REGEN2by

Next renewable multi-generation technology enabled by two-phase fluids machines

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SUSTAINABLE PLACES 2023

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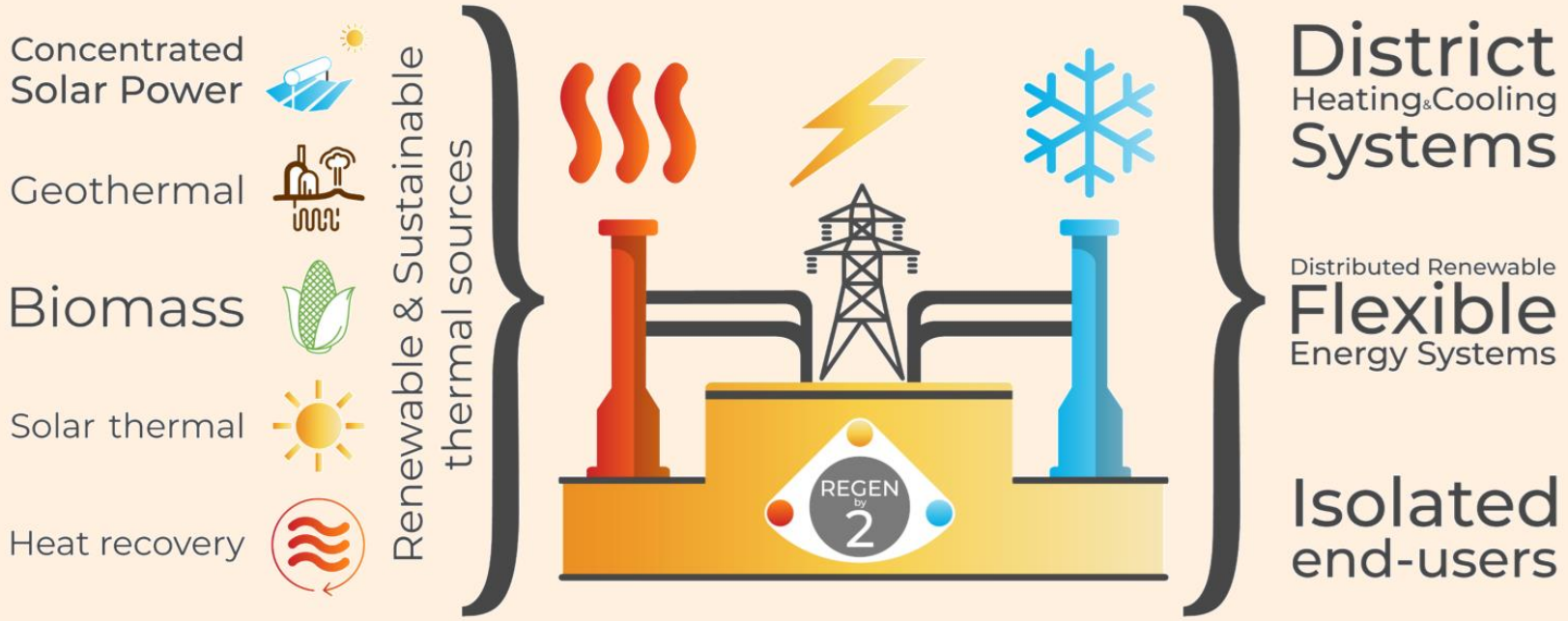
This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n° 851541

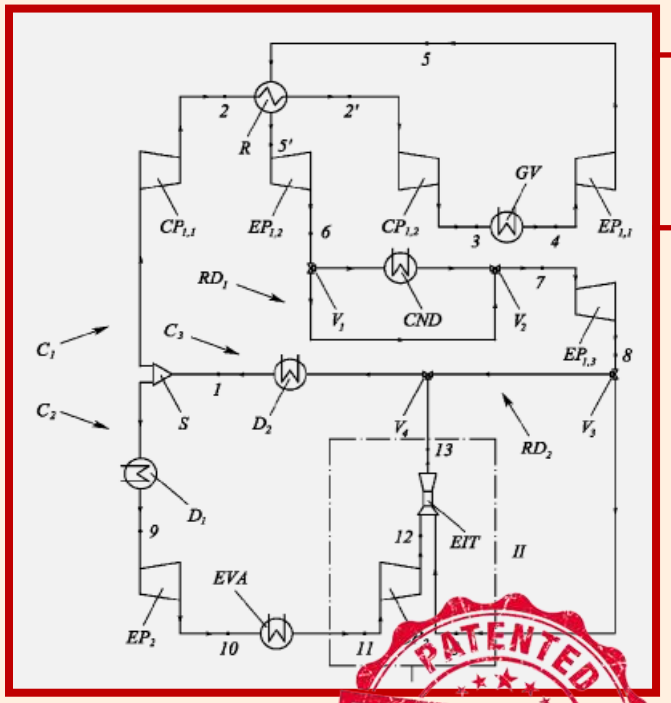
REGEN-BY-2 concept

REGEN-BY-2 is a breakthrough multi-generation technology that can:

- convert any typology of renewable thermal source into energy vectors
- operate in three alternative modes → be used in a large number of applications



From TRL1 to TRL4



Theoretical Demonstration of **Improved Efficiency**

Near-**worldwide** patent

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REGEN-BY-2 Goals

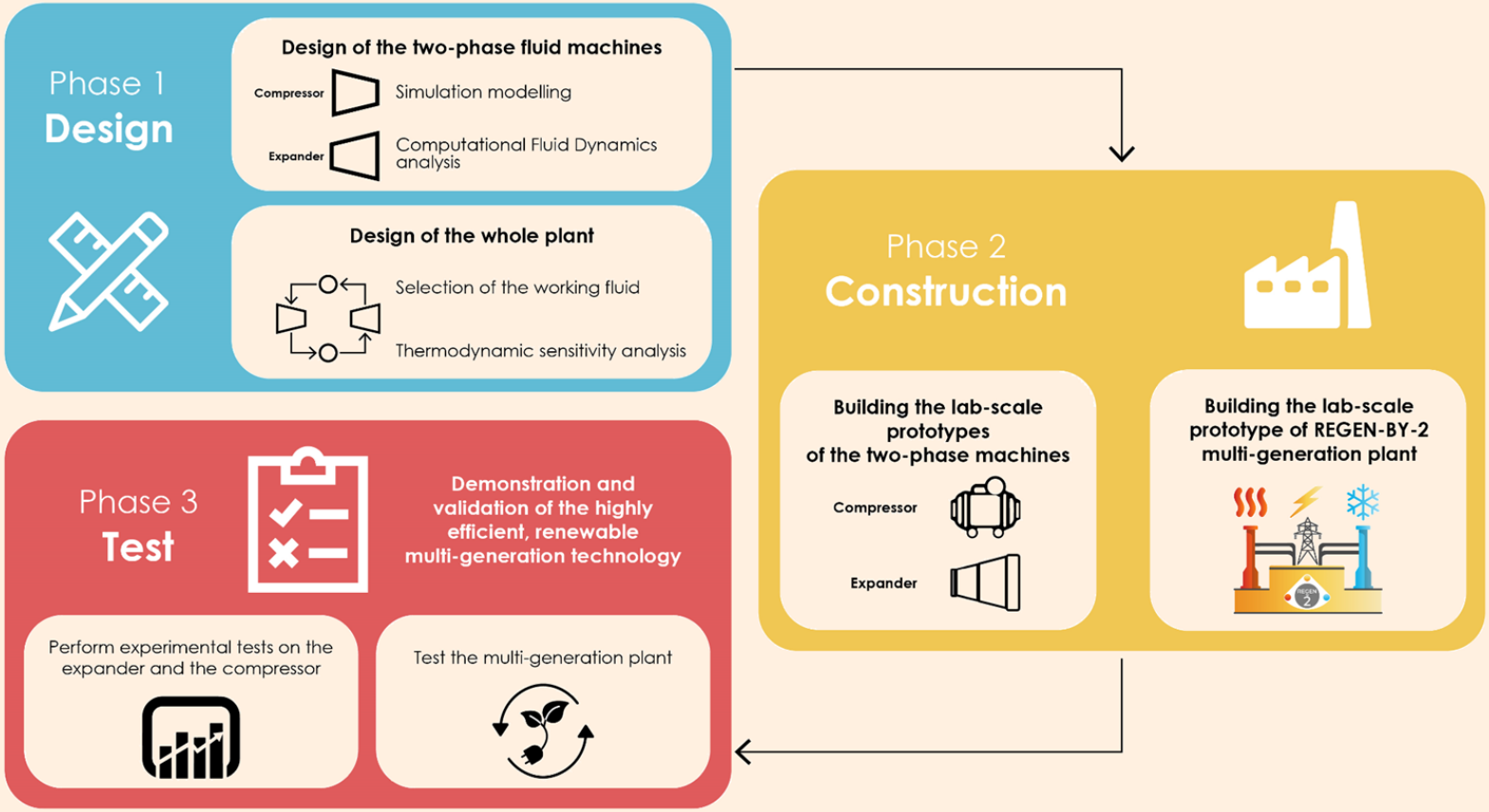
Potentiality of CCHP Plants in **DHC**

Two-phase Machines Effectiveness

Test Patented Cycle **Performance**

Phases of the REGEN-BY-2 Project

REGEN-BY-2 is following a development process consisting of 3 main phases:



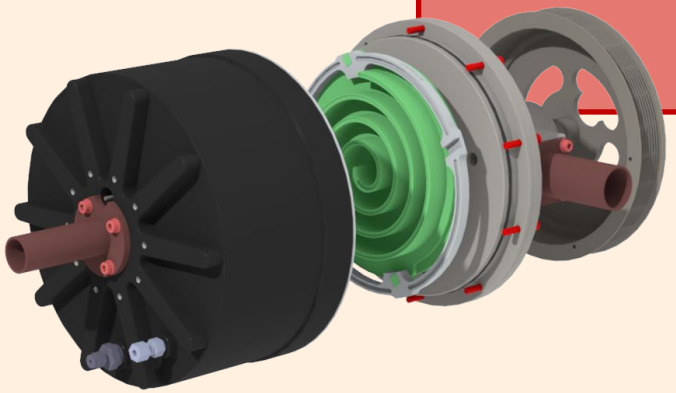
Project Results: Phase 1

CYCLE OPTIMISATION

Residential Target among 5 potential Users

R1233zd(E) – **New Generation** Refrigerant

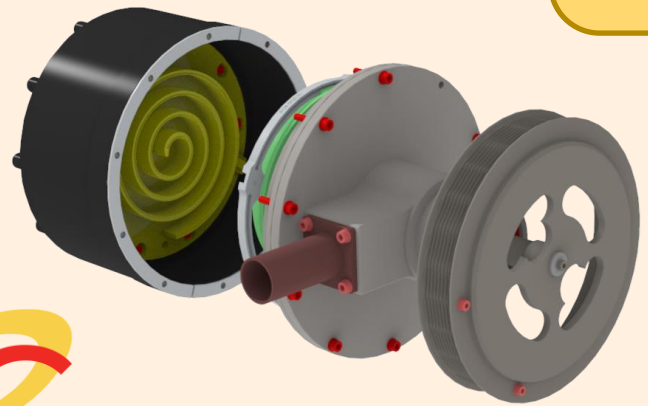
Definition of **Cycle Performance**



MACHINE DEVELOPMENT

Dedicated **Geometry** Definition

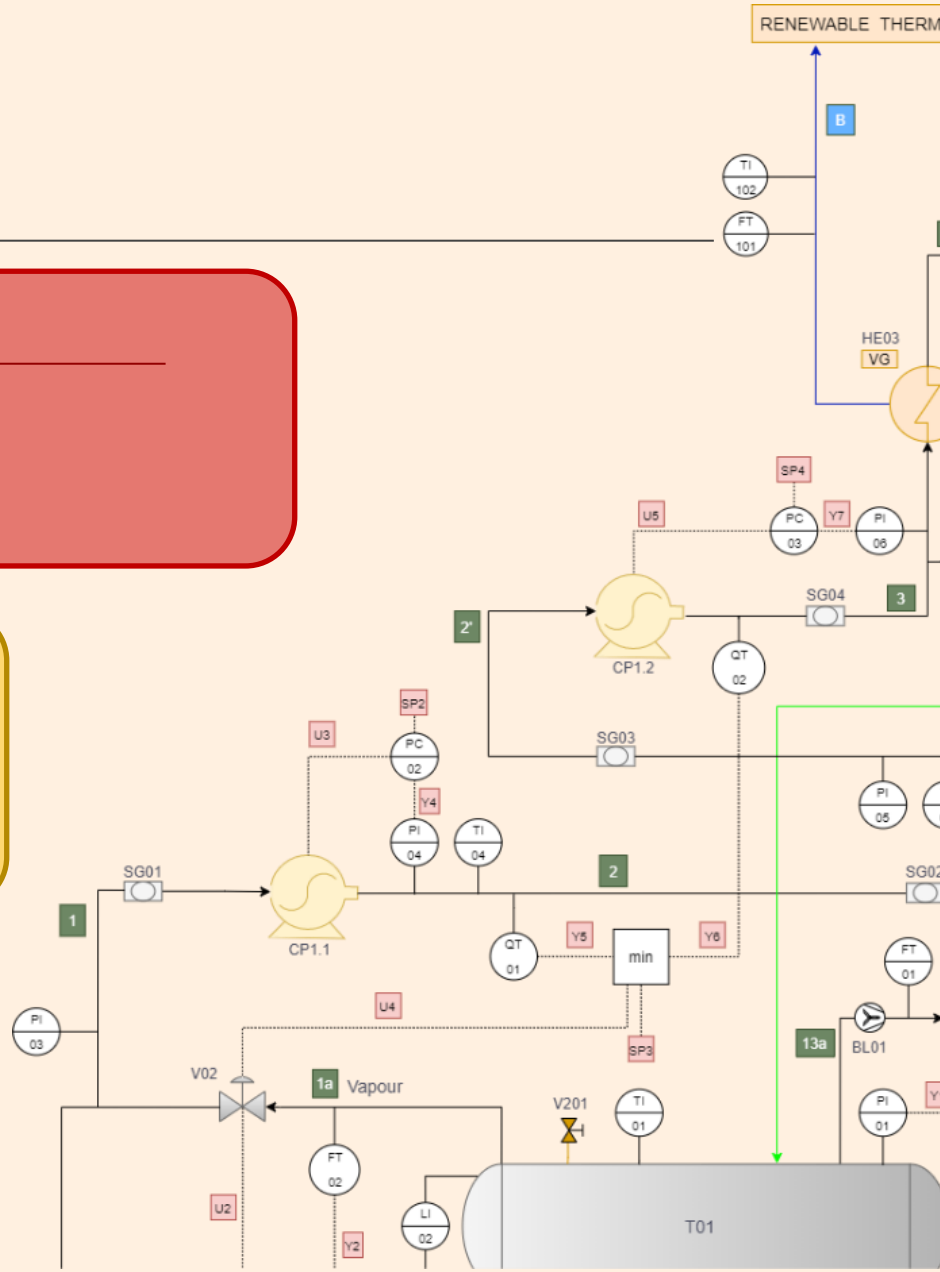
For **Isentropic Efficiency** Target



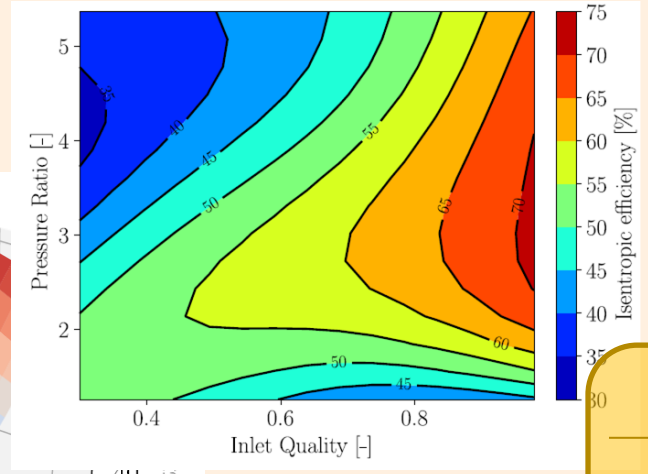
PLANT DESIGN

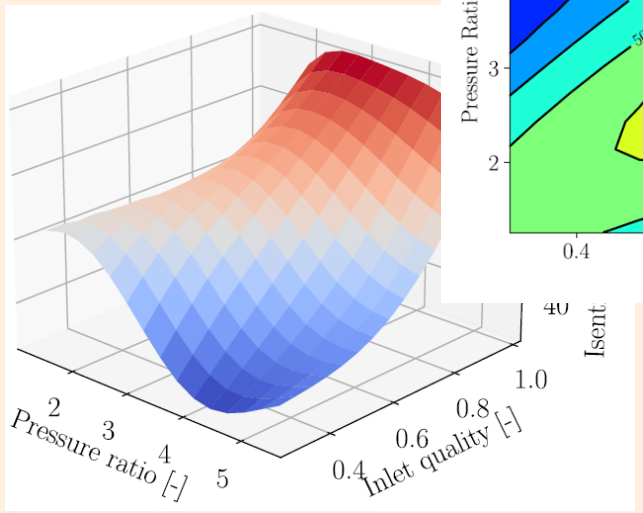
Process Flow

Components Selection



Project Results: Phase 2





PLANT MODELLING

Performance analysis in:

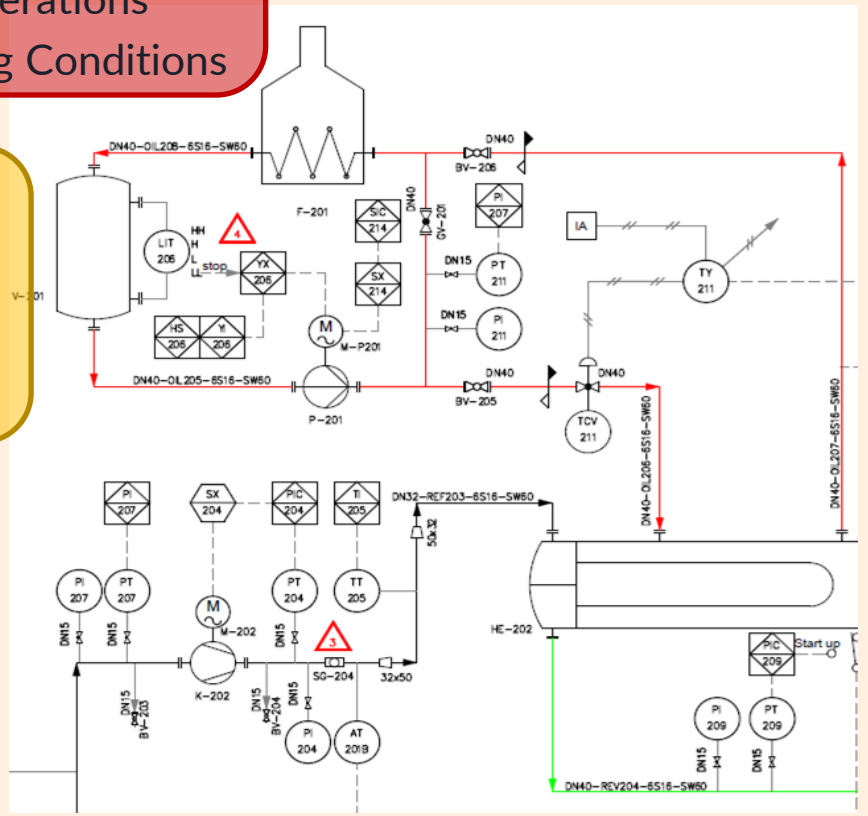
Off-design Operations

Transitory Working Conditions

MACHINE DEVELOPMENT

Machines Testing

Performance **Maps** Definition

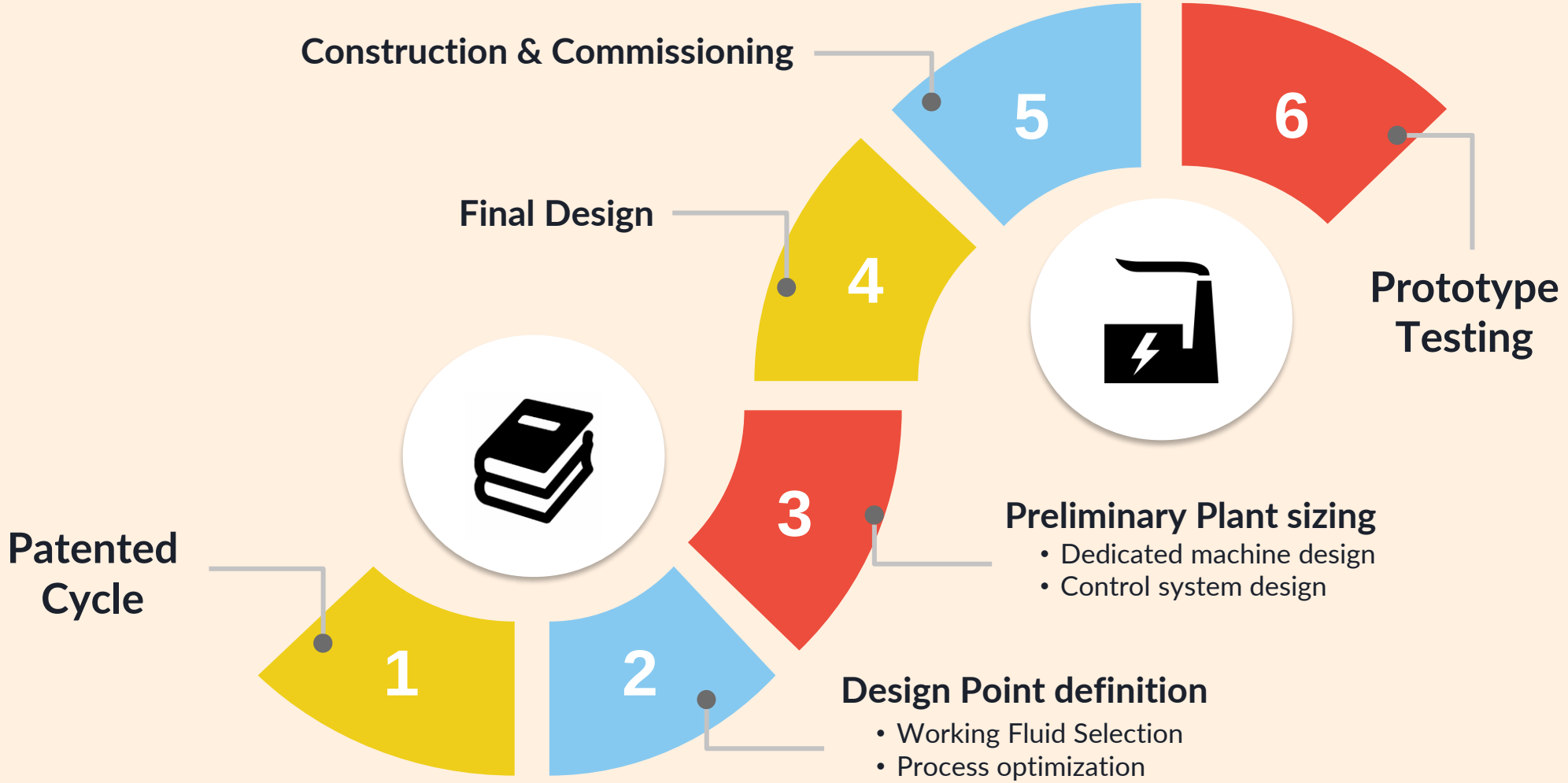


PLANT DESIGN

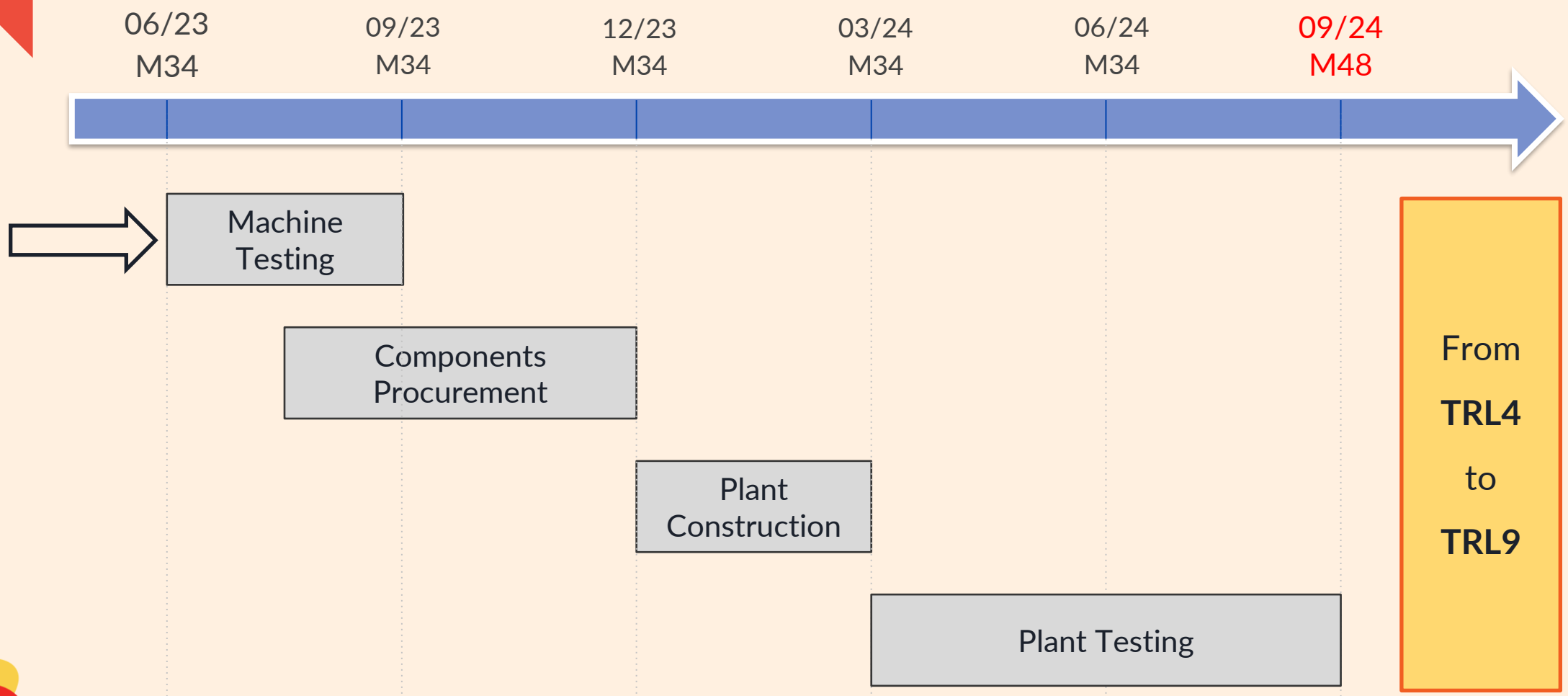
Piping & Instrument Diagram

Executive Design

Technical timeline



Future planning



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