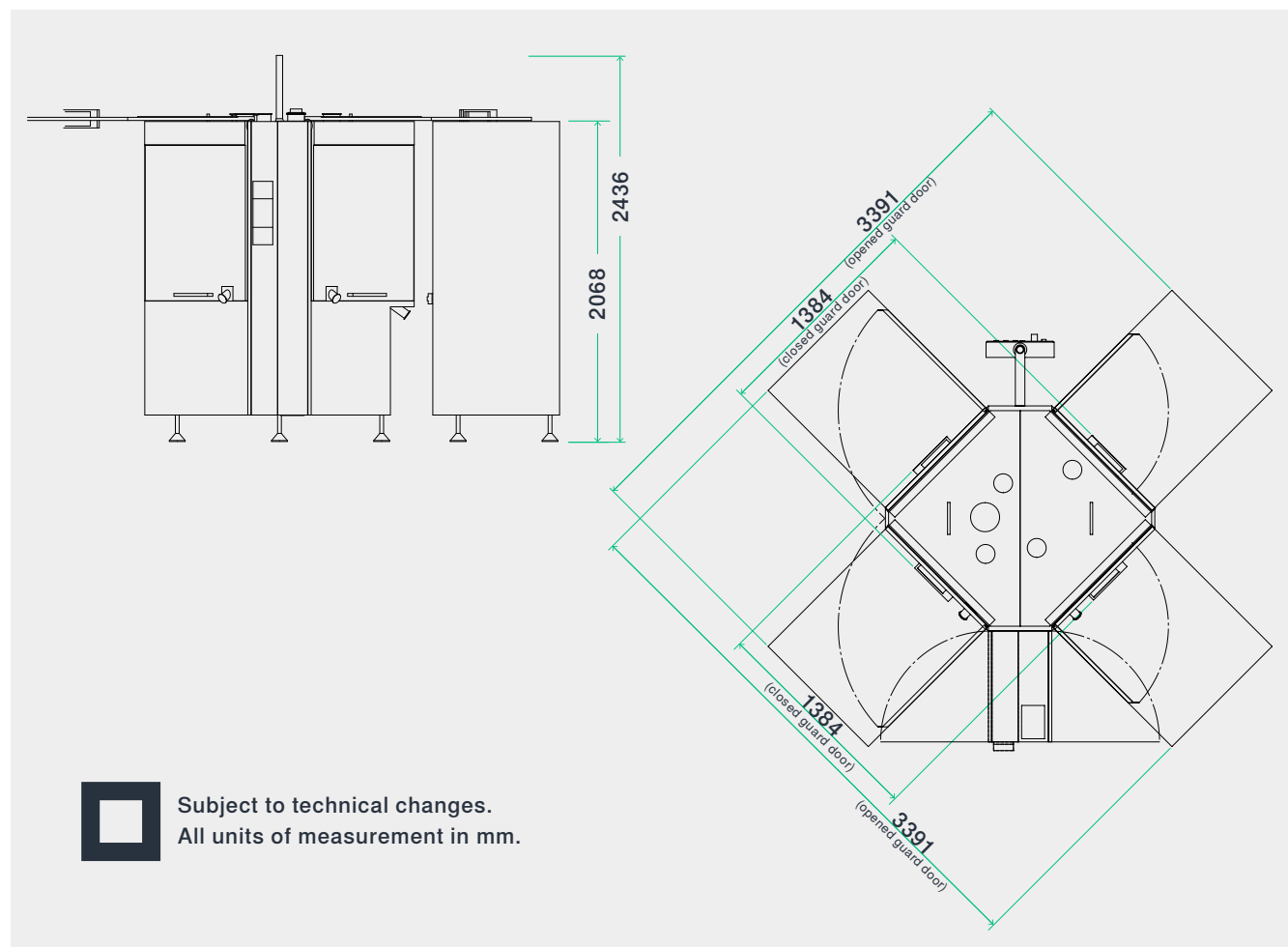
ACCESSORIES

- Vacuum pump
- Vacuum cleaner for dust suction
- Empty capsule feeder (option)
- Product feeder (option)
- Capsule deduster (option)
- Metal detector (option)
- External in process control IPC (option)
- Drum distribution System (option)



Layout and top view

for both standard GKF 2600 OEB3 & GKF 2600 ProTect OEB4

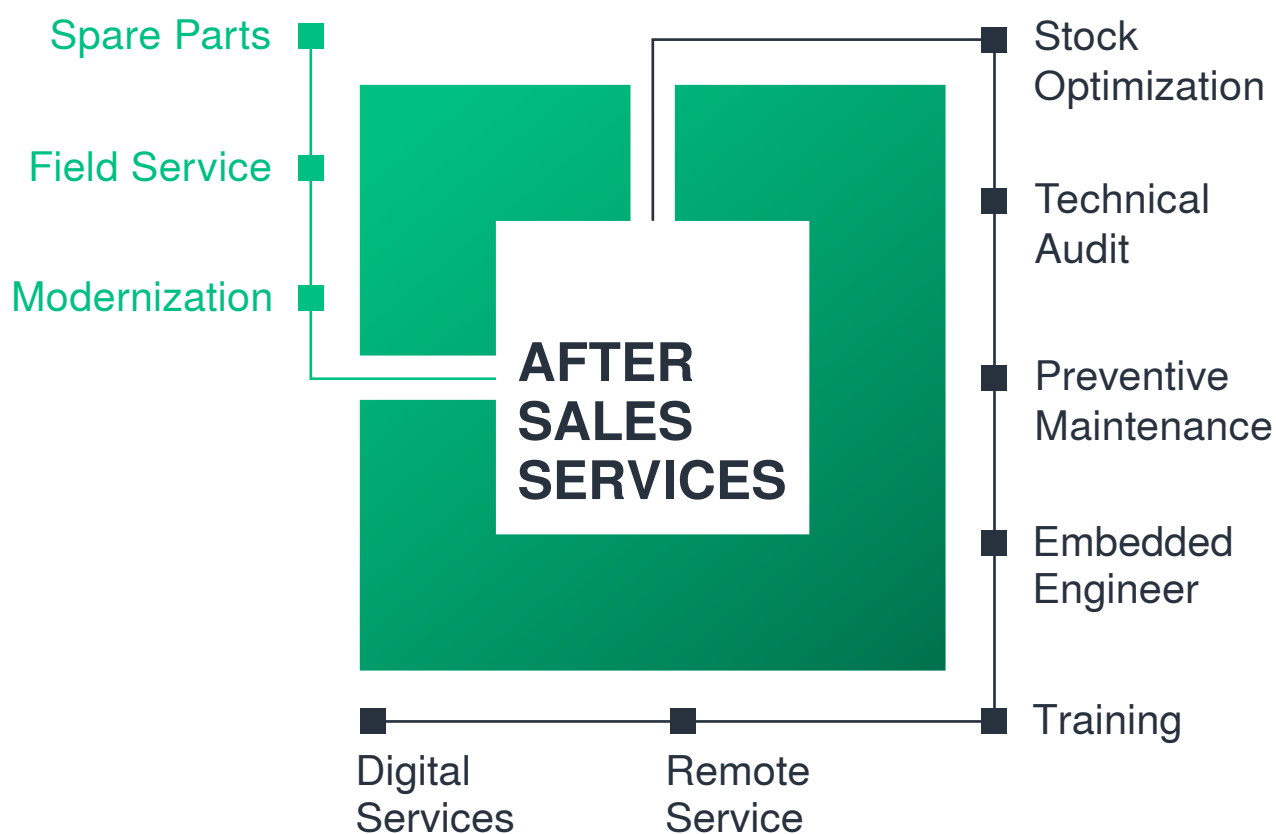


GKF 2600, Versatile
high volume capsule filling machine

Customized service solutions for the entire life cycle of your machine.

By investing in a Syntegon packaging machine, you gain access to an extensive range of services. We are always there for you, providing reliable services from a single source, all over the world. It begins during the project phase with services such as process consulting, system planning, or lab services. Service continues during operation: from spare parts and field service offerings to

stock optimization, modernization, and preventive maintenance, all the way to remote and data-based services and training. Whether it's a customized solution or a standard service – together with us you achieve maximum output with minimum downtime and optimize the profitability of your machines.



For detailed information
please visit our homepage:
www.syntegon.com/services

Connect with our team.



Syntegon Technology GmbH
Pharma Solid
Stuttgarter Straße 130
71332 Waiblingen, Germany

Mail
Phone
Web

packaging-ph@syntegon.com
+49 7151 14-0
syntegon.com