

Continuous Technologies



for <Customer>

<Presenter>,

<Glatt Company>

<Place>; <Date>



We set the Standard

Overview of Presentation

Fluidized Bed - General Overview

Granule Formation in the Fluid Bed

Continuous Fluid Bed - GF

Continuous Fluid Bed – AGT

Continuous Spouted Bed - ProCell

Laboratory Units and Rental Units

Product Examples



CONTACT

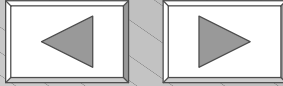
END





Fluid Bed Technology - General Overview

- General Process Advantages
- Advantages of Continuous Process
- Product Advantages of Fluidized Bed



MAIN MENU

GENERAL

GRANULE
FORMATION

GF MENU

AGT MENU

LAB / RENTAL
UNITS

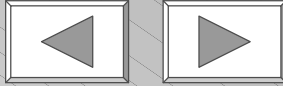
EXAMPLES



Advantages of the Fluid Bed Technology

Process Advantages

- Ideal mixing of material
- High intensity of material and heat exchange
- Gentle drying of temperature-sensitive materials
- Temperature in the bed may be as low as 40°C



MAIN MENU

GENERAL

BED FORMS

REGION OF
OPERATION

GENERAL
ADVANTAGES

ADVANTAGES
OF CONTINUOUS
PROCESS

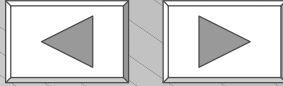
PRODUCT
ADVANTAGES



Advantages of the Fluid Bed Technology

Continuous processes

- Constant and reproducible product quality
- High throughput due to long operating time
- Little down times
- Total running time may be as high as 8000 hr/year



MAIN MENU

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BED FORMS

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ADVANTAGES

ADVANTAGES
OF CONTINUOUS
PROCESS

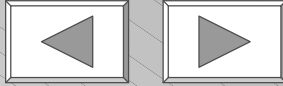
PRODUCT
ADVANTAGES



Product Advantages of the Fluidized Bed

Product

- No problems with dust
- Easy to dose and to transport due to good free flowing property
- Constant filling weight and - volume for packing and pressing due to constant bulk density
- No segregation of components of mixture



MAIN MENU

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BED FORMS

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GENERAL
ADVANTAGES

ADVANTAGES
OF CONTINUOUS
PROCESS

PRODUCT
ADVANTAGES



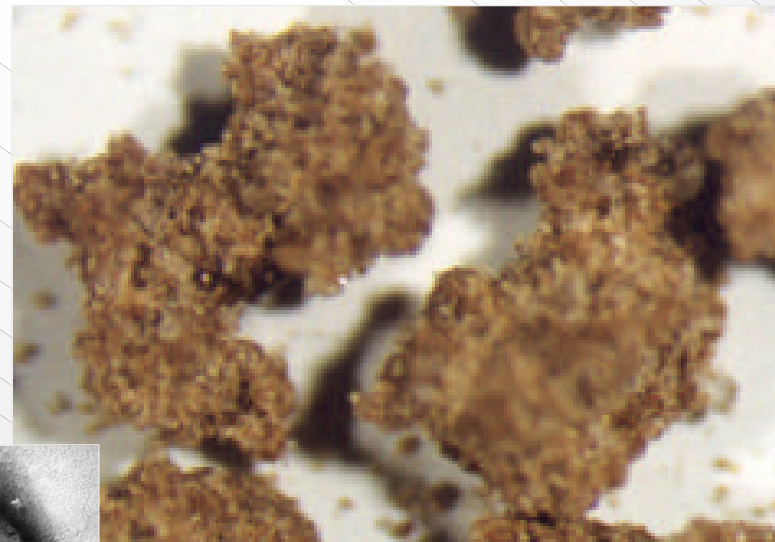
Granule Formation in the Fluidized Bed

Why Granulation?

Principle Agglomeration

Principle Layering

Principle Coating



MAIN MENU

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UNITS

EXAMPLES



Granule Formation - Why Granulation ?

Superior to

Powder

- no dust
- good free flowing properties
- easy to dose
- easy to transport
- decreased handling hazards

Liquid

- less weight
- less volume
- no precipitation or settlement
- easy to ship
- decreased handling hazards



MAIN MENU

GRANULE
FORMATION

WHY
GRANULATION?

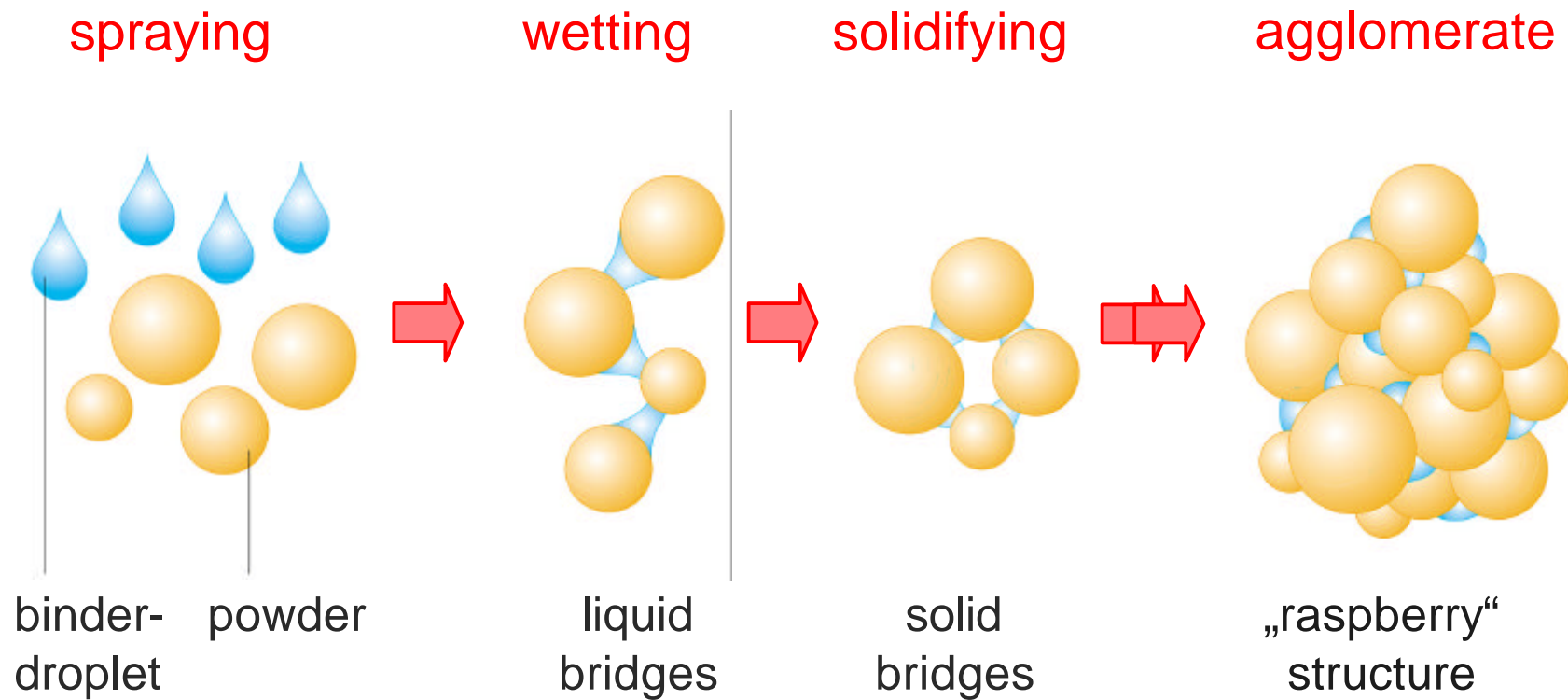
AGGLOMERATION

LAYERING

COATING



Granule Formation - Principle: Agglomeration



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WHY
GRANULATION?

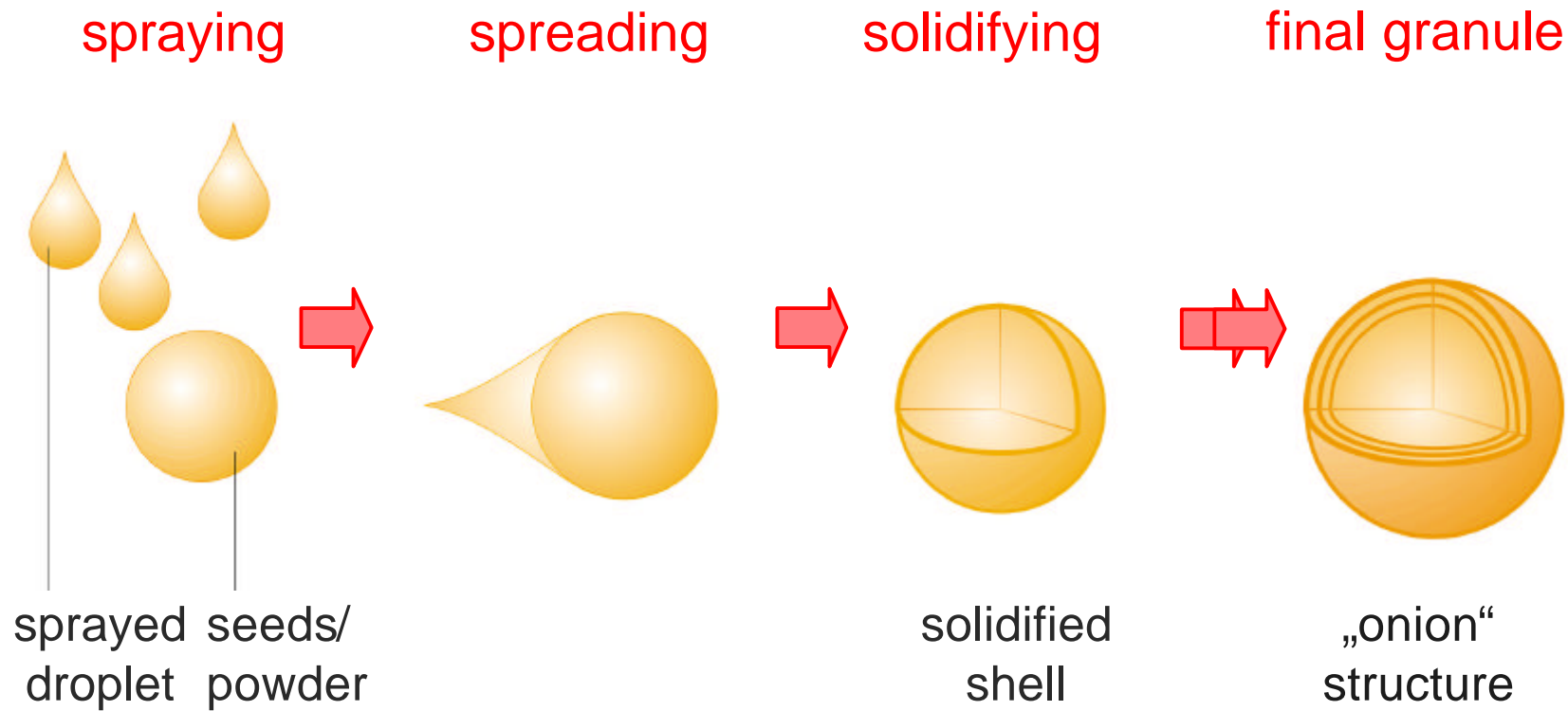
AGGLOMERATION

LAYERING

COATING



Granule Formation - Principle Spray Granulation



MAIN MENU

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WHY
GRANULATION?

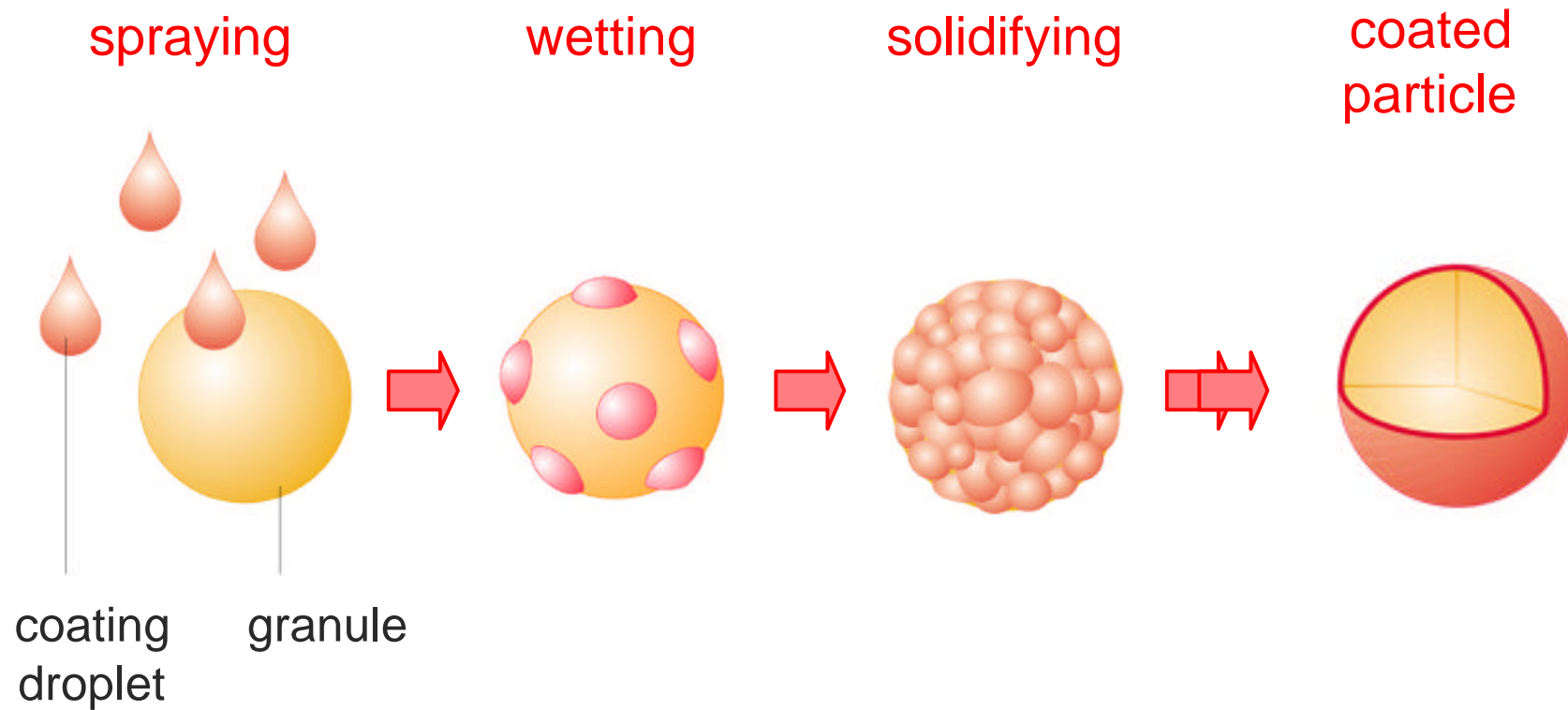
AGGLOMERATION

LAYERING

COATING



Granule Formation - Principle Coating



MAIN MENU

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WHY
GRANULATION?

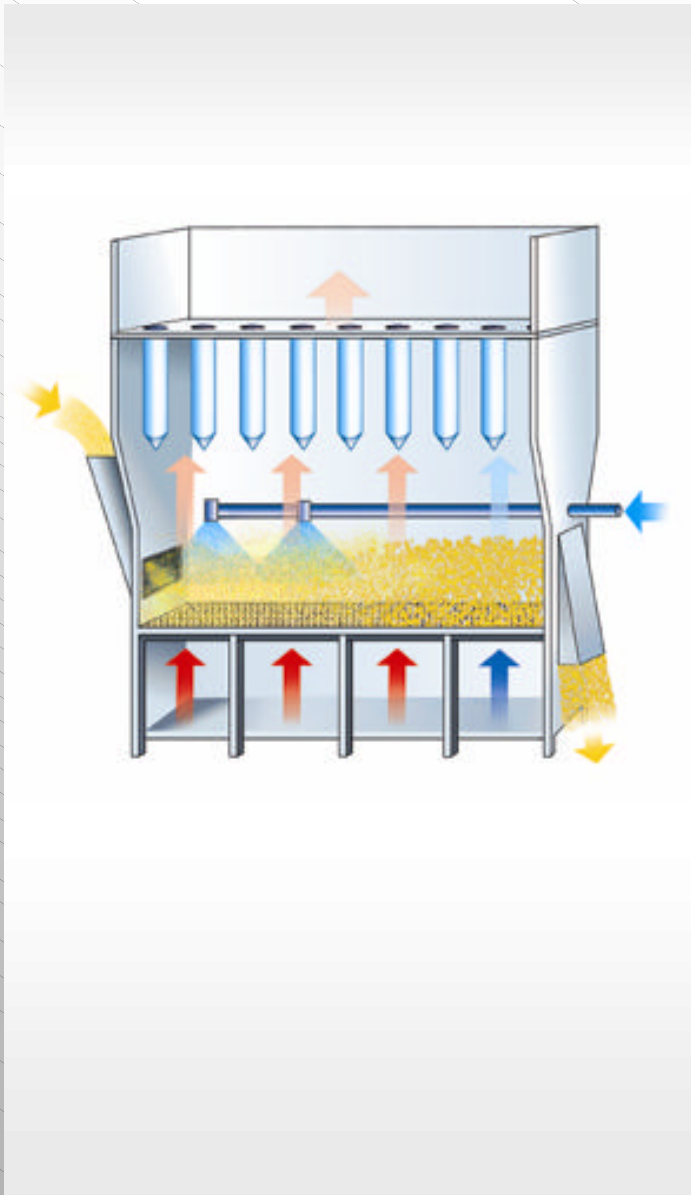
AGGLOMERATION

LAYERING

COATING



Continuous Fluid Bed - GF



- Operating Principle
- Application
- Technology Advantages
- Product Characteristics
- Standard Plant
- GFG 500
- GSG



MAIN MENU

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GF MENU

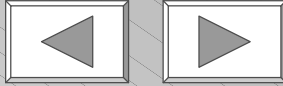
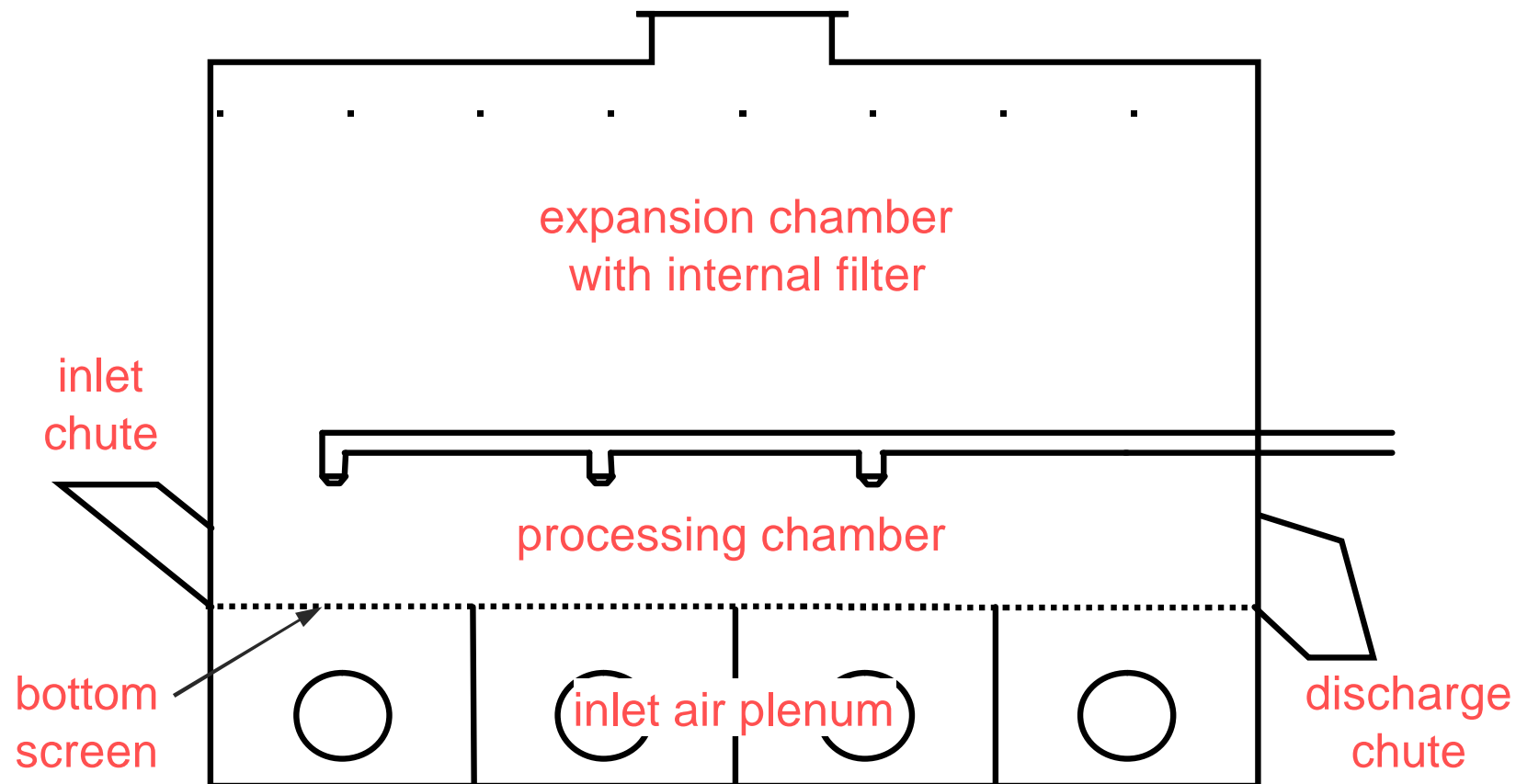
AGT MENU

LAB / RENTAL
UNITS

EXAMPLES



GF Operating Principle



MAIN MENU

GF MENU

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TECHNOLOGY
ADVANTAGES

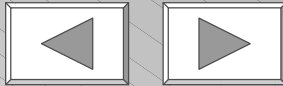
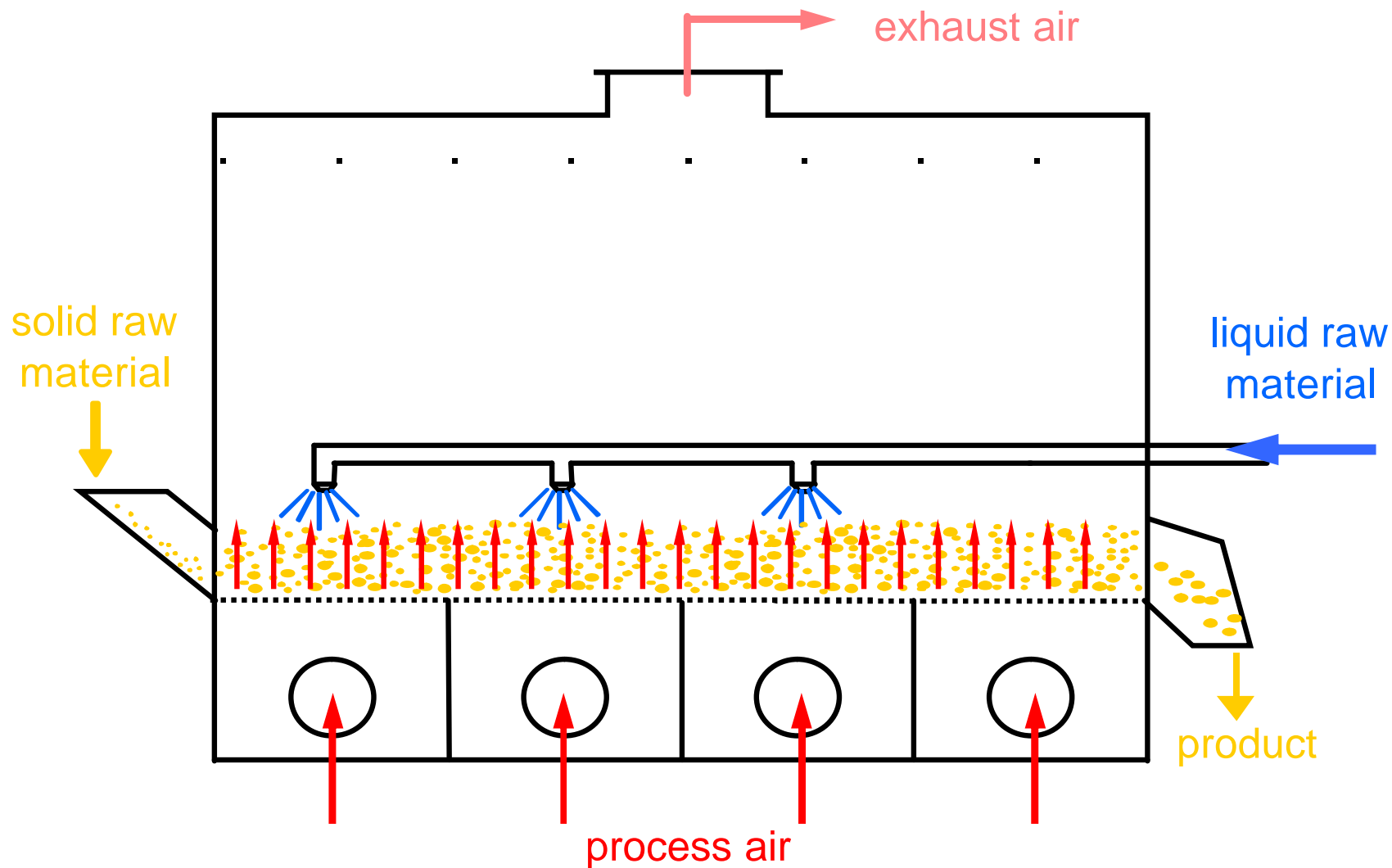
PRODUCT
CHARACTER

STANDARD PLANT

GFG 500



GF Operating Principle



MAIN MENU

GF MENU

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ADVANTAGES

PRODUCT
CHARACTER

STANDARD PLANT

GFG 500



GF-G



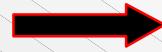
Spray **g**ranulation
of solutions, suspensions, melts

GF-G



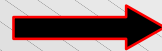
Agglomeration
of powder, instantiation

GF-C



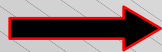
Coating
of granules, crystals, extrudates

GF-T

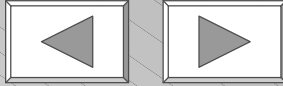


Drying
of material of coarse or small grain size

GF-K



Cooling
of material of coarse or small grain size



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GF MENU

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ADVANTAGES

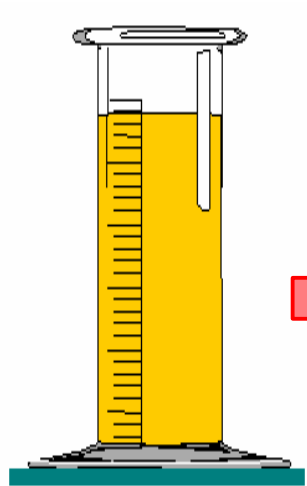
PRODUCT
CHARACTER

STANDARD PLANT

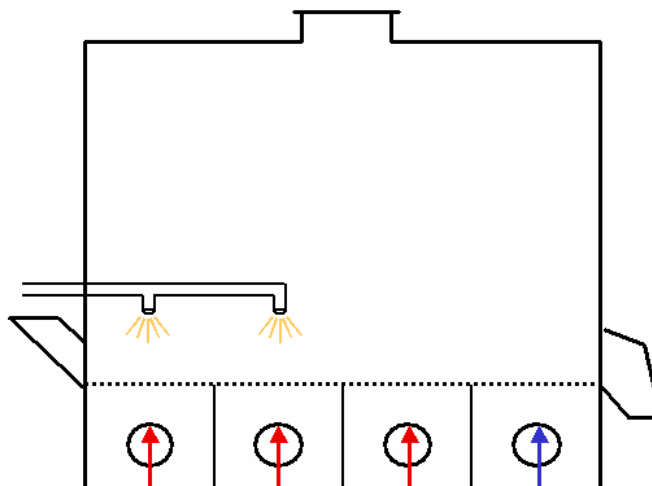
GFG 500



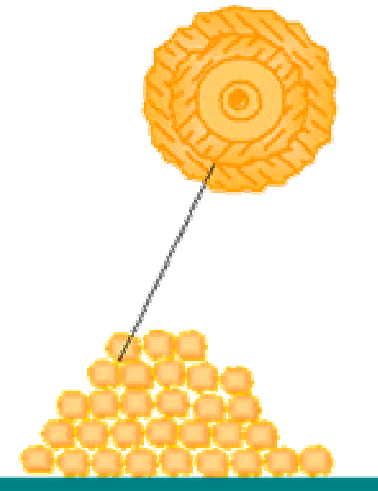
GF Application: Spray granulation



solution,
suspension,
melt



Granulation
Drying
Cooling



e.g. phosphate
enzyme



MAIN MENU

GF MENU

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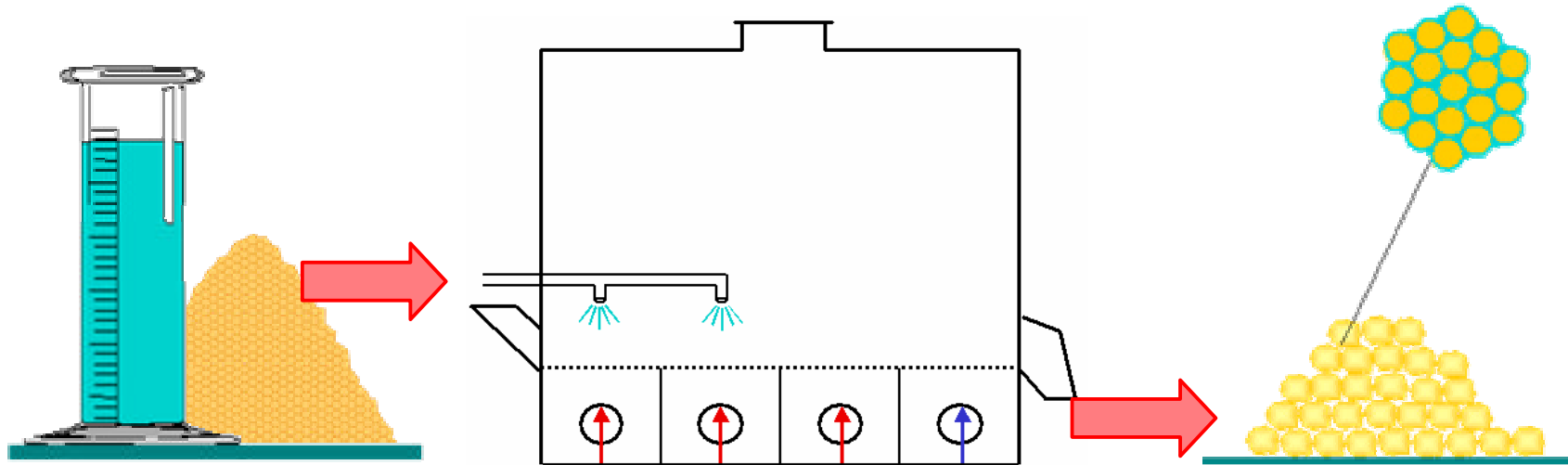
PRODUCT
CHARACTER

STANDARD PLANT

GFG 500



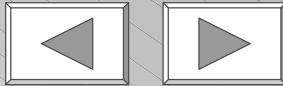
GF Application: Agglomeration



solid material +
solution,
suspension
(binder)

Agglomeration
Drying
Cooling

e.g. milk powder
instant tea



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GF MENU

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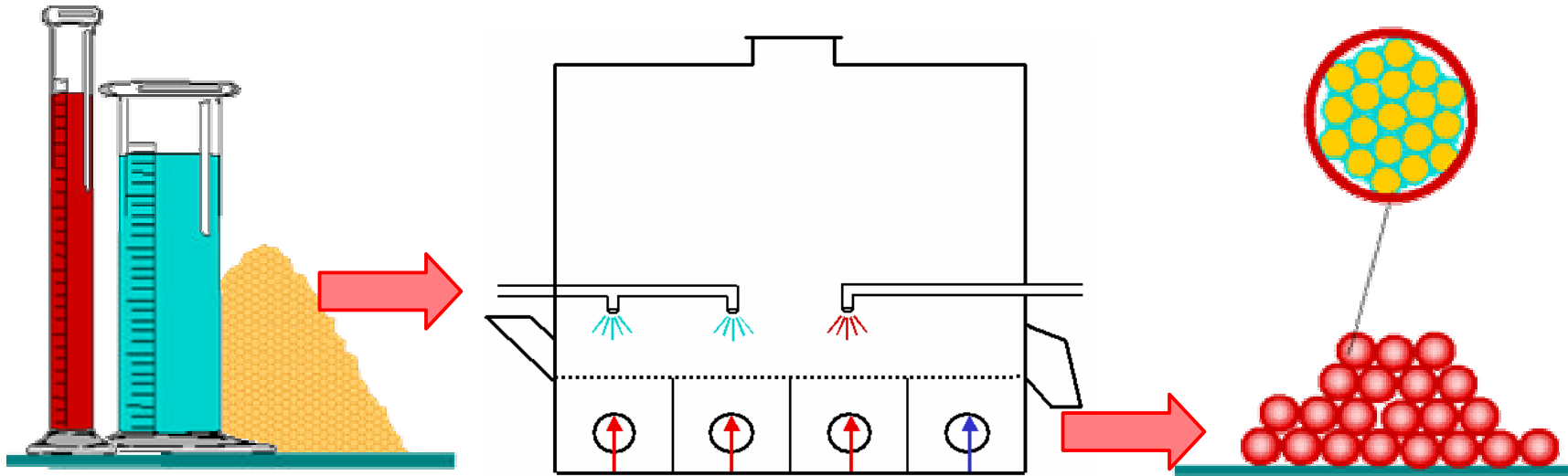
PRODUCT
CHARACTER

STANDARD PLANT

GFG 500



GF Application: Coating



solid material
+ binder
+ coating liquid

Agglomeration
Coating
Cooling

e.g. sugar



MAIN MENU

GF MENU

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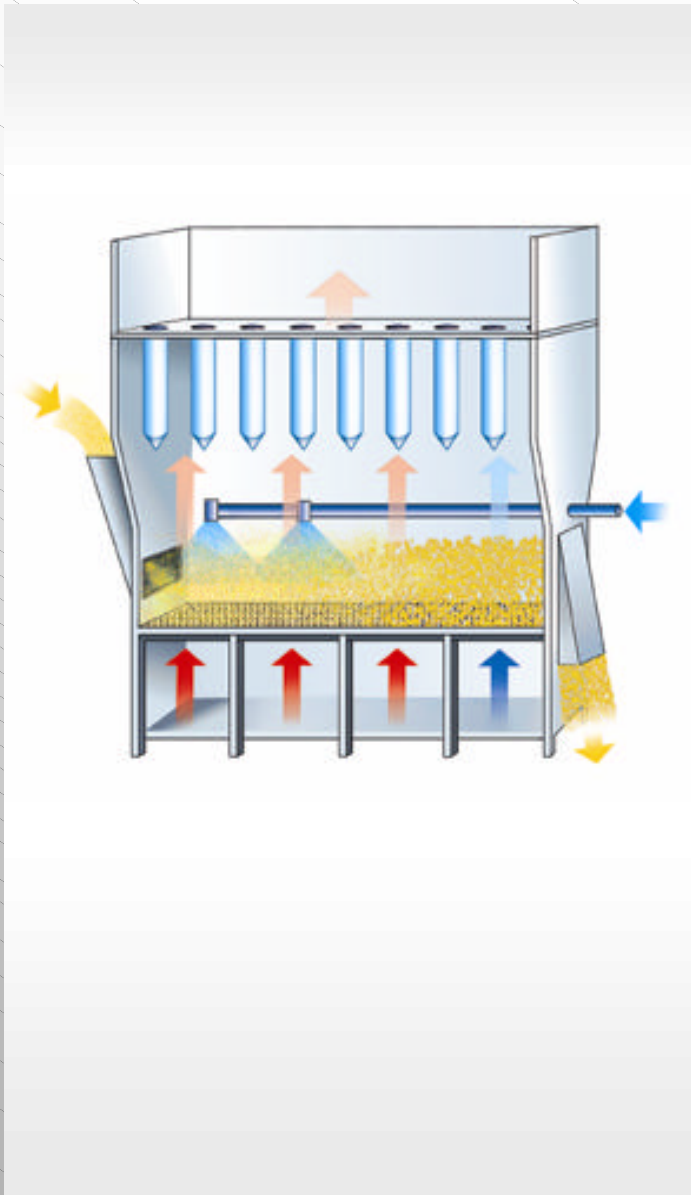
PRODUCT
CHARACTER

STANDARD PLANT

GFG 500



GF: Technology - Advantages



- Very variable process for granulating, drying, cooling and coating
- Combination of processes in one unit possible
- High yield due to the retention of dust up to 100% yield
- Simultaneous processing of solid and liquid raw materials to homogeneous granules



MAIN MENU

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PRODUCT
CHARACTER

STANDARD PLANT

GFG 500



Characteristics of the Product

- Good dispersibility
- Excellent solubility
- Dust-free product
- Depending on raw material and process many product parameters can be influenced, like:
 - bulk density
 - grain size
 - agglomeration (0.2 ... 1.5 mm)
 - layering (0.5 ... 5 mm)
 - hygroscopicity
 - residual moisture



MAIN MENU

GF MENU

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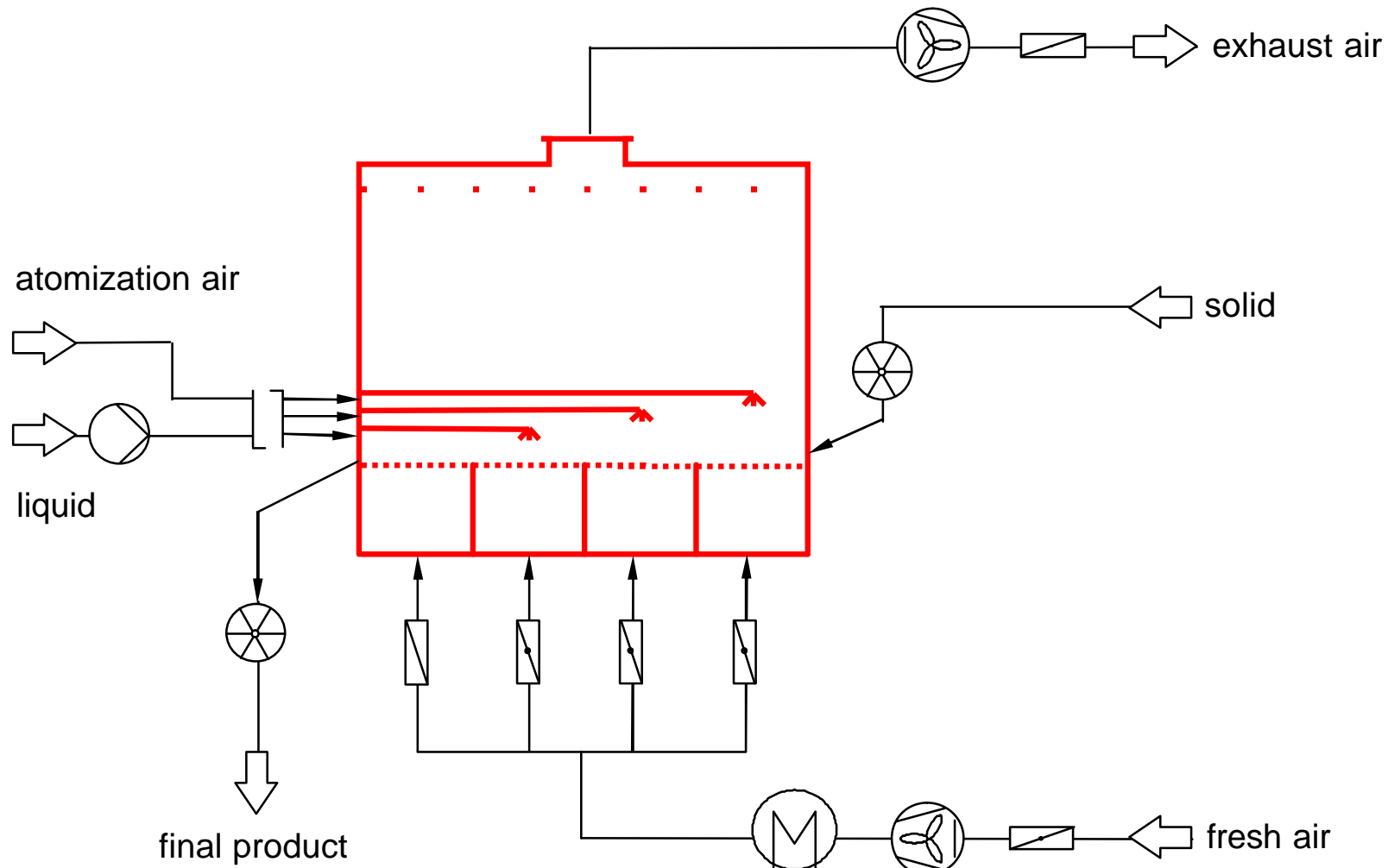
PRODUCT
CHARACTER

STANDARD PLANT

GFG 500



GF: Standard Plant



MAIN MENU

GF MENU

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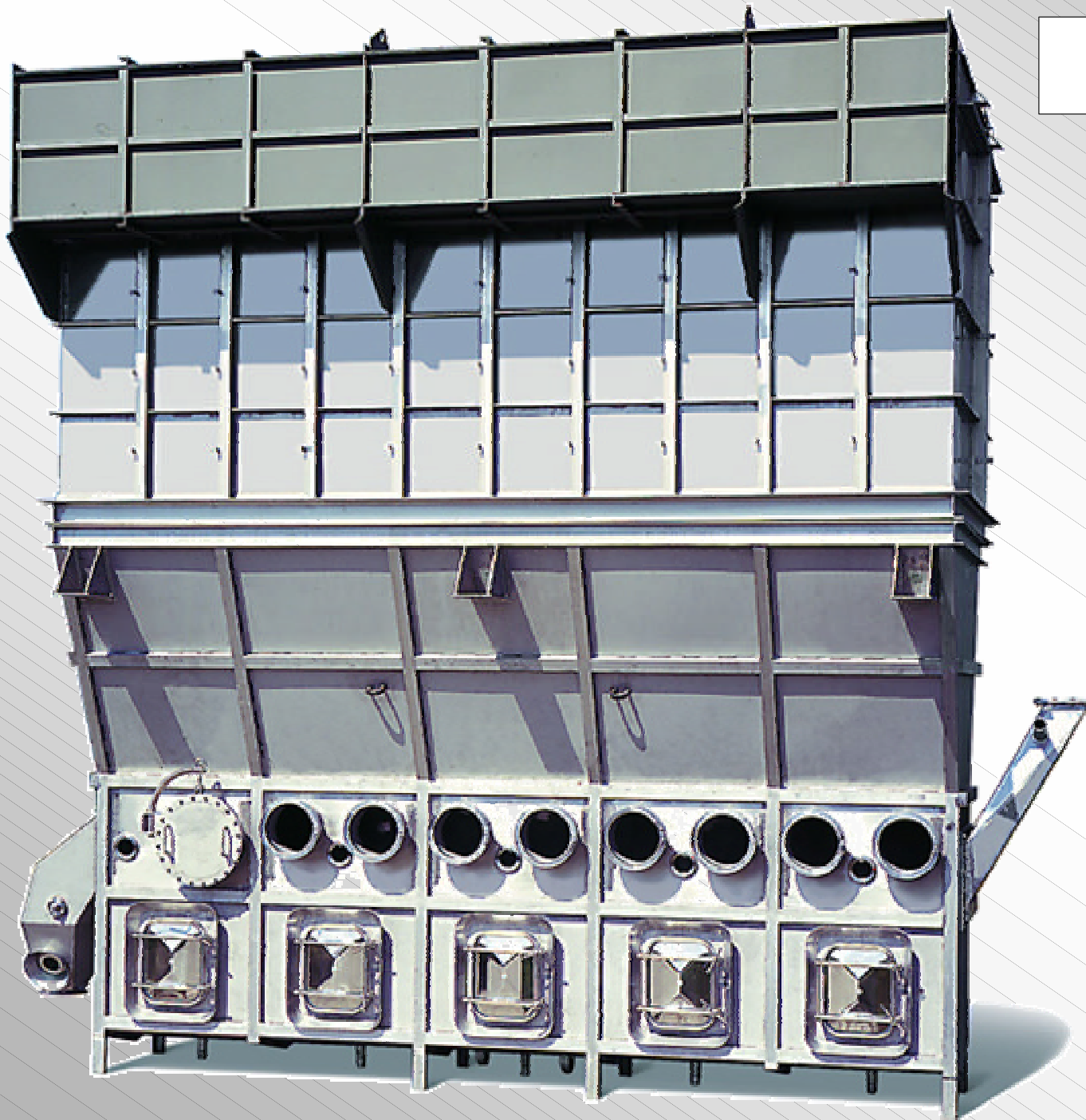
TECHNOLOGY
ADVANTAGES

PRODUCT
CHARACTER

STANDARD PLANT

GFG 500





GFG 500



MAIN MENU

GF MENU

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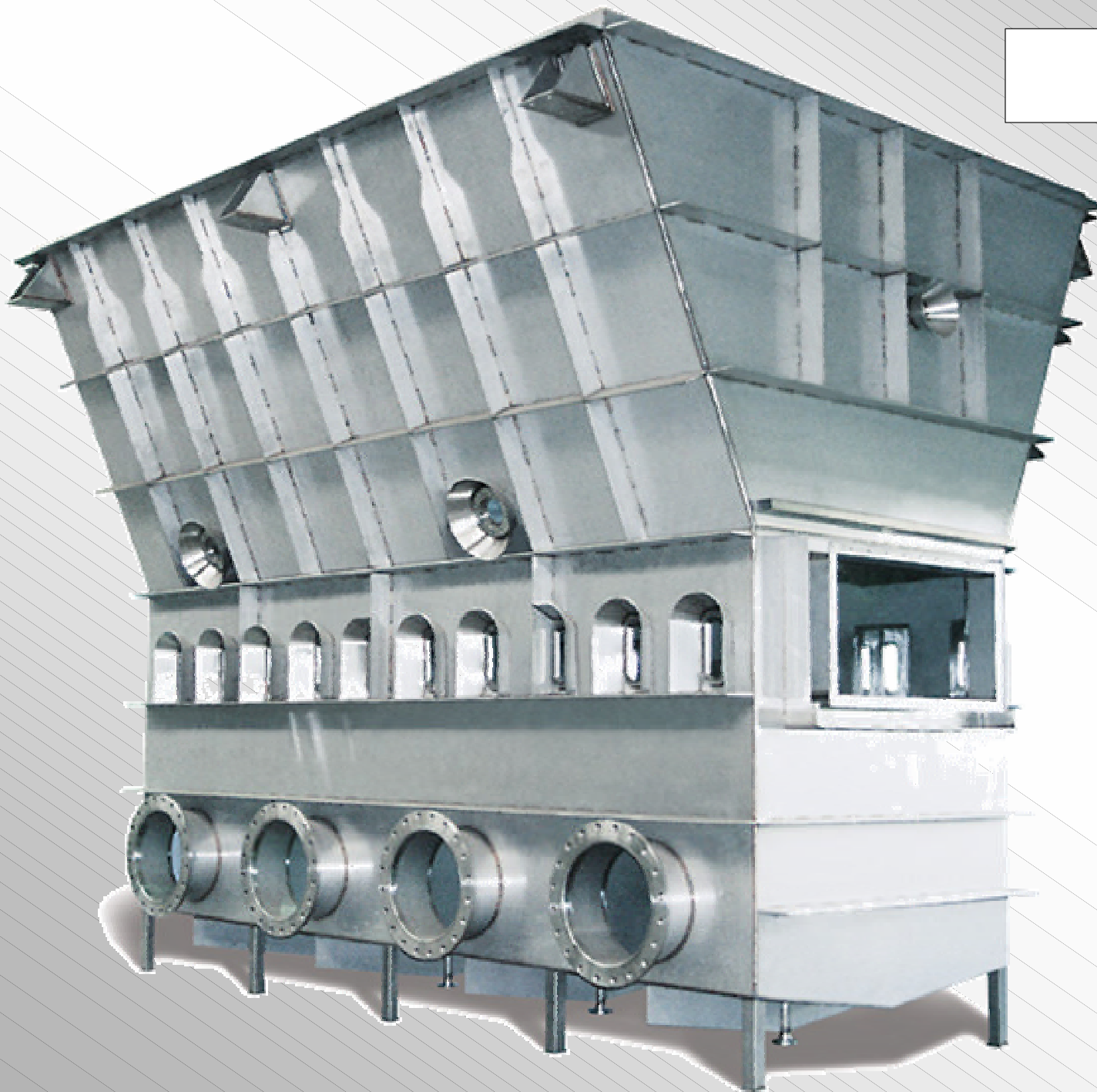
TECHNOLOGY
ADVANTAGES

PRODUCT
CHARACTER

STANDARD PLANT

GFG 500





GFG 1200



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STANDARD PLANT

GFG 500





GFC 750



MAIN MENU

GF MENU

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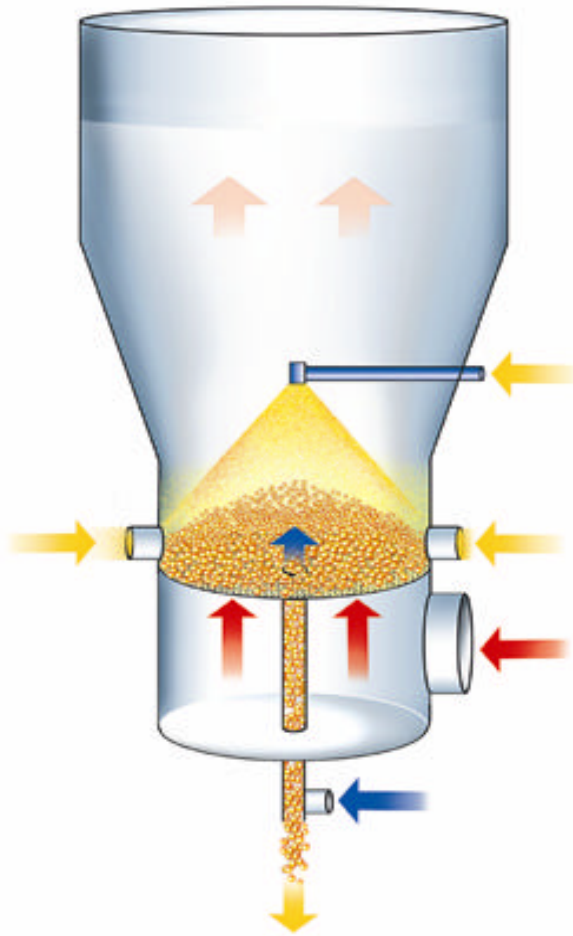
PRODUCT
CHARACTER

STANDARD PLANT

GFG 500



Continuous Fluid Bed - AGT



- Operating Principle
- Application
- Technology Advantages
- Product Characteristics
- Standard Plant
- AGT 2200



MAIN MENU

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GF MENU

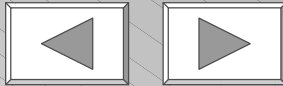
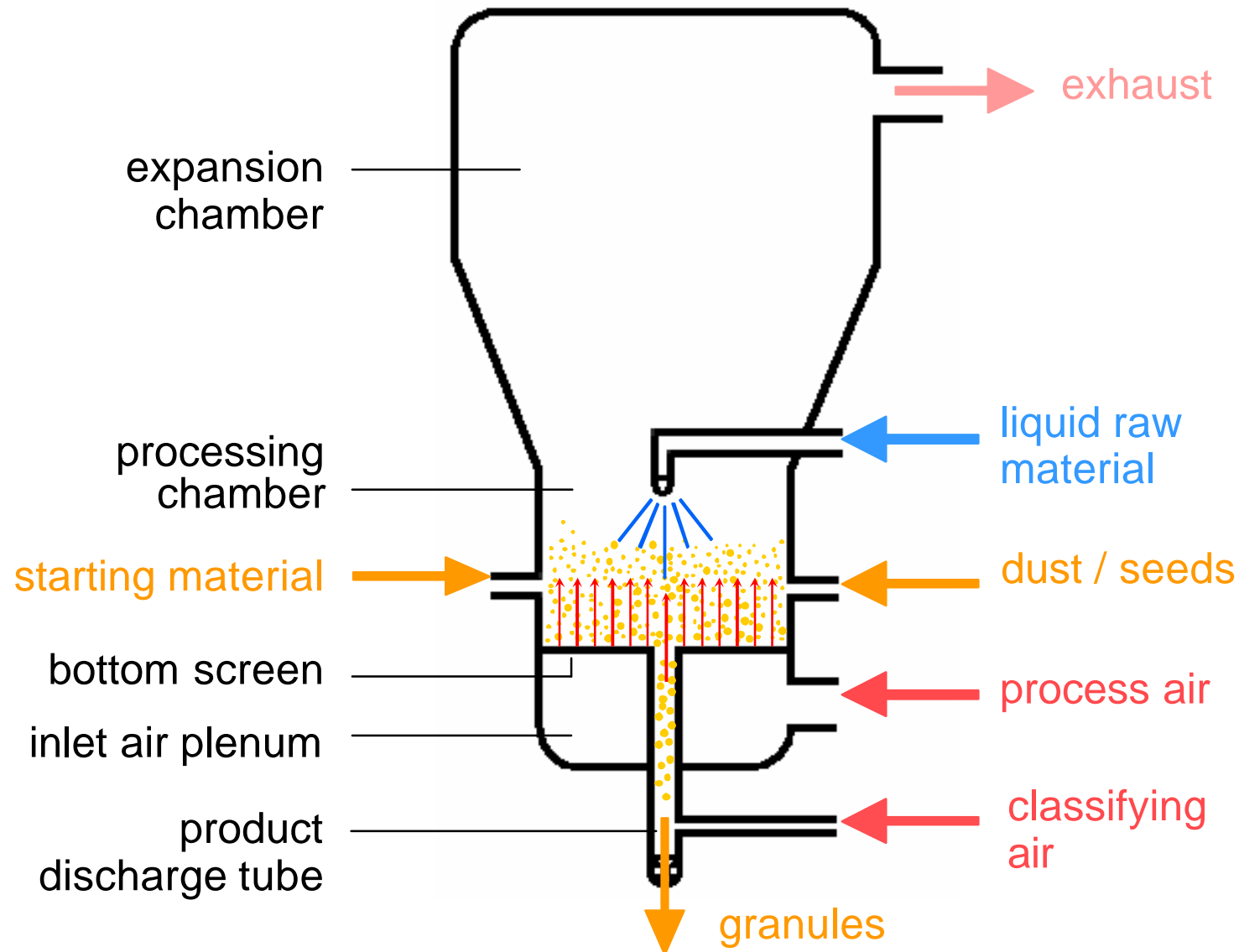
AGT MENU

LAB / RENTAL
UNITS

EXAMPLES



AGT-Operating Principle



MAIN MENU

AGT MENU

OPERATION
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TECHNOLOGY
ADVANTAGES

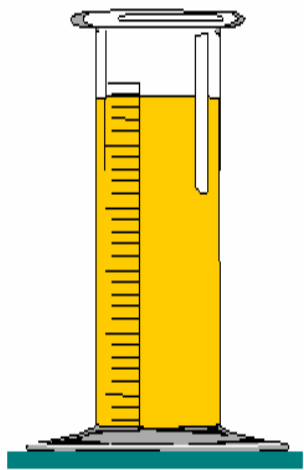
PRODUCT
CHARACTER

STANDARD PLANT

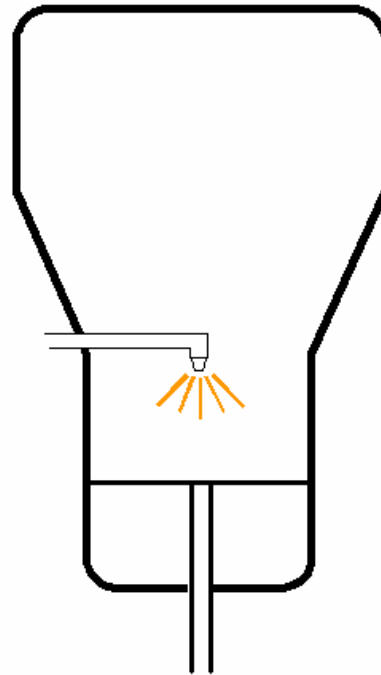
AGT 2200



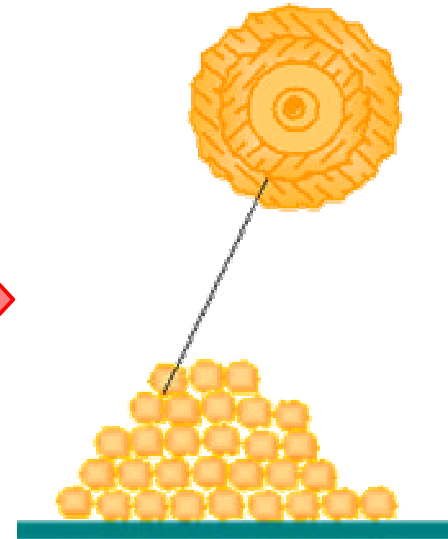
AGT Application: Spray granulation



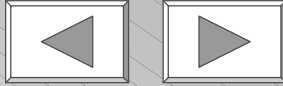
solution,
suspension



granulation
drying



e.g. amino acid
potash



MAIN MENU

AGT MENU

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TECHNOLOGY
ADVANTAGES

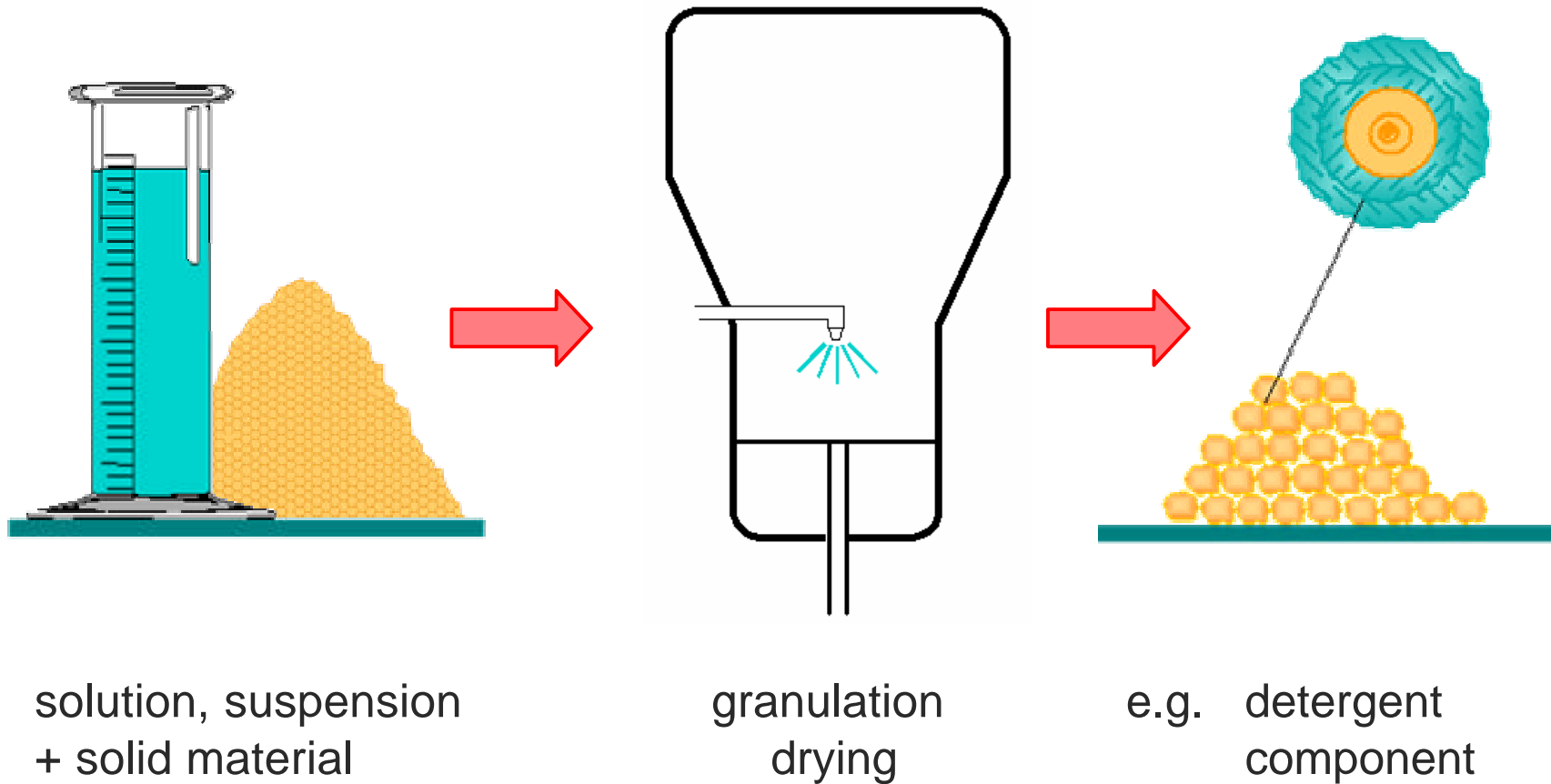
PRODUCT
CHARACTER

STANDARD PLANT

AGT 2200



AGT Application: Granulation and Mixing



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TECHNOLOGY
ADVANTAGES

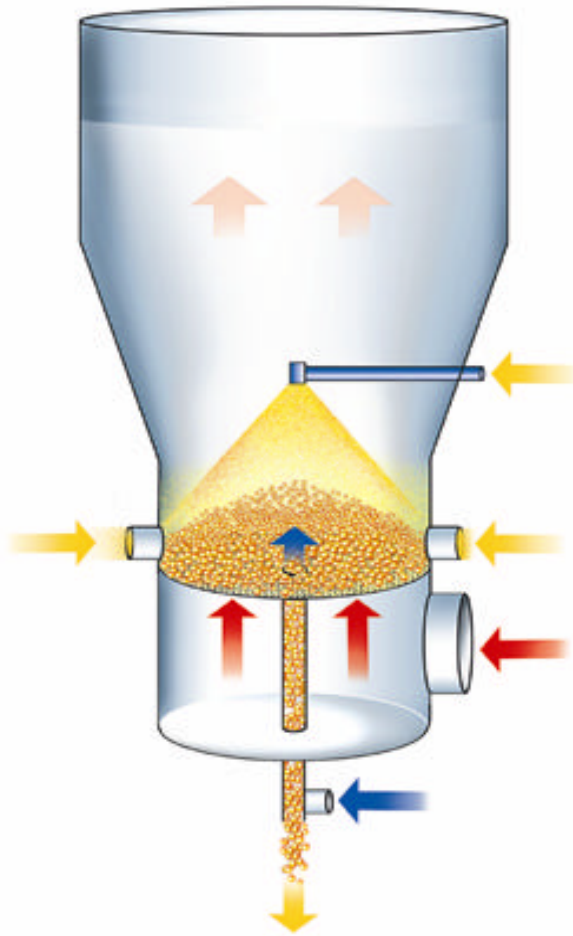
PRODUCT
CHARACTER

STANDARD PLANT

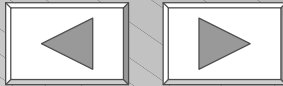
AGT 2200



AGT: Technology - Advantages



- Simultaneous processing of solid and liquid raw materials to homogeneous granules
- High yield due to the recycling of dust up to 100% yield
- Constant mixing of the whole bed material
- Simultaneous drying of liquids and building of particle size
- Smaller equipment size compared to spray dryers



MAIN MENU

AGT MENU

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TECHNOLOGY
ADVANTAGES

PRODUCT
CHARACTER

STANDARD PLANT

AGT 2200



Characteristics of Product

- Narrow grain size distribution down to 0.5 mm
- Dust-free and compact granules
- Good resistance against abrasion
- Reduced hygroscopicity
- Good storage properties



MAIN MENU

AGT MENU

OPERATION
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TECHNOLOGY
ADVANTAGES

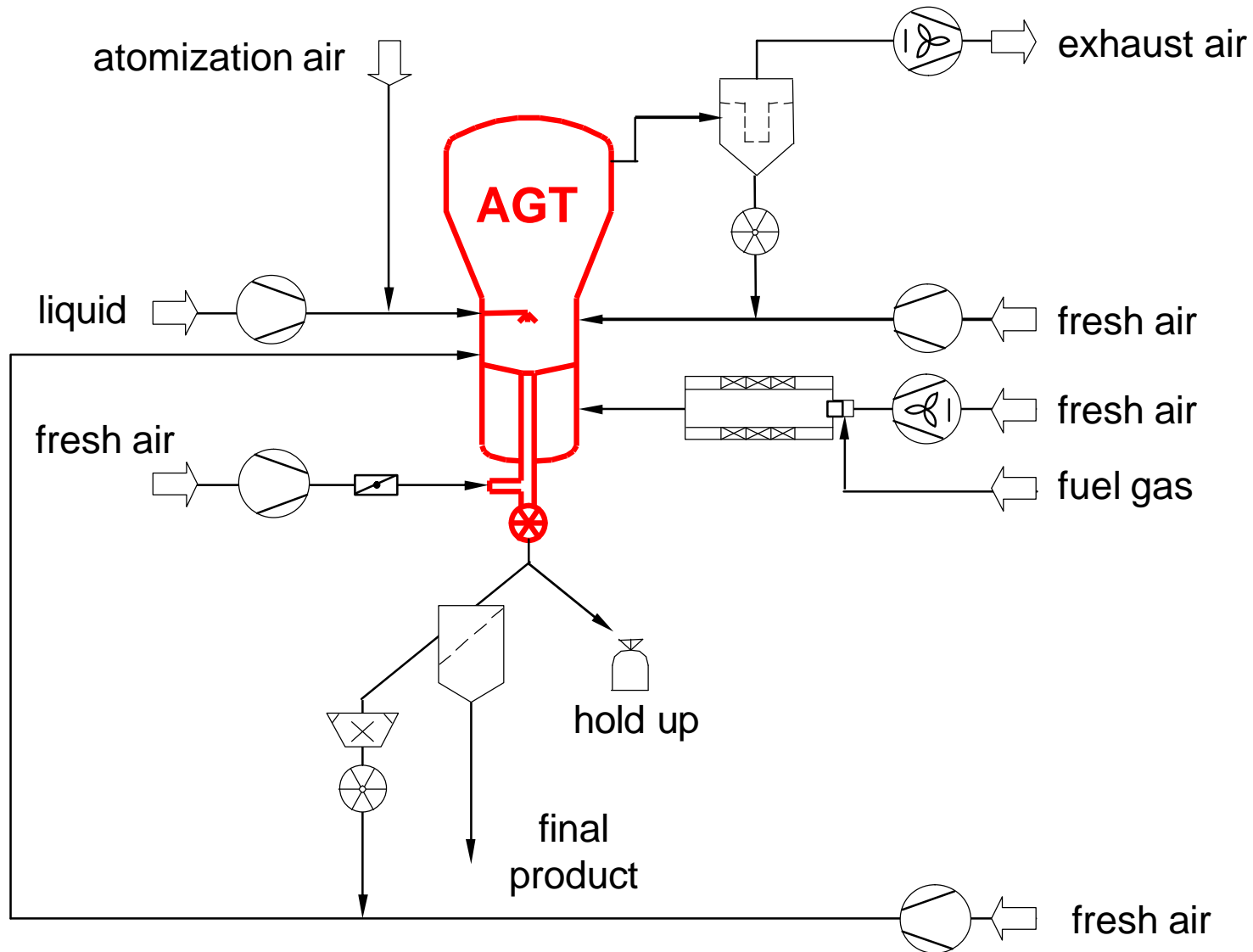
PRODUCT
CHARACTER

STANDARD PLANT

AGT 2200



AGT: Standard Plant



MAIN MENU

AGT MENU

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TECHNOLOGY
ADVANTAGES

PRODUCT
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STANDARD PLANT

AGT 2200

