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Im Wlngen 25, D-40731 Waltrng


3  Döscher & Döscher

## In-line monitoring of granule properties in fluidized bed granulation processes using a novel PAT tool

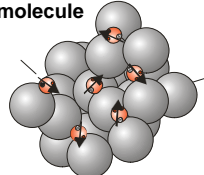
C. Buschmüller<sup>1,2</sup>, W. Wiedey<sup>2</sup>,  
C. Döscher<sup>3</sup>, J. Breikreutz<sup>1</sup>

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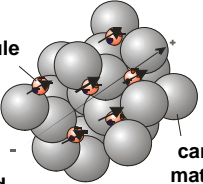
## Microwave Resonance Technology



water molecule

carrier material

water in product





water molecule

carrier material

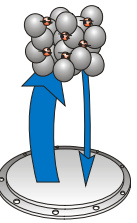
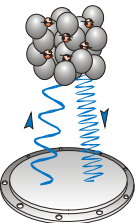
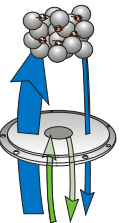
electromagnetic field

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## Microwave Resonance Technology






EP 1331 476


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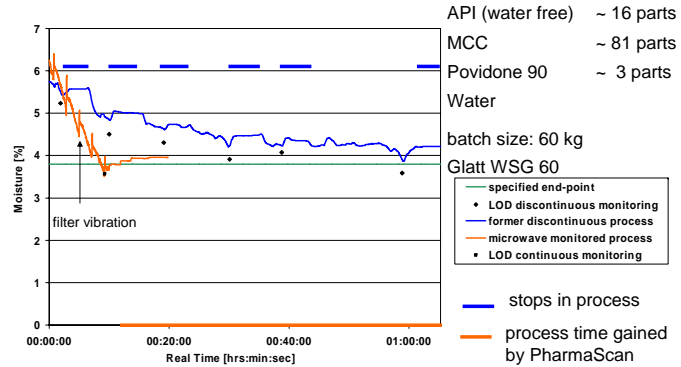
## Mounting of Hydorpharm® fbma



**Glatt WSG 60,  
PHARBIL Waltrng GmbH**

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## Drying of verum granules



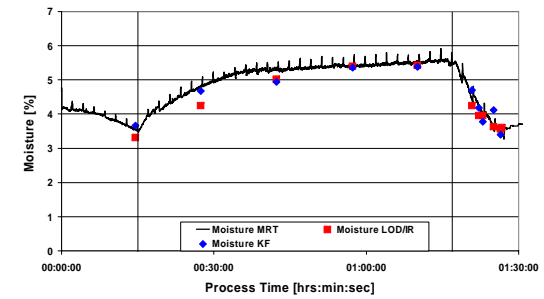
API (water free) ~ 16 parts  
MCC ~ 81 parts  
Povidone 90 ~ 3 parts  
Water  
batch size: 60 kg  
Glatt WSG 60

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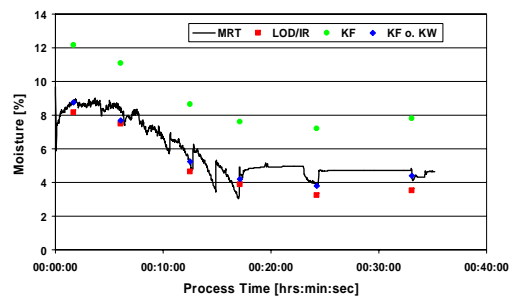
## Granulation process verum granules



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## Drying of crystal water containing placebo granules

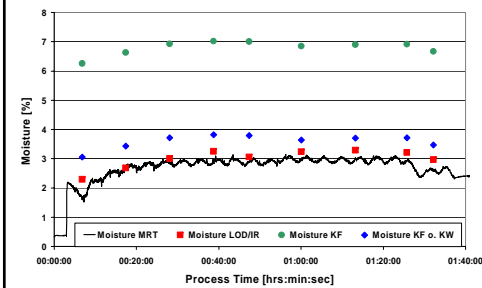


Lactose ~ 68 parts  
Maize starch ~ 32 parts  
Water  
crystal water 3.4 %

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## Granulation process Verum granules



API I < 1 part  
API II ~ 3 parts  
Lactose ~ 65 parts  
pregelatinized starch ~ 25 parts  
Povidone 30 3.6 parts  
Water  
crystal water ~ 3.2 %

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## Conclusions



- Microwave resonance technology as a novel PAT tool
- Continuous monitoring of moisture
- Density independency
- Suitable for crystal water containing and crystal water free granules
- Good correlation with reference methods
- Suitable for unconditioned inlet air
- Improved product safety
- Saving process time
- Ensuring product quality

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## Project Team



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Dr. Claas Döscher	Döscher & Döscher GmbH
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