

KRONOS digital

for wheat doughs

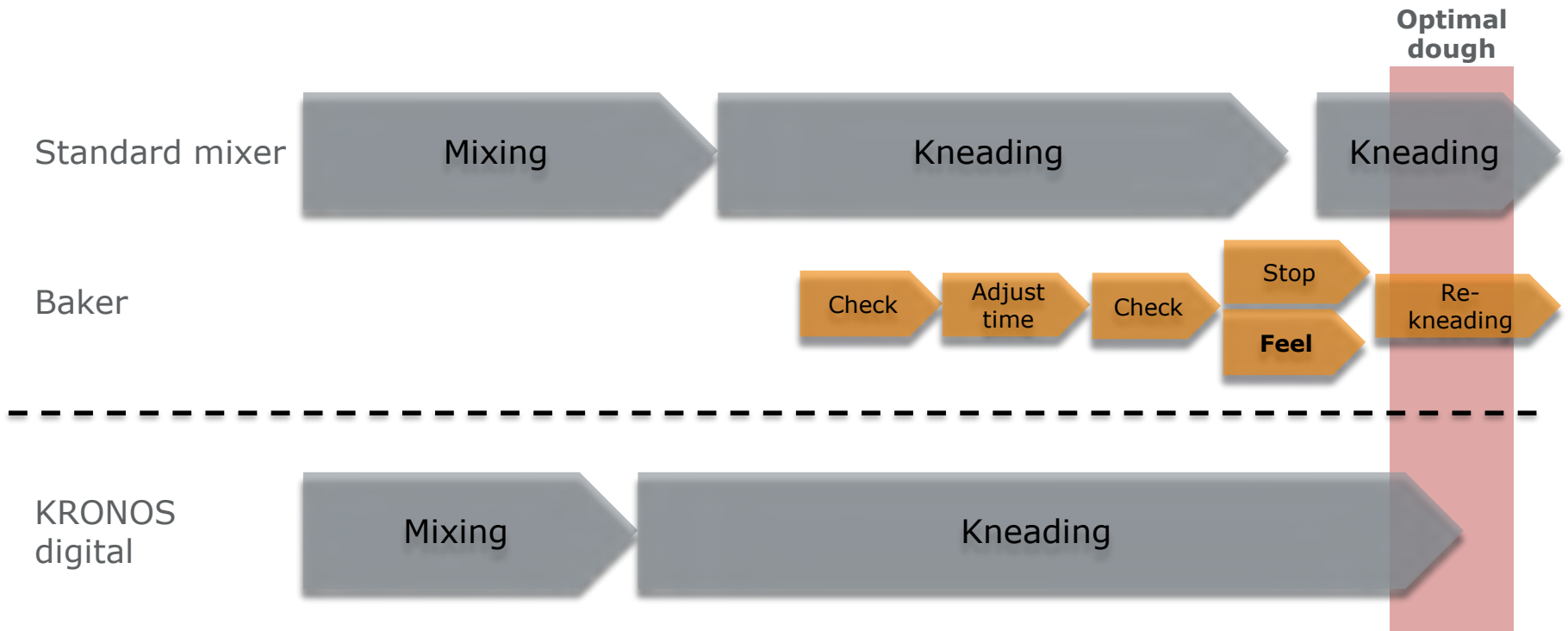


Standard mixing process today



- Control after fixed mixing and kneading times though environmental temperature and ingredient quality vary
- Baker controls dough
→ Dough quality is dependent of staff
- Missing reproducibility
- Increasing shortage of skilled workers

Standard vs. intelligent mixing processes



Human – Machine – Interaction

Intelligent mixing processes



- Continuous control of the mixing process based on measured dough properties
- Operator only starts the mixer
- Independent adaption of the mixing and kneading phase with fluctuating raw material quality and environmental conditions through the mixer
- Always optimal dough quality
- Complete and continuous logging, evaluation and documentation
- Early prediction of dough properties

Function



- Continuous determination of the dough conditions during mixing
- Adaption of the mixing process
- Mixing process stops at optimal dough quality
- Forecast of mixing duration and final dough temperature

We teach the mixer to feel

KRONOS digital in detail



New technology – new design

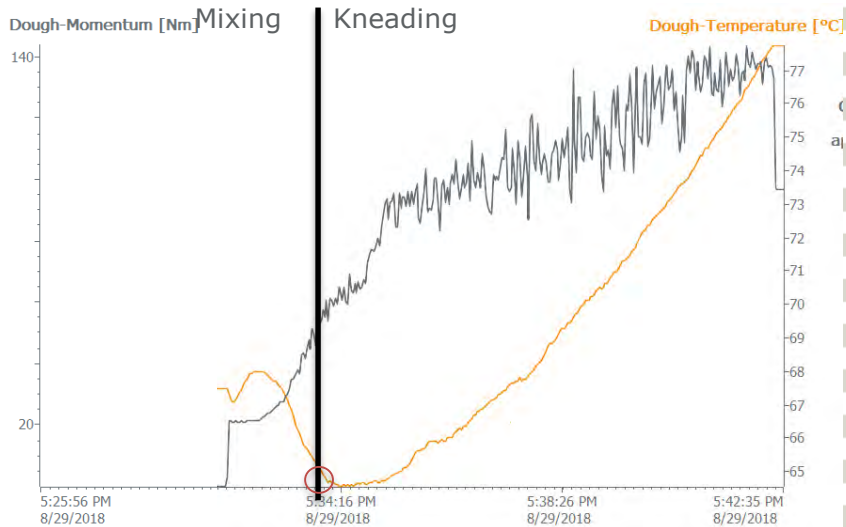
KRONOS digital in detail



- Quick, intensive mixing of the ingredients
- High energy intake within the kneading phase
- Automatic achievement of the optimal dough quality
- Consistent dough quality

Dough quality

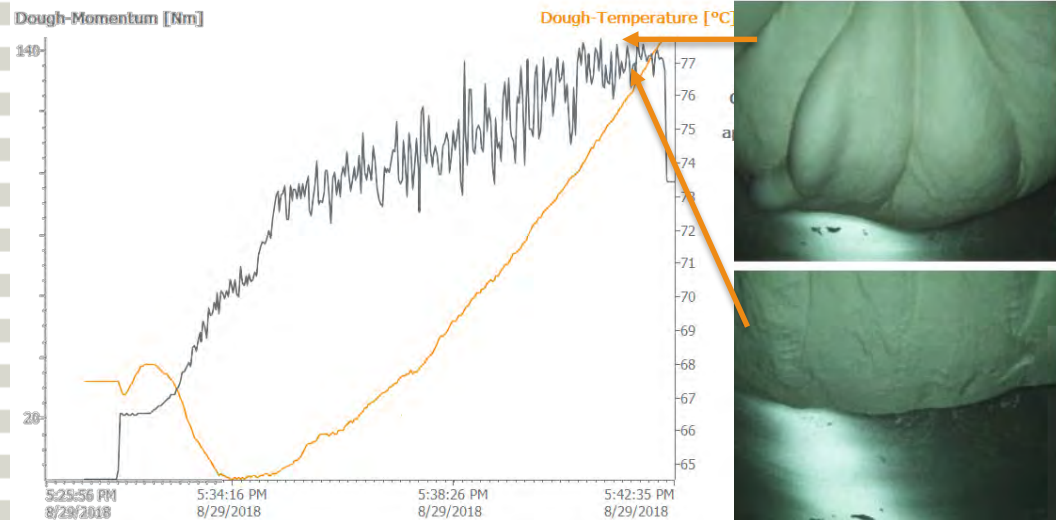
Indicators in detail



- Water and flour temperature changes general temperature
- Measurement via PT100 in the guide bar
- Temperature minimum stops the mixing phase
- Prediction of the temperature profile and final dough temperature
- End of mixing phase

Temperature profile

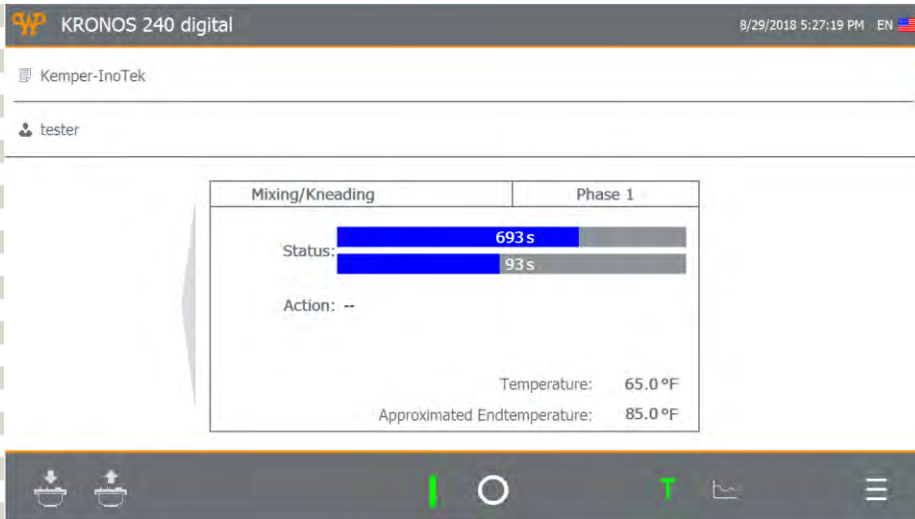
Indicators in detail



- Gluten formation
- Dough resistance rises through gluten formation
- Torque maximum = optimal dough conditions
- End of kneading phase

Torque curve

KRONOS digital in detail



- Torgue curve
- Temperature profile
- Engine speed control
- Energy intake
- Filling level
- Prediction based on the measurements

Indicators

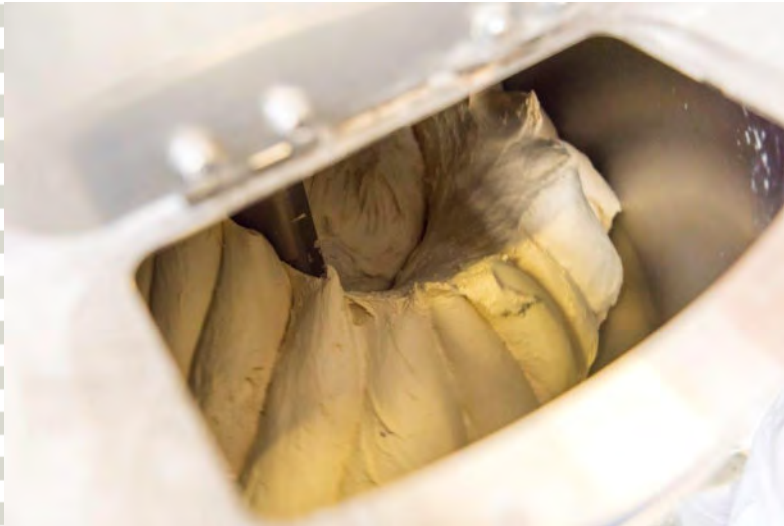
KRONOS digital in detail



- Stainless steel execution
- Large, clear touch panel (15")
- Powerful control and frequency-controlled drives
- Interface to higher-level MES system
- Operation via iPad possible

Configuration

KRONOS digital offers...



Doughs in optimal quality

- Reproducible
- Independent of staff
- Adaptation to unsteady raw material and environmental conditions

Consistent logging

- Extended process-know-how
- Verifiability

Thank you for your attention!

we kemper it.

