

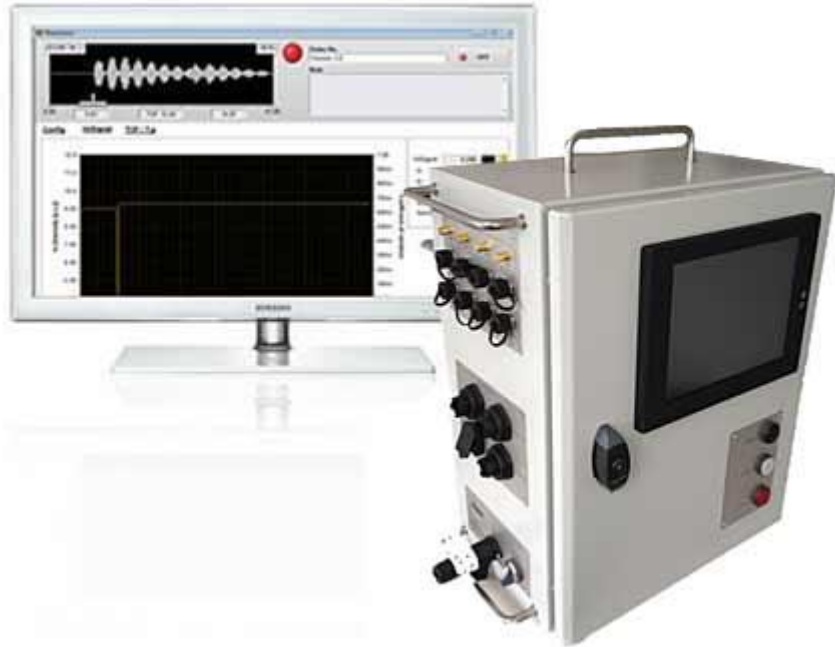


# Rhenowave<sup>®</sup> – Inline process control of rubber compounds energized by LANXESS

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15<sup>th</sup> April 2015

**LANXESS**  
Energizing Chemistry

# Rhenowave<sup>®</sup> – The product range



## ■ Components

- Transducer and sensor technology (ultrasound, temp., press.)
- Hardware box (PCM LAN100 & PC for calculation and connection)
- Software (signal detecting and calculation)

## ■ Range and limitations

- Homogeneity of filler in rubber mixture (relative values)
- Experimental confirmation for different rubber types (EPDM, NR, IIR)

## ■ Upgrade possibility Rhenogran<sup>®</sup> AP with marker

- Homogeneity of cross-linking chemicals in rubber mixture (relative values)

Lower scrap rate & increased capacity by real time quality analysis of rubber compounds

# Rhenowave<sup>®</sup> – Application & benefits

## Applications

- Process support
  - Extrusion support of finish
  - Injection Molding
  - Continuous mixing
- Laboratory instrument
  - Stand alone machine
- **iCOM<sup>®</sup>\***
  - Continuous mixing in combination with Rhenogran AP with marker

## Benefits for our customer

- Wide range of application
- Non-destructive testing
- No delay of response (<1s; inline)
- Representative results (volumetric)
- Detection of single impurities (> 500 µm)

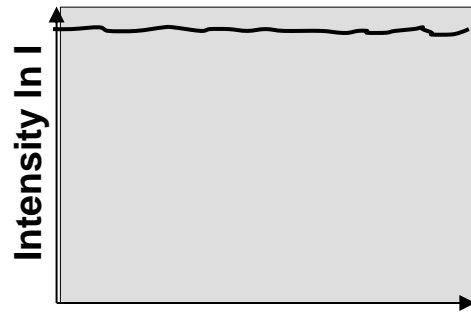
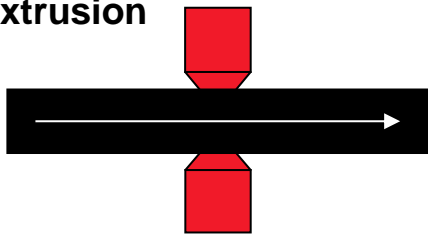
## Determination of Compound Homogeneity

- Distribution of fillers
- Dispersion of fillers agglomerates
- Dosing of Rhenogran<sup>®</sup> AP with marker

\* Integrated Continuous Mixing

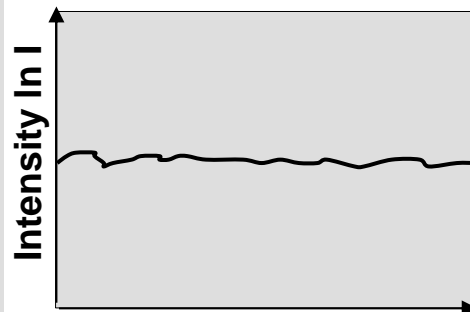
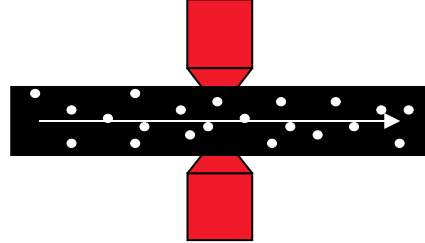
# Rhenowave<sup>®</sup> – What can we detect?

Extrusion



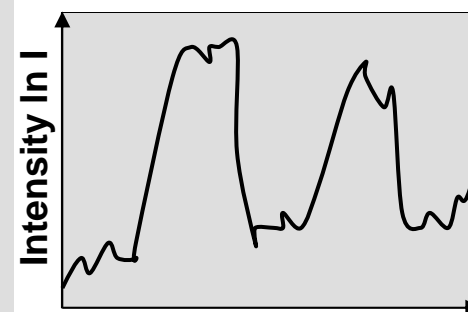
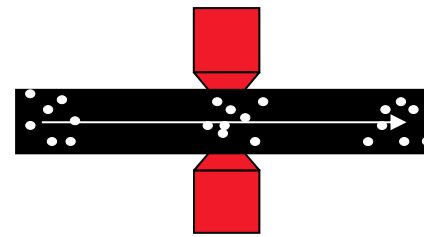
Extrusion time  $t_{\text{Extr.}}$

Without  
Particles



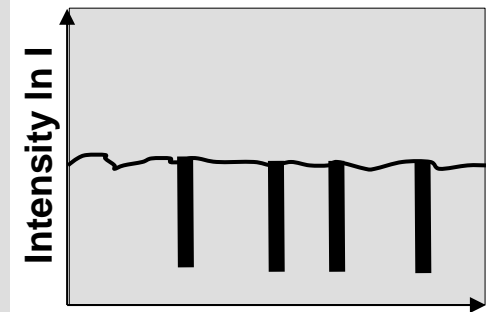
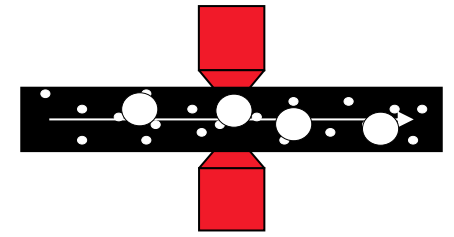
Extrusion time  $t_{\text{Extr.}}$

Homogeneous  
Distribution



Extrusion time  $t_{\text{Extr.}}$

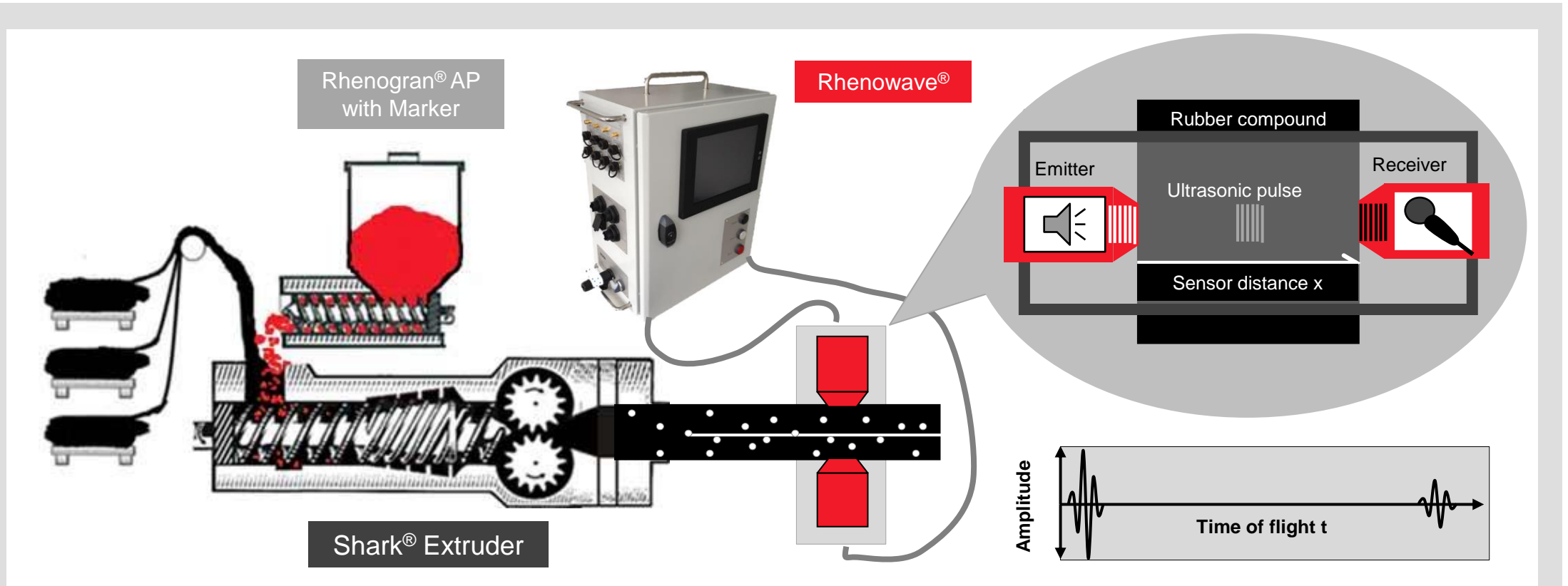
Inhomogeneous  
Distribution



Extrusion time  $t_{\text{Extr.}}$

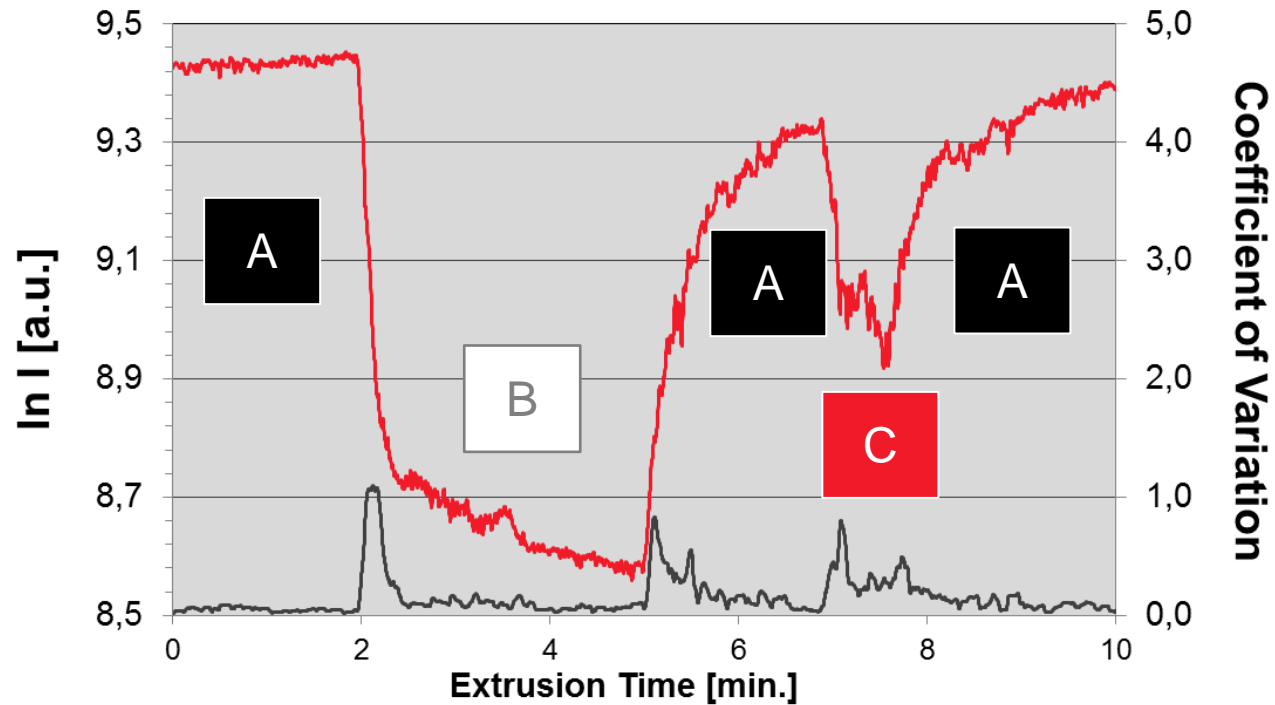
With Flaws  
 $\geq 500 \mu\text{m}$

# Example of application: iCOM<sup>®</sup> (Integrated Continuous Mixing) Set Up



**Accelerator amount & distribution detection with Rhenogran<sup>®</sup> AP with marker!**

# Rhenowave<sup>®</sup> – Detection of Rhenogran<sup>®</sup> AP with Marker



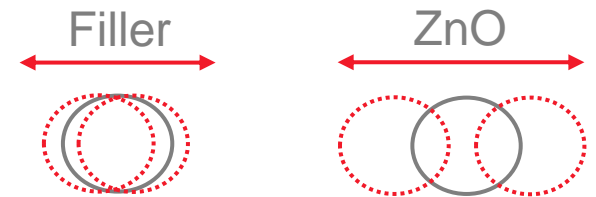
**Accelerator amount & distribution detection with Rhenogran<sup>®</sup> AP with marker!**

NR-compound **without** Rhenogran<sup>®</sup> AP **A**

NR-compound with Rhenogran<sup>®</sup> AP with marker mixed **homogeneously** **B**

**Heterogeneous** addition of Rhenogran<sup>®</sup> AP with marker to NR-compound **C**

## Relative Movement



$$\alpha_{\text{diss.}} \sim (\rho_{\text{Rub.}} - \rho_{\text{Particle}})$$

# Questions about our services? Contact us now!

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