SIMPLI-DEMO IMPACTS

THE TECHNOLOGIES DEVELOPED IN SIMPLI-DEMO HAVE IMPACT ON THREE LEVELS:

- → The end-user cases that serve as representatives of major classes of processes in the specialty chemicals industry
- → The specialty sector in the chemical industry
- → The chemical industry at large

THE SPECIALTY CHEMICALS SECTOR:

- → covers areas such as paints and inks, crop protection, dyes and pigments
- → is the most heterogeneous group of all chemical sectors with regard to products, applications, production processes, HSE requirements and business structure
- → offers chemical products which provide a wide variety of effects on which many other industry sectors rely

EXPECTED BENEFITS:

- 30 TO 80 % ENERGY SAVINGS
- 40 TO 70 % RESOURCE EFFICIENCY
- UP TO 60 % REDUCTION IN CO_2 EMISSION
- 20 TO 45 % SAVINGS IN CAPEX
- 45 TO 55 % SAVINGS IN OPEX

SIMPLI-DEMO PARTNERS

END-USER CHEMICAL COMPANIES

Coatex SAS, France
Arkema France, France
GE Healthcare, Norway
Megara Resins, Greece

TECHNOLOGY SUPPLIERS

Weber Ultrasonics AG, Germany
Muegge GmbH, Germany

UNIVERSITIES AND RESEARCH INSTITUTIONS

KU Leuven, Belgium
National Technical University of Athens, Greece
TU Dortmund University, Germany
Fraunhofer Institute for Chemical Technology, Germany
Fraunhofer Institute for Structural Durability and System Reliability, Germany
Heriot-Watt University, United Kingdom

SERVICE PROVIDERS

AristEng Sàrl, Luxembourg
LeiKon, Germany

linkedin.com/company/simpli-demo
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www.simpli-demo.eu

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SONICATION AND MICROWAVE PROCESSING OF MATERIAL FEEDSTOCK

START DATE:	DURATION:	BUDGET:
1ST OCT 2022	48 MONTHS	9.4 MILLION €

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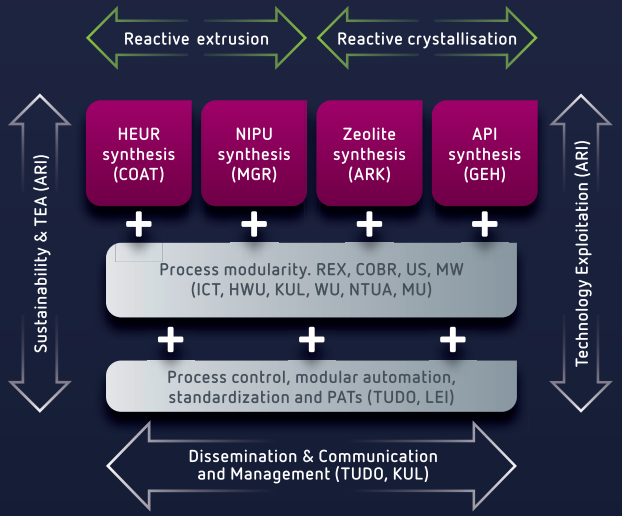
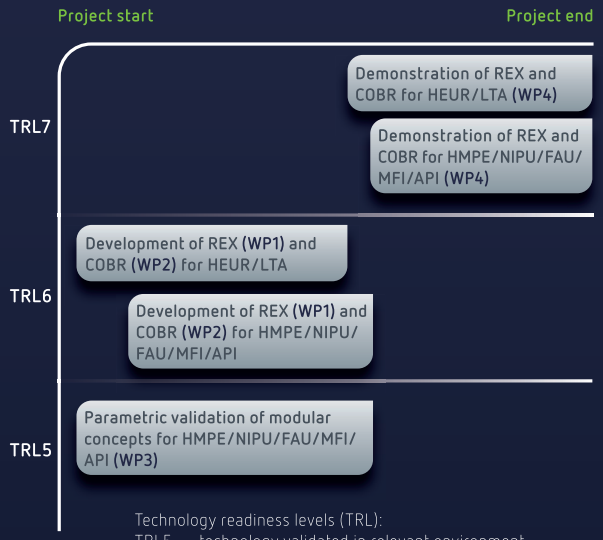
OBJECTIVES

- optimize and validate continuous multiphase reactions that involve solids or viscous phases in modular process equipment, based on prior validation in the lab
- design, validate and demonstrate pilot-scale intensified reactors that efficiently integrate modular flow technology
- develop and implement efficient process control and innovative automation strategies for modular, flexible continuous plants with actuation by alternative energy inputs
- assess the sustainability and techno-economics of the intensified processes compared to current industrial practice
- evaluate the potential adaptability, exploitation and multiplication of the developed technologies in other industrial processes and sectors

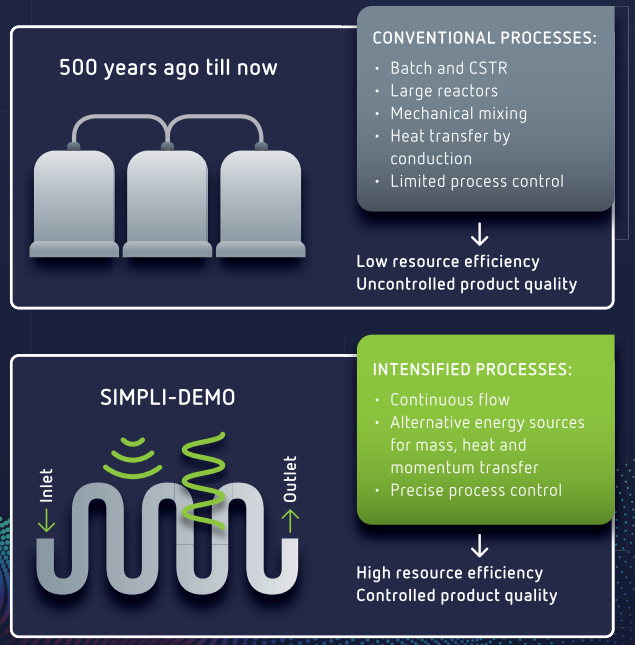
SIMPLI-DEMO PROJECT CONCEPT



TIMELINE FROM LAB TO MARKET



Technology readiness levels (TRL):
TRL5 - technology validated in relevant environment
TRL6 - technology demonstrated in relevant environment, industrial demonstration
TRL7 - technology system prototype demonstration



CASE STUDIES

At the core of the SIMPLI-DEMO project are the three case studies, serving as representatives for process classes of high importance in the chemical industry. The four representative use cases will be validated in the relevant environment (TRL5) and then demonstrated in the relevant (TRL6) and operational (TRL7) industrial environment.

CASE STUDY 1 & 2

For the application area of **reactive extrusion** two case studies with different TRL are selected.

CASE STUDY 3 & 4

For the application area of **reactive crystallization**, two other case studies with different TRLs have been selected.

1. Polyurethane synthesis to form hydrophobically modified ethoxylated urethanes (HEUR), with COATEX as the end user — ARKEMA COATEX
2. Synthesis of non-isocyanate based polyurethane (NIPU) with MEGARA as end user — MEGARA RESINS
3. Zeolite (LTA/FAU/MFI) synthesis with ARKEMA as end user — ARKEMA COATEX
4. Drug (API) synthesis with GE HEALTHCARE as end user — GE HealthCare