

**EVERYTHING YOU  
NEED TO FULFIL  
PHARMACEUTICAL  
R&D REQUIREMENTS**



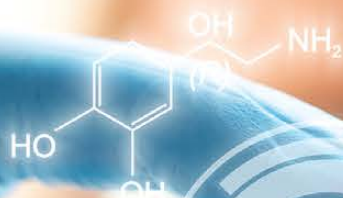
32001/905

22 14-311  
09

$\text{pH}[\text{H}^+]$

$[\text{OH}^-]$

completely  
relative to



HO

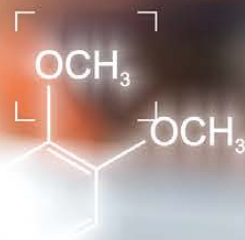
O

K

HN

$\text{H}_3\text{CO}$

$\text{H}_3\text{CO}$



$\text{Cb} = \text{pH}[\text{H}^+]$

$[\text{OH}^-]$

Alpha

7.403.98E-08

2.51E-07

0.20

7.602.51E-08

3.98E-07

0.28

8.001.00E-08

1.00E-06

0.50

8.403.98E-09

2.51E-06

0.71

8.801.58E-09

6.31E-06

0.86

9.001.00E-09

1.00E-05

0.90

9.403.98E-10

2.51E-05

0.98

9.602.51E-10

3.98E-05

0.99

## **Get pharma R&D ready with us**

It has always been ACG's endeavor to seek innovation and create unique processing solutions that match the ever-changing pharmaceutical R&D needs. Our expert engineers understand the complexities involved in pharma R&D. Keeping in alignment with this approach, all our R&D and pilot-scale machines generate tangible data that helps to achieve scale-up parameters for commercial-scale processes. Right from mixing, granulation, drying to tablet compression, capsule filling and blister packaging, our R&D range of products covers almost all the processes required in pharma R&D. Our quest series of R&D and pilot-scale technologies is evidence of our efforts to support customer-driven innovation.

# ACG'S R&D AND PILOT-SCALE GRANULATION SOLUTIONS

## 1. Tabletop Fluid Bed System for Feasibility Studies

### Quest™ FB

Quest™ FB is the ideal lab-scale granulation equipment for feasibility studies. This versatile unit can be used for drying, top spray granulation, and Wurster coating applications. It features a single container retrofittable for top-spray and Wurster applications.

#### Working Capacity

Top-spray and drying: 0.6 L to 3 L

Bottom-spray: 0.3 L to 1.5 L

#### Features

- Data storage and access management
- Multiple air distribution plates as integral part of supply
- Weighing scale integration with PLC
- Tabletop and portable



## 2. Lab and Pilot-scale Granulation System

### GPCG 1.1

GPCG 1.1 is one of the most trusted models in its performance class for feasibility and scale-up studies. Packed with all the features of a production-scale machine, GPCG 1.1 is ideal for handling a varied range of products. The entire process of drying, granulation, and Wurster pellet coating takes place in a single container. Its latest and easy-to-operate HMI and PLC controls provide quick access to data storage and allow recipe handling.

#### Working Capacity

Top Spray: 1.5 L to 5 L

Bottom Spray: 0.75 L to 2.5 L

#### Features

- Performs drying, granulation, and pellet coating
- Precise air volume monitoring
- PID loop control characteristics
- Hinged filter housing for easy relocation





### 3. The R&D-Scale High Shear Mixer

#### Quest HSM III

QUEST HSM III is ACG's latest offering within our processing systems product line. QUEST HSM III has been developed jointly by XERTECS, Germany, and ACG, incorporating 12-bar pressure shock resistance and the ACG X·ONE COMMAND™ process control system (optional).

The system offers the flexibility of interchangeable process bowls, available in 15 L, 30 L, and 65 L sizes.

#### Working Capacity:

4.5 L to 52 L

#### Features

- Innovative wrap-around machine design that arranges all crucial machine components perfectly, facing the operator
- Multi-blade chopper and Z-shaped impeller to ensure better granules and shorter process time
- Mobile plug and play system
- Featuring the Maximum Operational Safety Technology (MOST™, patent pending), an advanced engineering approach to 12-bar safety
- Offers the highest batch size flexibility (15 L, 30 L, and 65 L)
- Production of pilot and exhibit batches is possible



### 4. Versatile R&D-Scale Granulation System

#### Quest™ FB II

Quest™ FB II performs drying, granulation, and Wurster pellet coating in a single container. It is accompanied by four process inserts to accommodate varied batch sizes and products. Quest™ FB II has been developed jointly by XERTECS, Germany, and ACG, incorporating a 12-bar pressure shock resistance design. Additional features include dust-free filter change, slide in-slide out process inserts, and a plug and play design.

#### Working Capacity

- Top spray and drying - 0.6 L to 12 L
- Bottom spray - 0.6 L to 8 L

#### Features

- Certified 12-bar pressure shock resistance
- Dust-free filter change
- Slide in- slide out process inserts
- Handles varied batch sizes with four process inserts
- Performs drying, granulation, and pellet coating



## 5. The Ideal Solution for Design of Experiments (DoE) Studies

### Quest™ FBC III

Quest™ FBC III is an ideal solution for performing DoE studies to understand scale-up implications and establish parameter ranges. QUEST™ FBC III can be used for drying, top spray granulation, and Wurster coating applications.

#### Working Capacity:

Top spray and drying: 13 L to 55 L

Bottom spray: 5 L to 25 L

#### Features

- Featuring the Maximum Operational Safety Technology (MOST™, patent pending), an advanced engineering approach to 12-bar safety
- Unique X·ONE inflatable seals ensure lower operating costs and significantly longer life span
- The state-of-the-art twin filter shaking system provides maximum flexibility, ergonomic handling, and improved performance
- A commercial scale nozzle is incorporated to evaluate scale-up impact



## ACG'S R&D AND PILOT-SCALE ENCAPSULATION SOLUTIONS

### 1. Fully Automatic Lab-scale Capsule Filling Machine

#### AFT Lab

AFT Lab is a fully automatic R&D scale capsule filling machine that is suitable for laboratories. It ensures greater flexibility to experiment with various dosage forms such that resultant formulations are production-line ready.

It is one of a kind machine that allows filling any four sizes of capsules with a single format part. Not only does this simple changeover save time and effort, it also enables the scale-up of the development process without any modification in formulations.

#### Output:

Up to 6000 capsules/h (higher than any existing lab model)

#### Features

- With only two changeable parts, suitable dosing discs, and tamping pistons, AFT Lab can fill the entire range of capsules sizes, i.e., 00, 0el, 0, 1, 2, 3, 4, and 5. The combination sets are as follows: 00, 0el, 0, 1 and 2, 3, 4, 5.
- Can be upgraded to an AF 25T machine (25,000 capsules/h).
- Capable of filling solid dosage formulations in powder, tablet, or pellet form.
- Can also fill combinations of powder + tablet, pellet + tablet, and powder + pellet + tablet.





## 2. Semi-automatic Liquid Filling and Sealing Machine for Hard Gelatin Capsules

### Fluidocap 1000

Fluidocap 1000 is a semi-automatic machine that integrates filling, closing, and band sealing processes in one compact and robust machine. It offers the versatility to process a large variety of capsules from sizes 00 to 4 in both Gelatin and the HPMC (veg) variety of Flofit™ capsules designed by ACG for this special application.

#### Output:

Up to 1,000 capsules/h

#### Features

- Compact filling and sealing equipment
- Mechanisms to handle 40 cps to 3,000 cps formulations including pastes, hot melt, and thixotropics
- Band sealing to aid in maintaining the integrity of the dosage form, provide brand distinction, and enhance shelf life
- Flexibility to fill and seal gelatin as well as HPMC capsules



## 3. High-level Containment Capsule Filling Lines

### Securefill 6T

Securefill 6T, a lab-scale capsule-filling solution from ACG, is an automatic containment capsule-filler designed for filling high potency powder formulations.

#### Output:

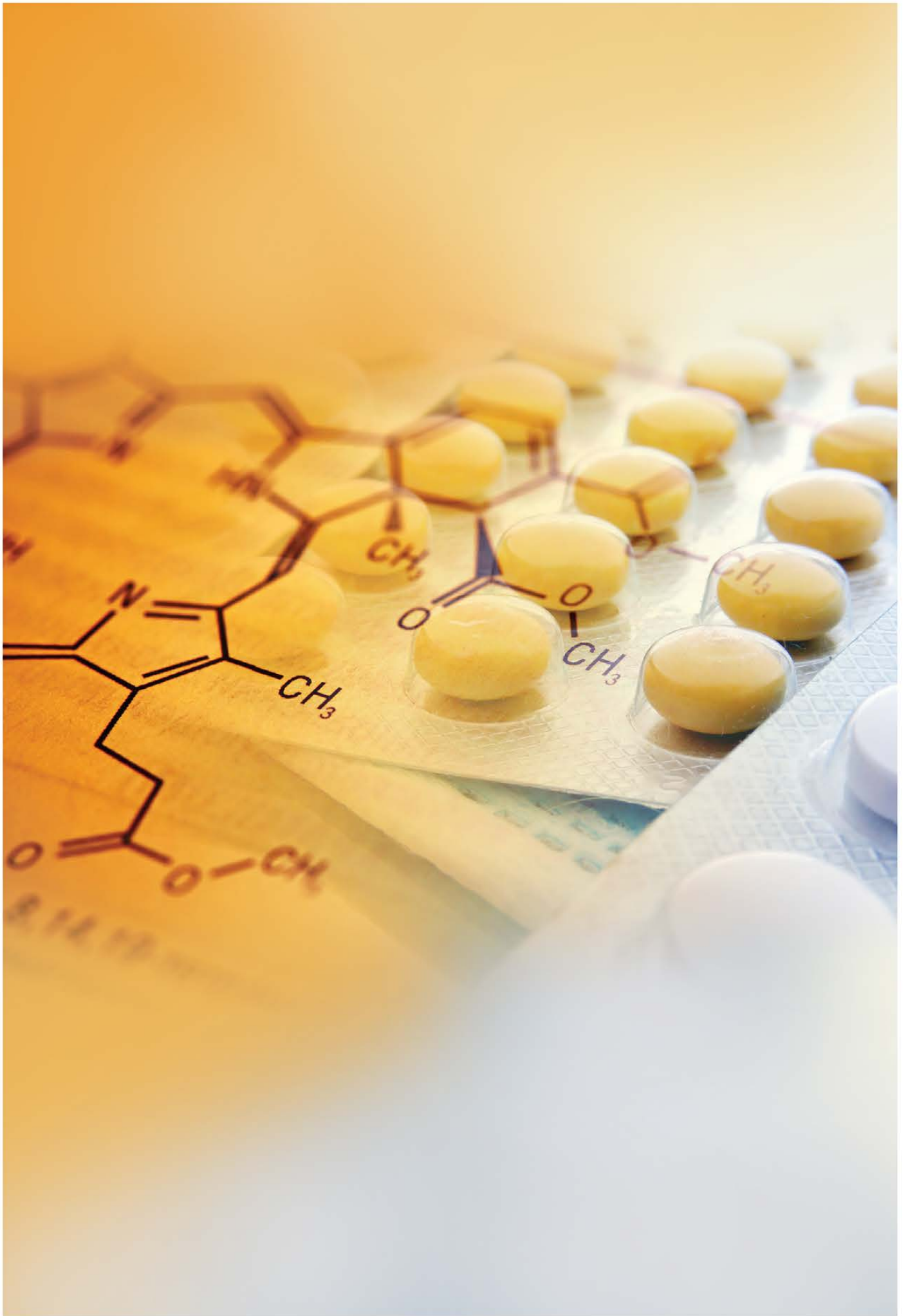
Up to 6,000 capsules/h

#### Features

- Securefill 6T is ideal for filling capsules with oncological, biopharmaceutical, hormone, anti-viral, cytotoxic, and any other products that qualify for an Occupational Exposure Band of 4, as specified by International Safety Standards (ISS).
- It includes a Wet-in-Place (WIP) post production system to ensure complete operator safety from any formulation residue or any leftover potent powder/dust.
- The Securefill technology also includes equipment for the pre- and post- filling stages (the Line Machine Chamber), including an empty capsule sorter elevator, de-duster polisher to remove any remnants of toxic API from exterior surfaces.







## ACG'S R&D AND PILOT-SCALE TABLETING SOLUTION

### 1. Single Rotary Pilot-scale Tableting Machine

#### Protab™ 300

Protab™ 300 is a single rotary tablet press suitable for R&D and pilot scale production.

#### Output:

Up to 215,000 tablets/h

#### Features

- Turret with combinations for trying out different types of formulations and tooling, including:
  - Eight stations of type D + 8 stations of type B tooling
  - Four stations of type D + 4 stations of type B + 4 stations of type BB + 4 stations of type BBS
- Interchangeable turret: The same machine can be used to scale up immediately to a pilot scale batch by changing the turret to a 21 station D or a 27 station B turret.
- Simplified turret changeover in just 30 min (15 min to remove the 8+8 or 4+4+4+4 turret, and 15 min to engage the pilot scale turret)
- Less powder leftover in the feeder (< 50 g)



## ACG'S R&D AND PILOT-SCALE TABLET COATING SOLUTIONS

### 1. Advanced R&D Scale Coater

#### Quest TC

Quest TC is a tabletop, perforated-pan coater intended for feasibility and R&D studies of various coating applications. Packed with almost all the features of a production-scale model, Quest TC offers ease of operation and handling. It is available with three interchangeable pan sizes — 0.8 L, 1.6 L, and 2.5 L

#### Working Capacity

0.3 L to 2.5 L

#### Features

- Adjustable 'nozzle-to-bed' distance and angle
- Easy access to the drum
- Allows data storage and access management
- Weighing scale integrated to PLC
- Anti-bearding Schlick nozzle
- Horizontal air flow pattern



## 2. Piloting Your Quest for Innovation

### Quest TC III

Quest TC III is an advanced, pilot-scale tablet coater with four interchangeable pans (2L, 9L, 24L, and 56L). It embraces a user-centric design philosophy and offers best-in-class ergonomics and excellent cleanability. The revolutionary X·ONE nozzle ensures a higher spray rate for quick and better coating. Quest TC III takes flexibility to a new level with its film and sugar-coating capabilities.

#### Working Capacity

1 L to 56 L

#### Features

- Horizontal air flow pattern
- X·ONE spray nozzle  
(developed by Schlick exclusively for ACG)
- ATEX- certified sensors
- WIP system to facilitate cleaning



## ACG'S R&D AND PILOT-SCALE PACKAGING SOLUTION

### 1. A Versatile Tabletop R&D Blister Packaging Machine for Stability Trials

#### Quest Nanoblis

Quest Nanoblis is a robust tabletop blister packaging machine, ideal for clinical trials, feasibility, and stability studies. It has a compact and portable design, measuring less than 1.5 m in length and weighing just over 100 kg. But what makes it truly stand out is that it is a trailblazer in the field of multiple-stage, concurrent-motion blister packaging for R&D purposes.

Output: 30 CYCLES/MIN

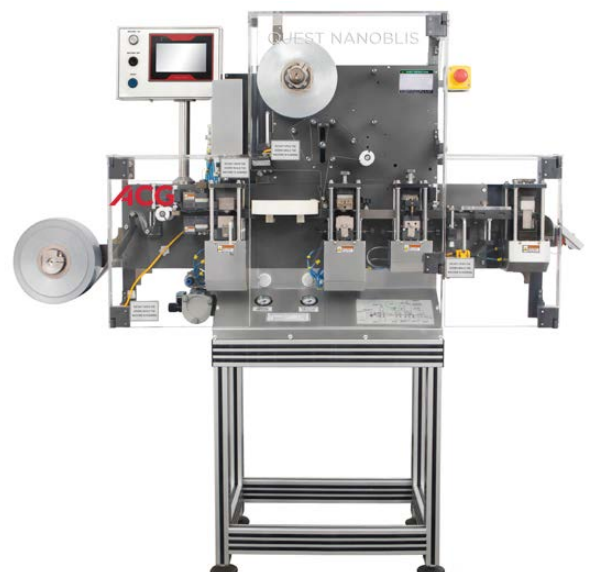
Format area: Max: 80 mm (width) X 38 mm (advance)

Forming depth: Up to 12 mm for thermoforming

Up to 9 mm for cold-forming

#### Features

- cGMP-compliant
- Balcony-type design
- Suitable for thermoform and cold-form applications
- Plug-assisted forming for uniform cavity thickness
- User-friendly machine—ergonomically designed with touchscreen HMI
- Servo motor for precise indexing
- Round edge cutting of blister for aesthetics



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