



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

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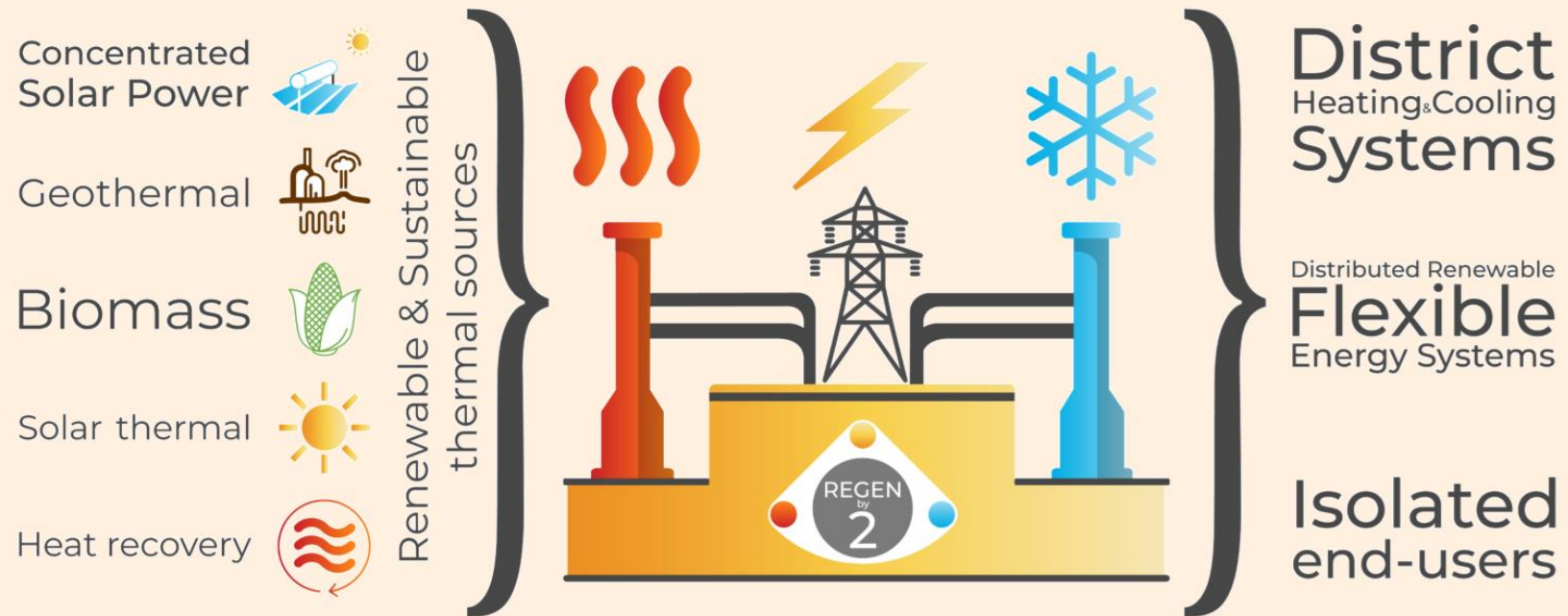
This project has received funding from the European Union's Horizon
2020 research and innovation programme under Grant Agreement n°
851541



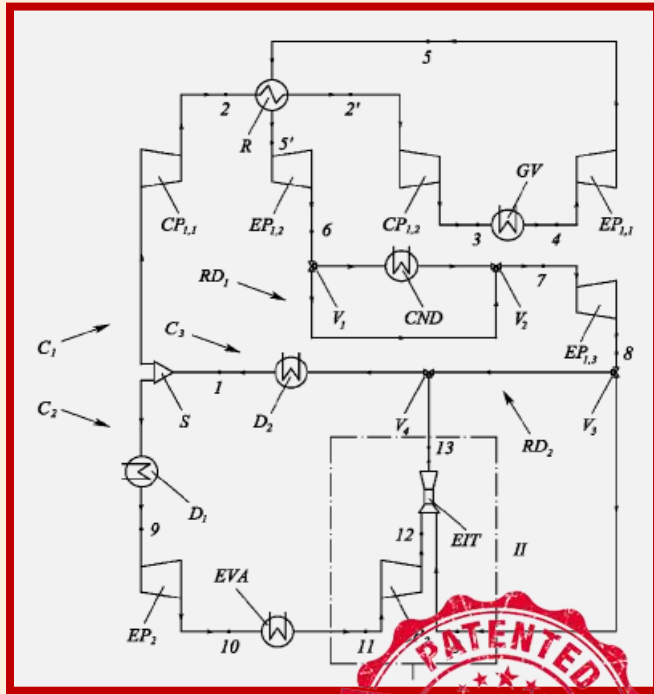
REGEN-BY-2 concept

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



REGEN-BY-2 Goals

Potentiality of CCHP
Plants in DHC

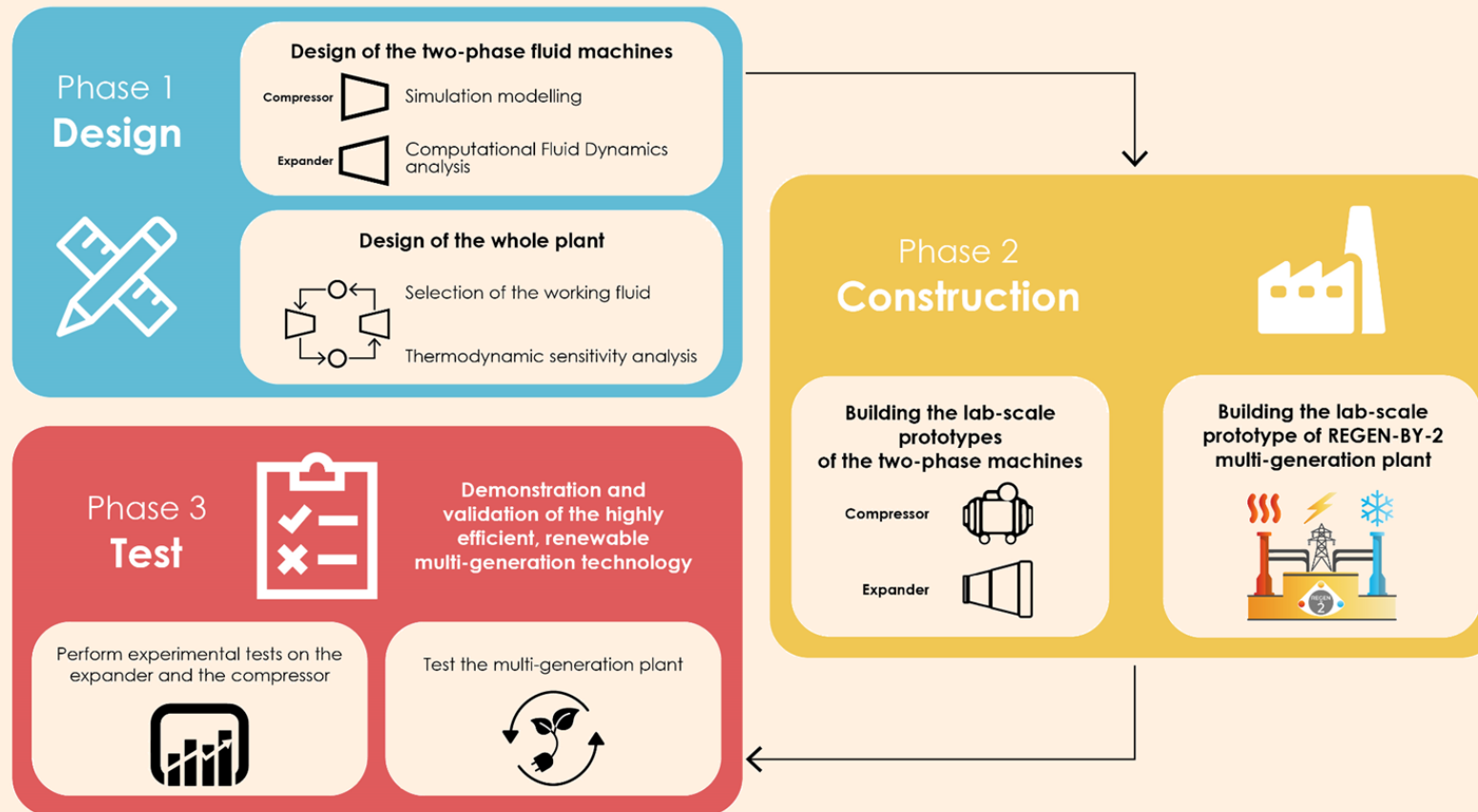
Two-phase Machines
Effectiveness

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

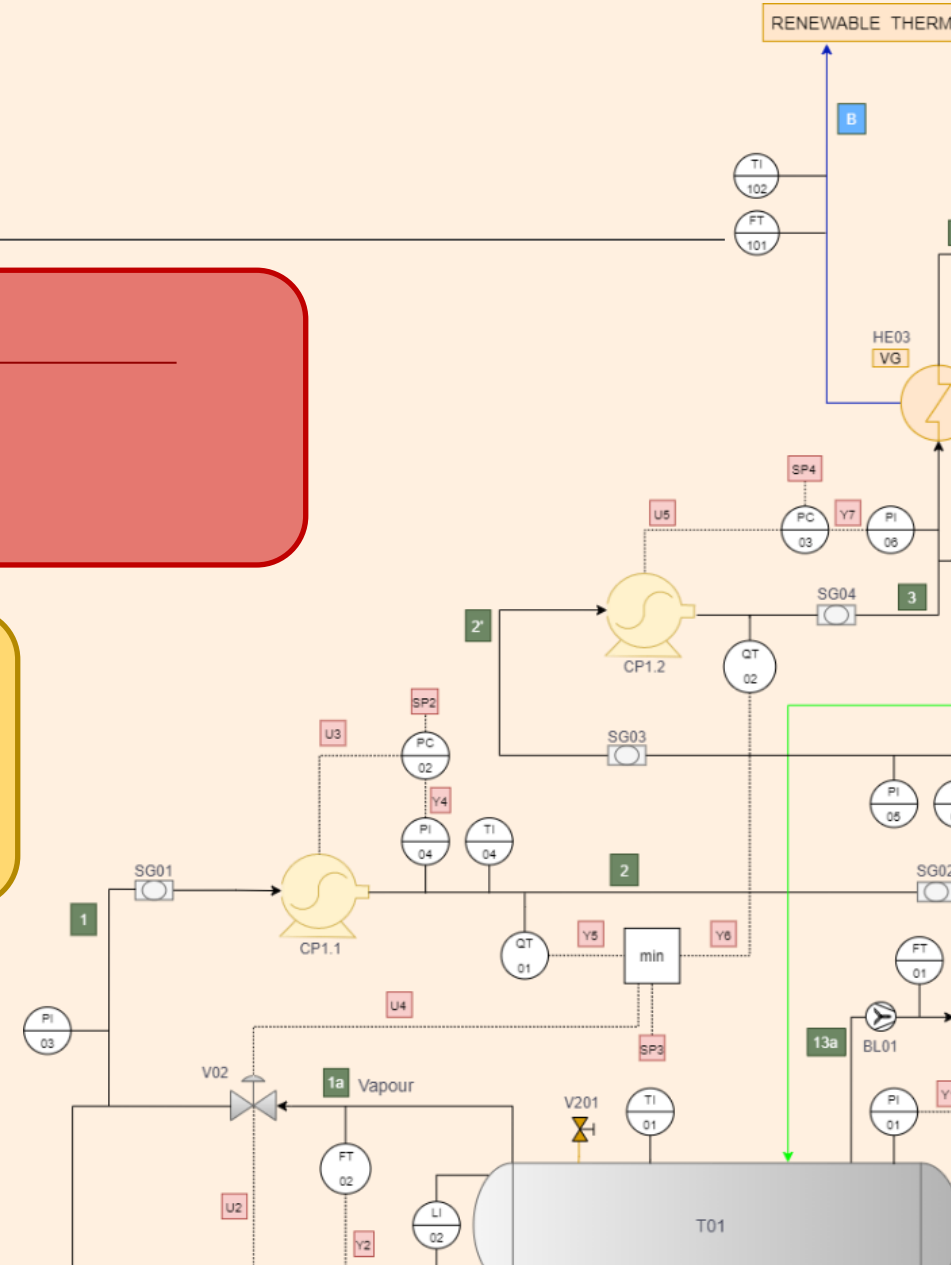
Residential Target among 5 potential Users
R1233zd(E) – New Generation Refrigerant
Definition of Cycle Performance

MACHINE DEVELOPMENT

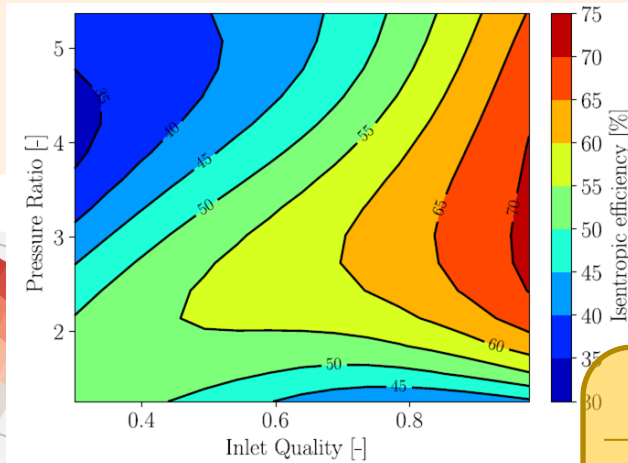
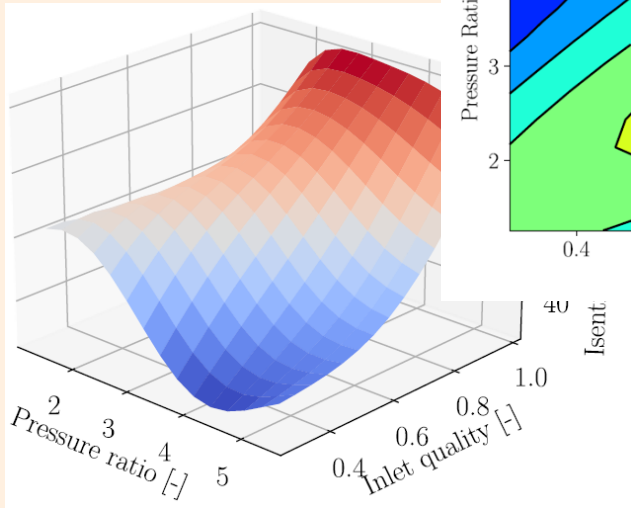
Dedicated Geometry Definition
For Isentropic Efficiency Target

PLANT DESIGN

Process Flow
Components Selection



Project Results: Phase 2



PLANT MODELLING

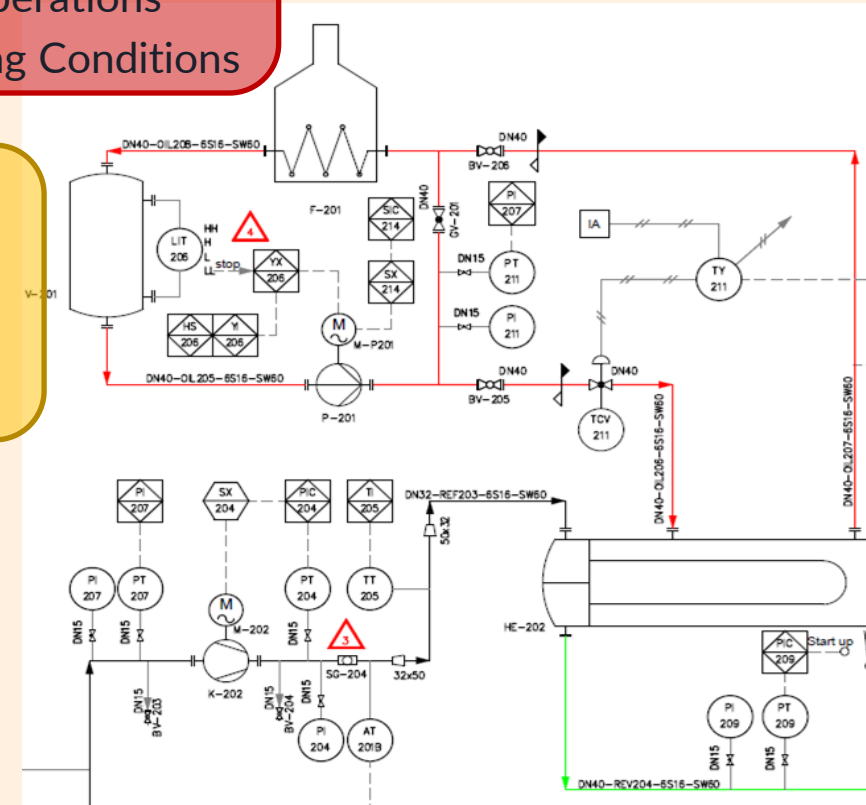
Performance analysis in:
Off-design Operations
Transitory Working Conditions

MACHINE DEVELOPMENT

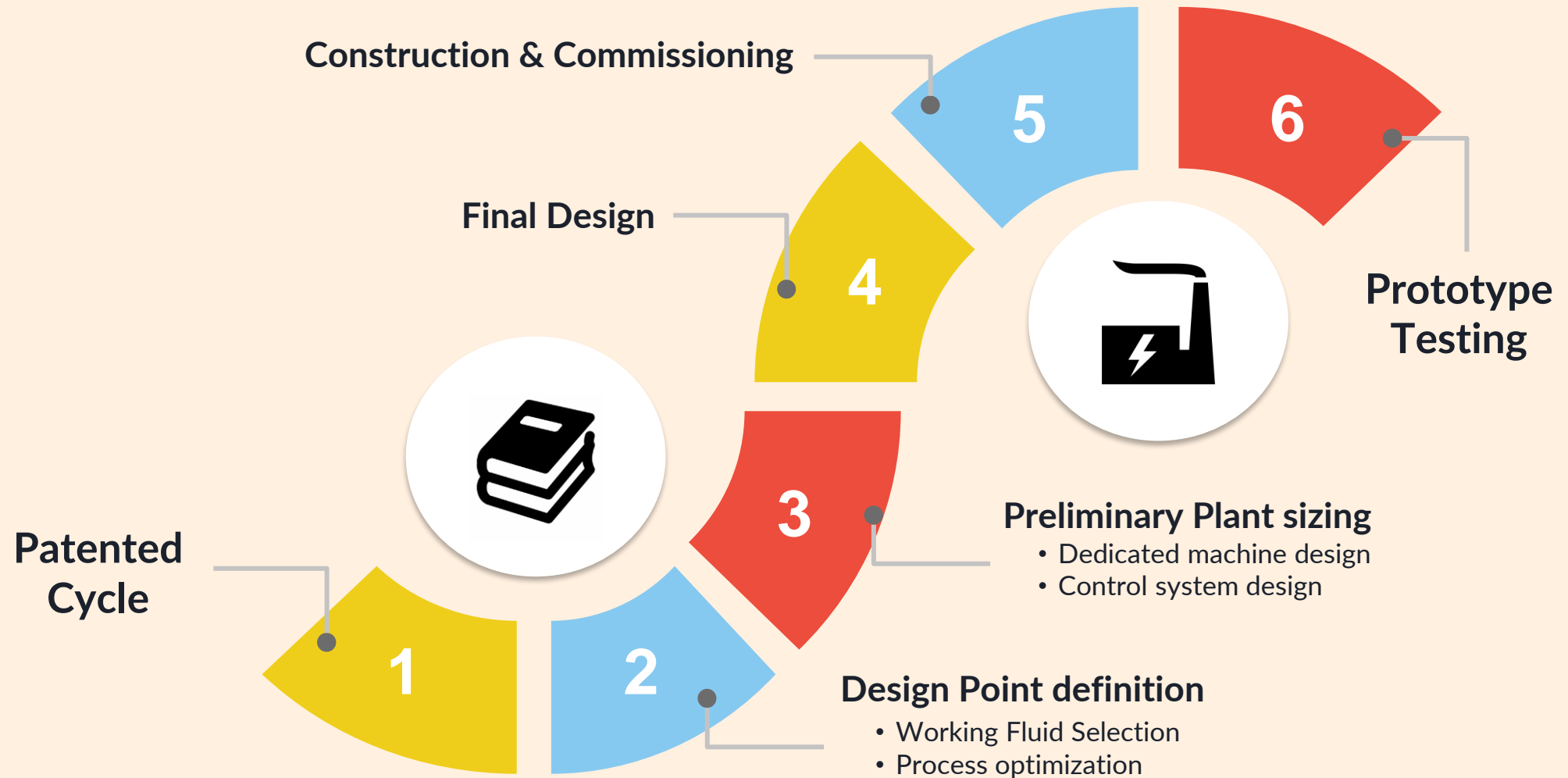
Machines Testing
Performance Maps Definition

PLANT DESIGN

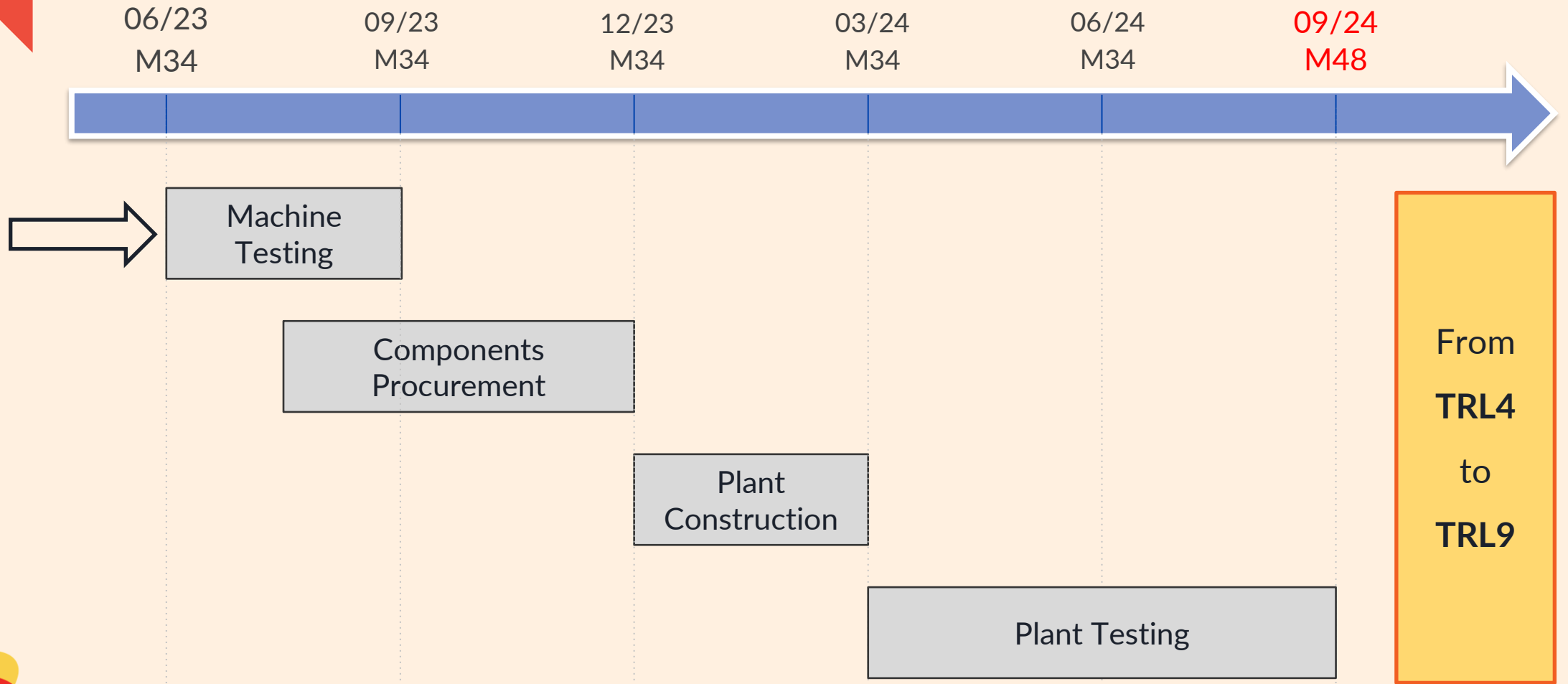
Piping & Instrument Diagram
Executive Design



Technical timeline



Future planning



Project Partners



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