CHASE
Chemical Systems Engineering

K1 centre uniquely combining process digitalization, process intensification and circular process streams
Research rationale of CHASE connecting domain knowledge
CHASE

- Interdisciplinary research in 3 converging areas
  - Process digitalization
  - Process intensification
  - Circular process streams

- 14 scientific partners
- 24 mainly international partners from industry
- 2 new research sites
- Addressing specific problems by developing generic methods
3 research areas

Area 1: Process Digitalization
- Turn data into knowledge / understanding create “digital-twin”

Area 2: Process Intensification
- Materials and process parameters to measure / control / predict

Area 3: Circular Process Streams
- Materials & process flows for renew / recycle solutions

Strategic Projects

Generic method and tools enabling specific solutions
Area 1: process digitalization
data platforms for digital transformation

- 2 data platforms with new digital solutions
- Horizontal data exchange between machines and production systems
- Digitalization tools for real time digital twin applications
- FFG funded pilot plant

... specific platform for company partners

... co-operations synergies

LIT Factory
Area 2: process intensification from analytics to modeling & simulation

**Process Analytical Technology**
- Development/application of novel PAT tools

**Computational Fluid Dynamic (CFD) Simulations**
- Key optimization tool for chemical process apparatus

Raw material → Energy, Time → Product

Waste
Area 3: circular process streams
Reuse/recycle – or change to bio-based

Waste streams are underutilized
• Often just released into the environment
• Or burnt due to missing alternatives

Unmet challenges
• High variability
• Complex composition
• Toxic and inhibitory
Effects not sufficiently understood
CHASE locations & ownership

JKU Open Innovation centre

JKU Technikum

TZ Seestadt, Vienna
Vision of CHASE

• CHASE leads the way to build-up systemic and interdisciplinary competence in the sweet spot of chemistry and chemical engineering in order to foster digitalization and process intensification.

• CHASE leads the use of new technologies beyond state-of-the-art in order make the process industry more efficient, more ecological, more flexible and sustainable.