

This activity has received funding from the European Institute of Innovation and Technology (EIT). This body of the European Union receives support from the European Union's Horizon 2020 research and innovation programme.



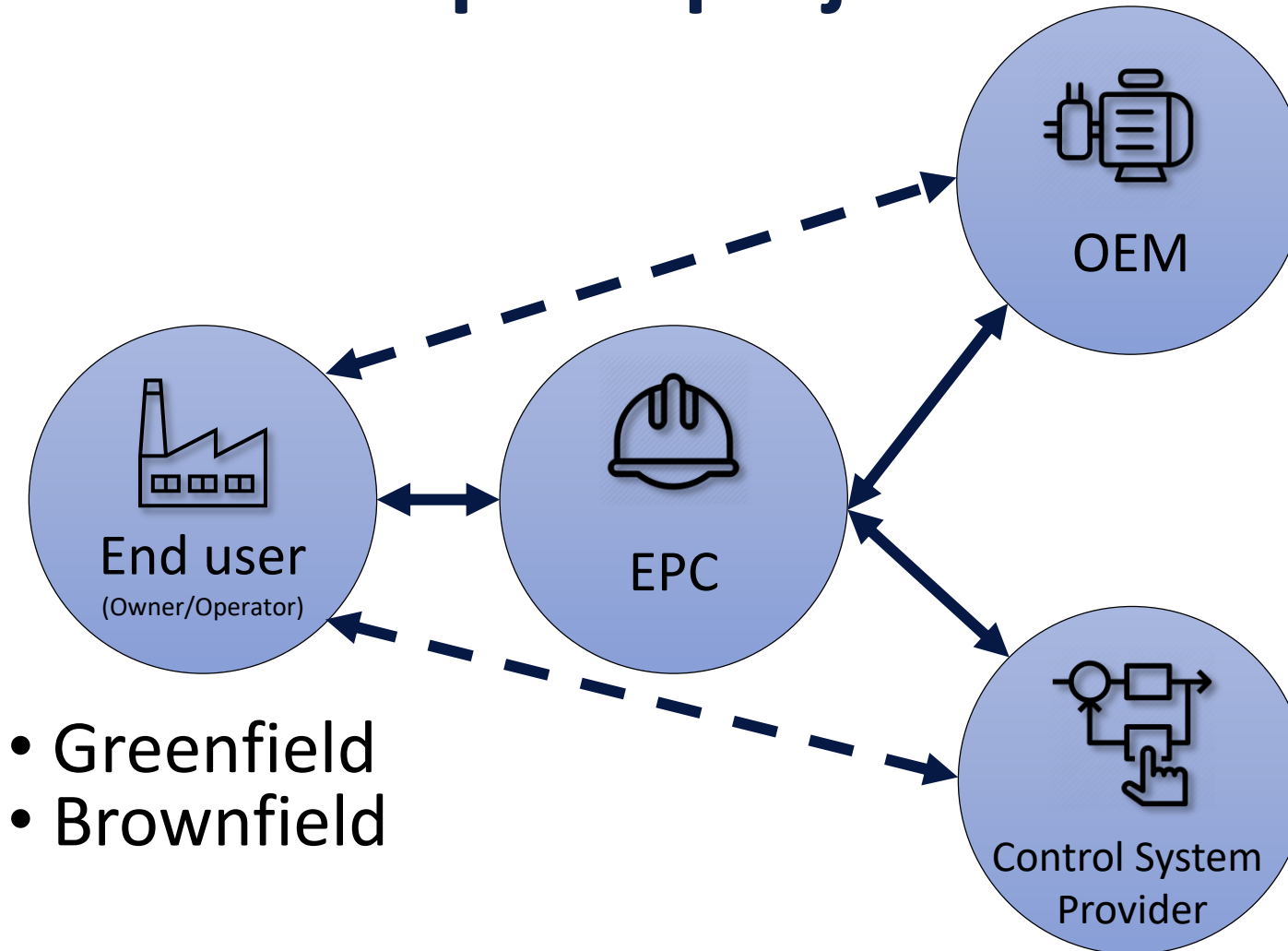
TAKEOFF for Future Intelligent Industries: Collaborative Design - Build - Operate Industrial Ecosystems

Project description

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Customer development: Traditional industrial plant projects



- Inefficient communication model
- Oversizing of equipment
- Non-optimal control strategies are used
- Lack of integrated testing for, e.g.
 - Energy optimization
 - Tackle maintainability issues

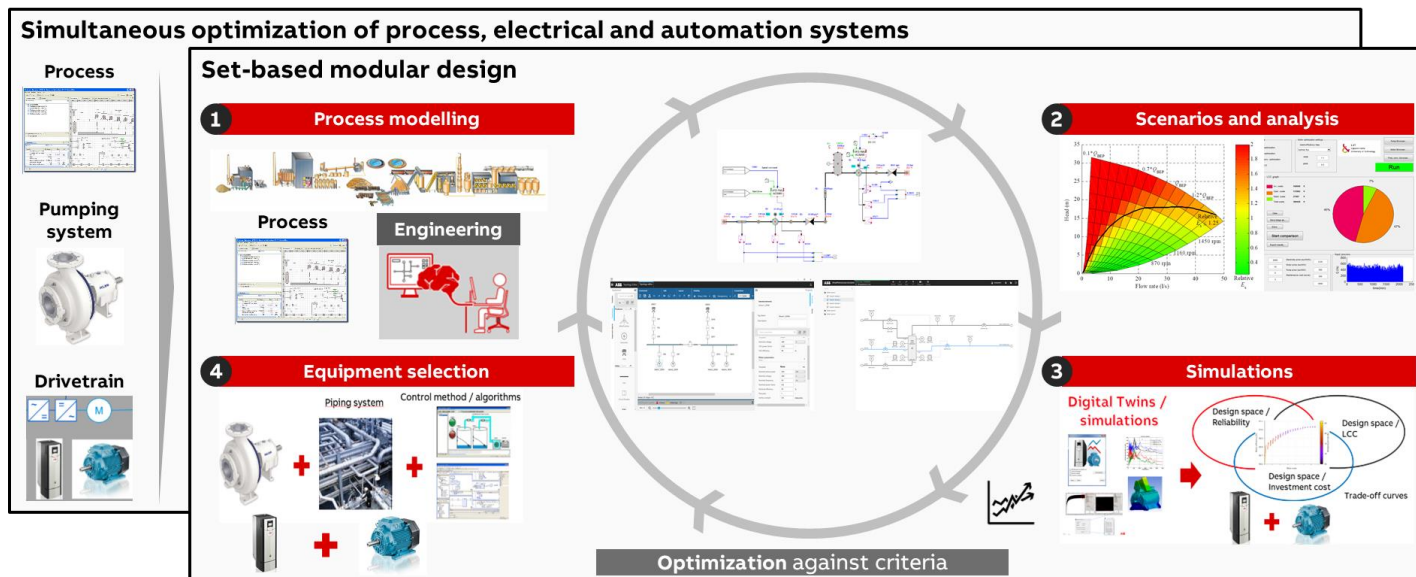
Pitch



Problem: Current way of working makes industrial plants operate **inefficiently**

Solution: Collaborative Design-Build-Operate Ecosystem

Results: Energy efficient industrial plants with happy partners



MVP Workflow



Solution Sales



Simulation and Analysis



Results Review

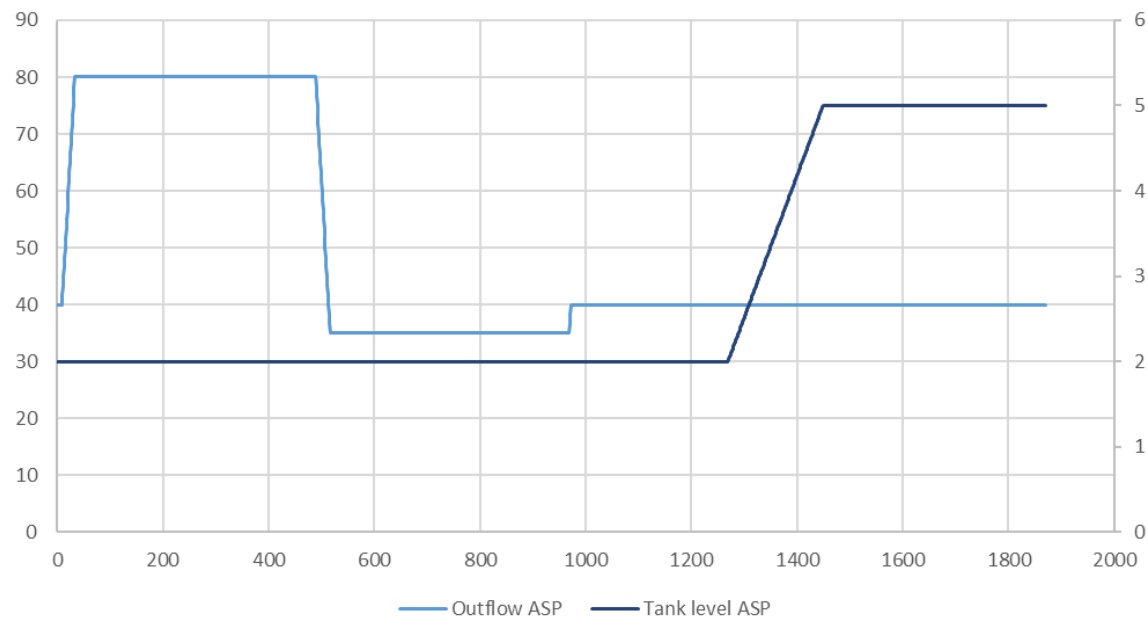


Solution Sales



- Process requirement specification and initial component selection

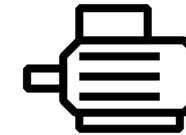
Test sequence



Undersized
powertrain



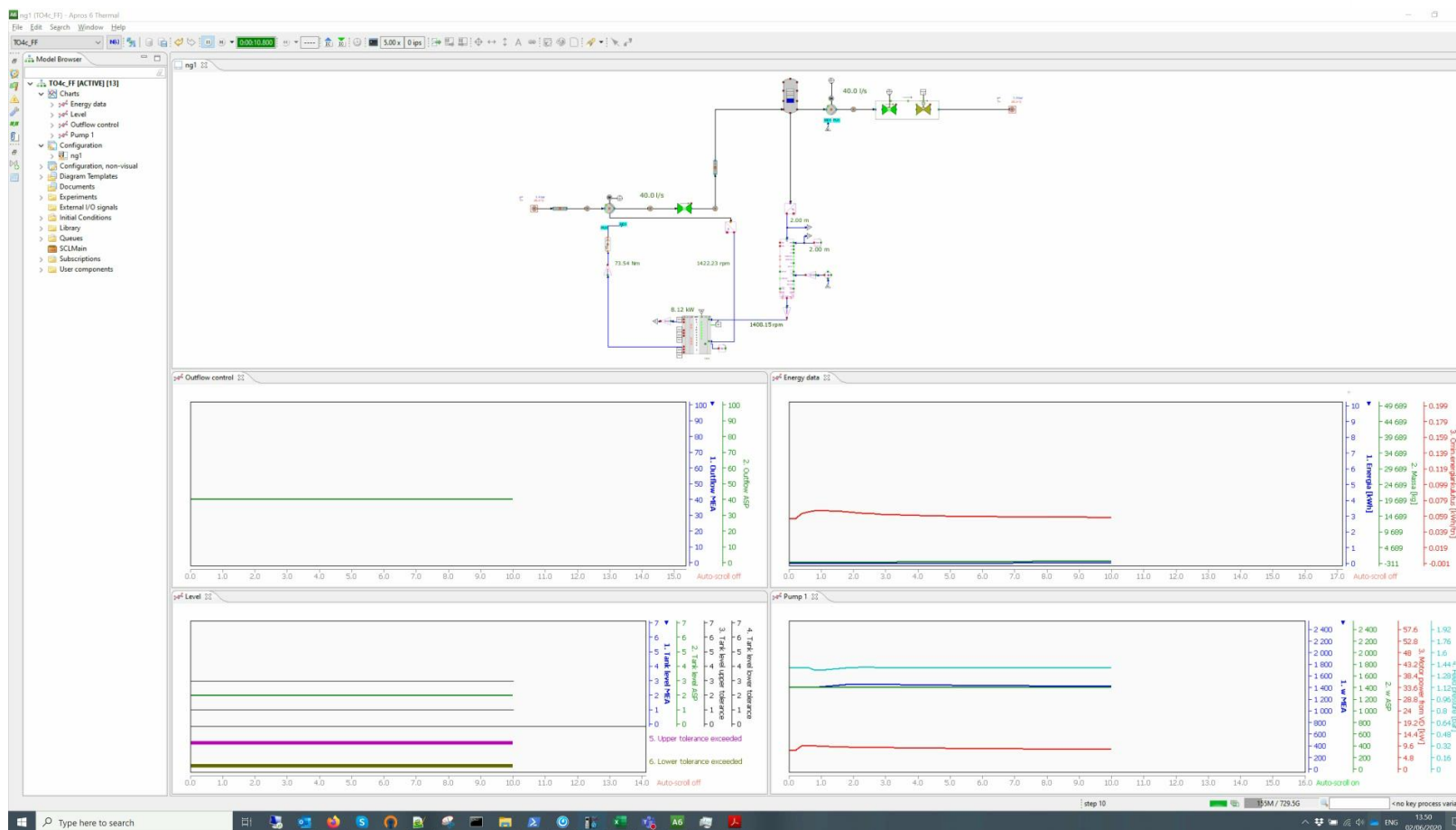
Optimal
powertrain



Oversized
powertrain



Simulation and Analysis



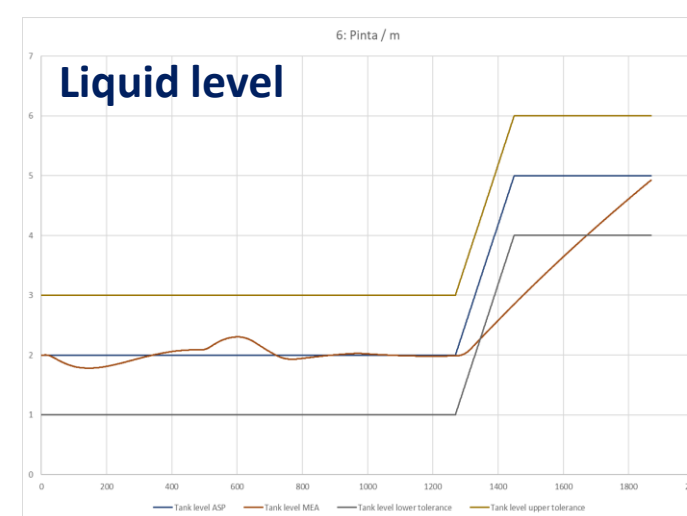
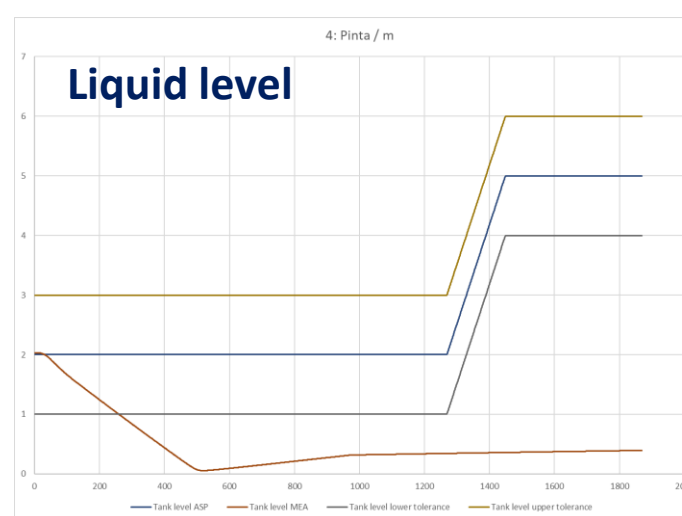
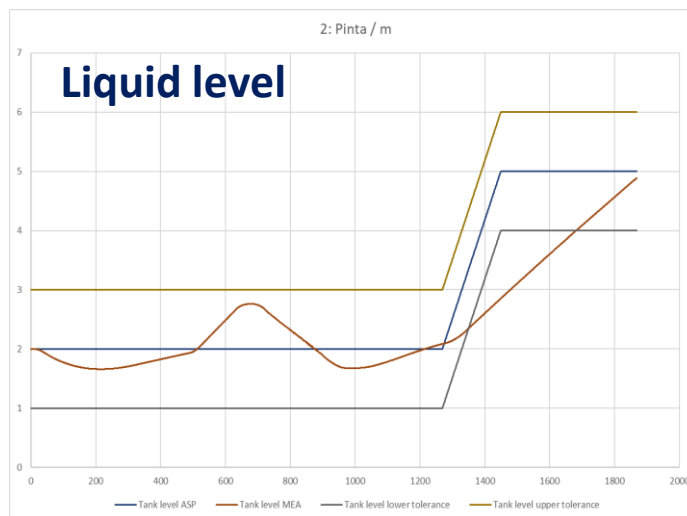
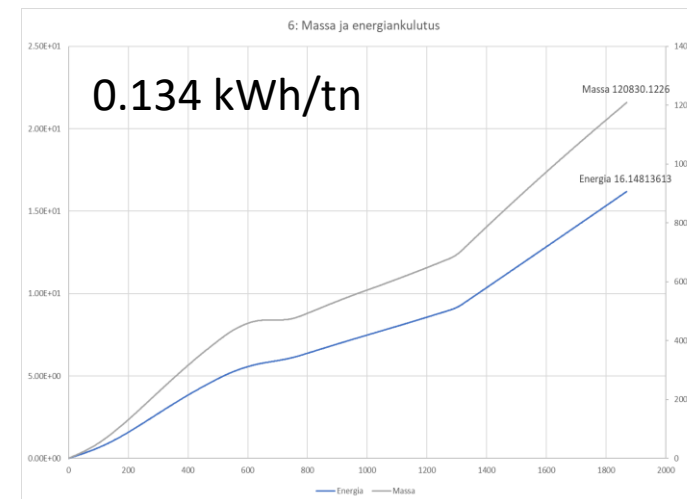
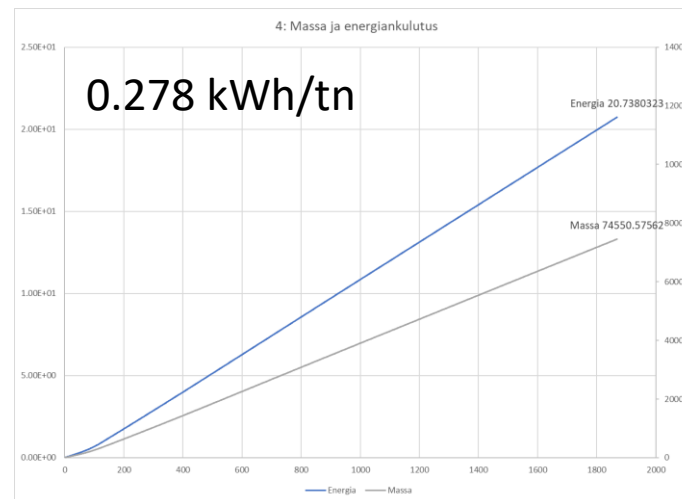
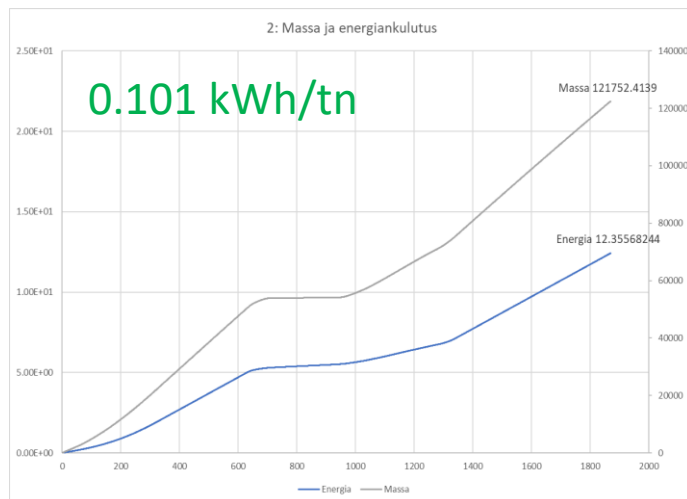
Simulation and Analysis



Optimal

Undersized

Oversized

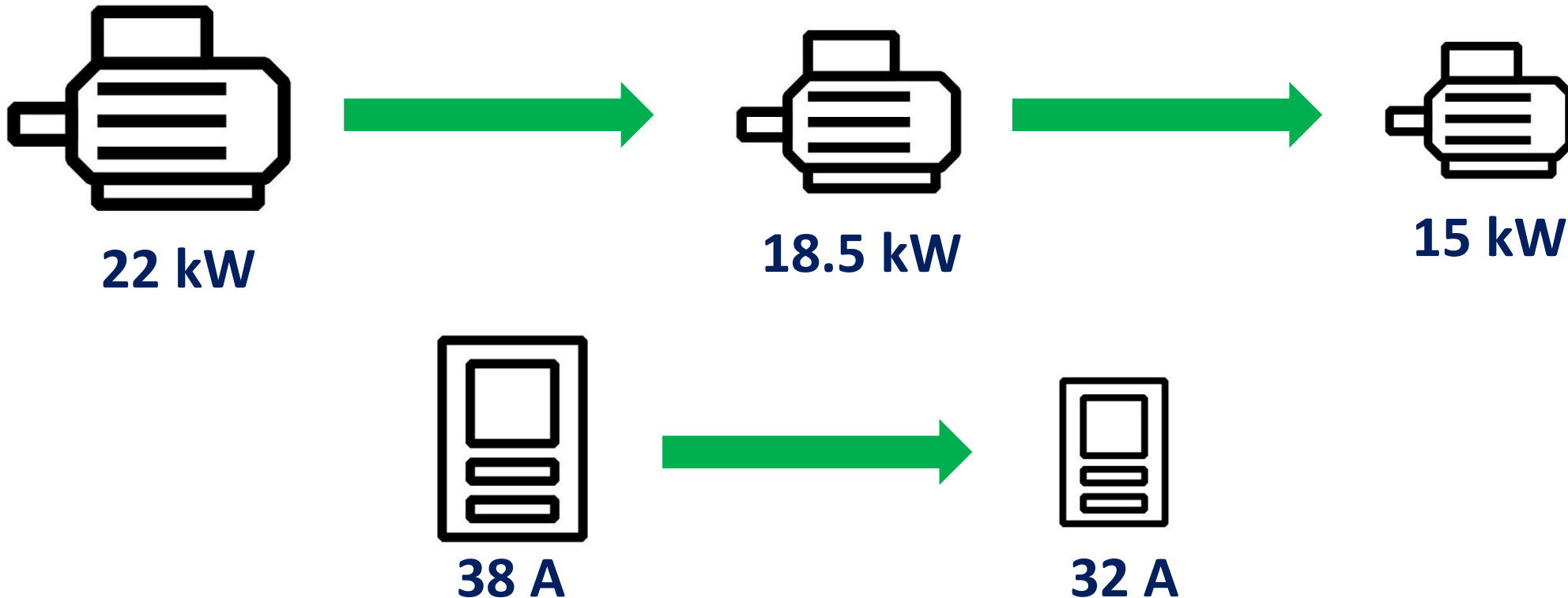


Simulation and Analysis



Improvements:

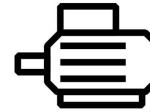
- Control structure change → Faster reactions to liquid level changes
- Motor and frequency converter re-dimensioned



Simulation and Analysis



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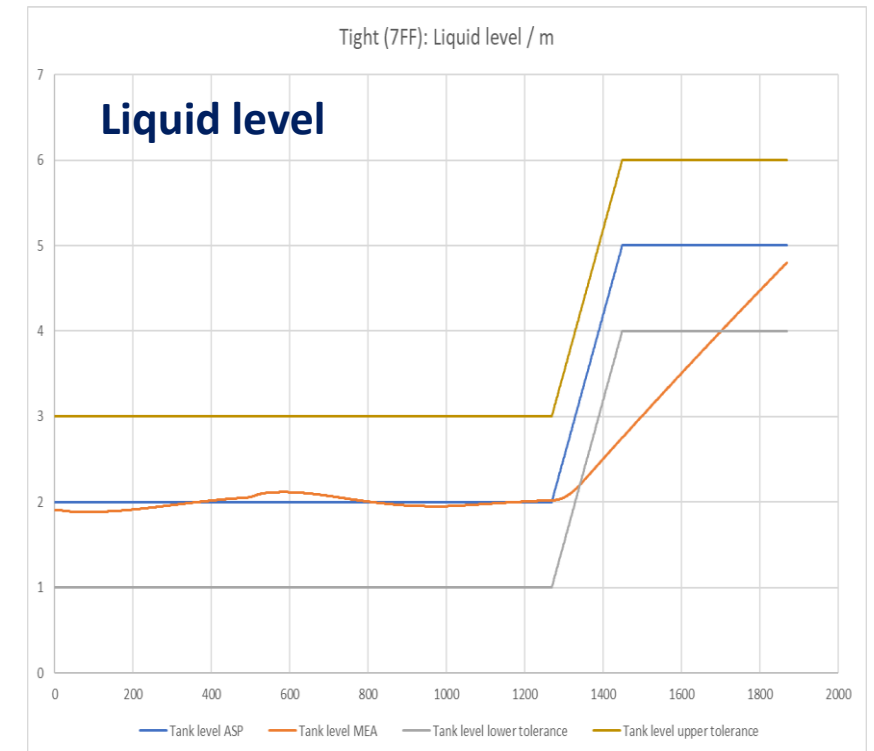
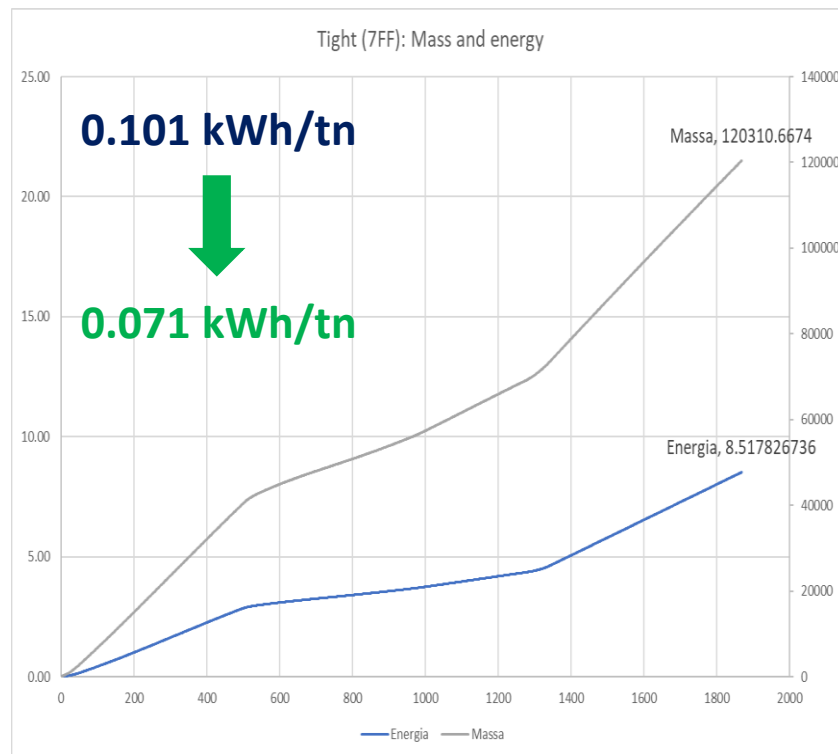
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Optimal pump

15 kW

32 A

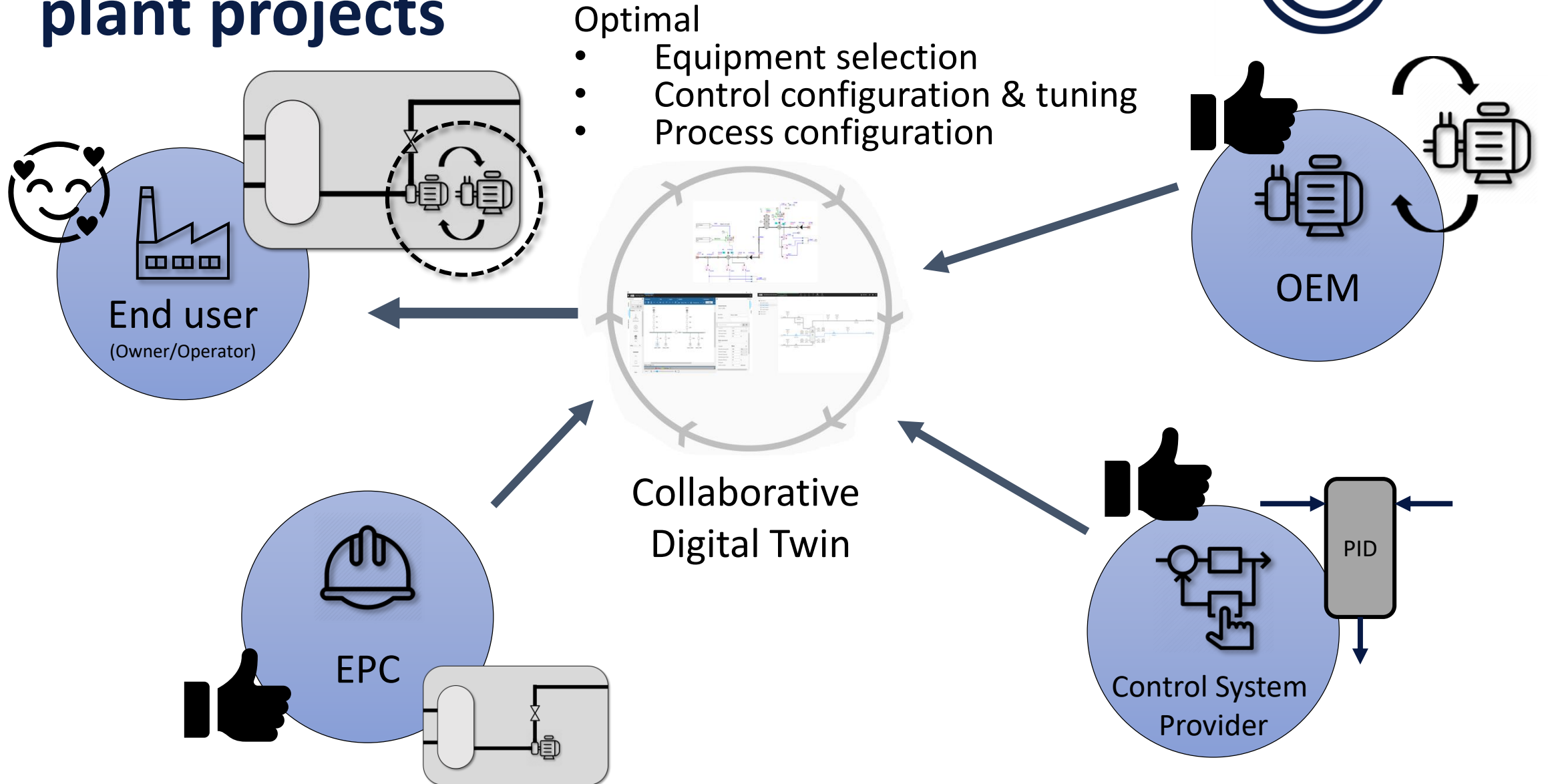


Results Review

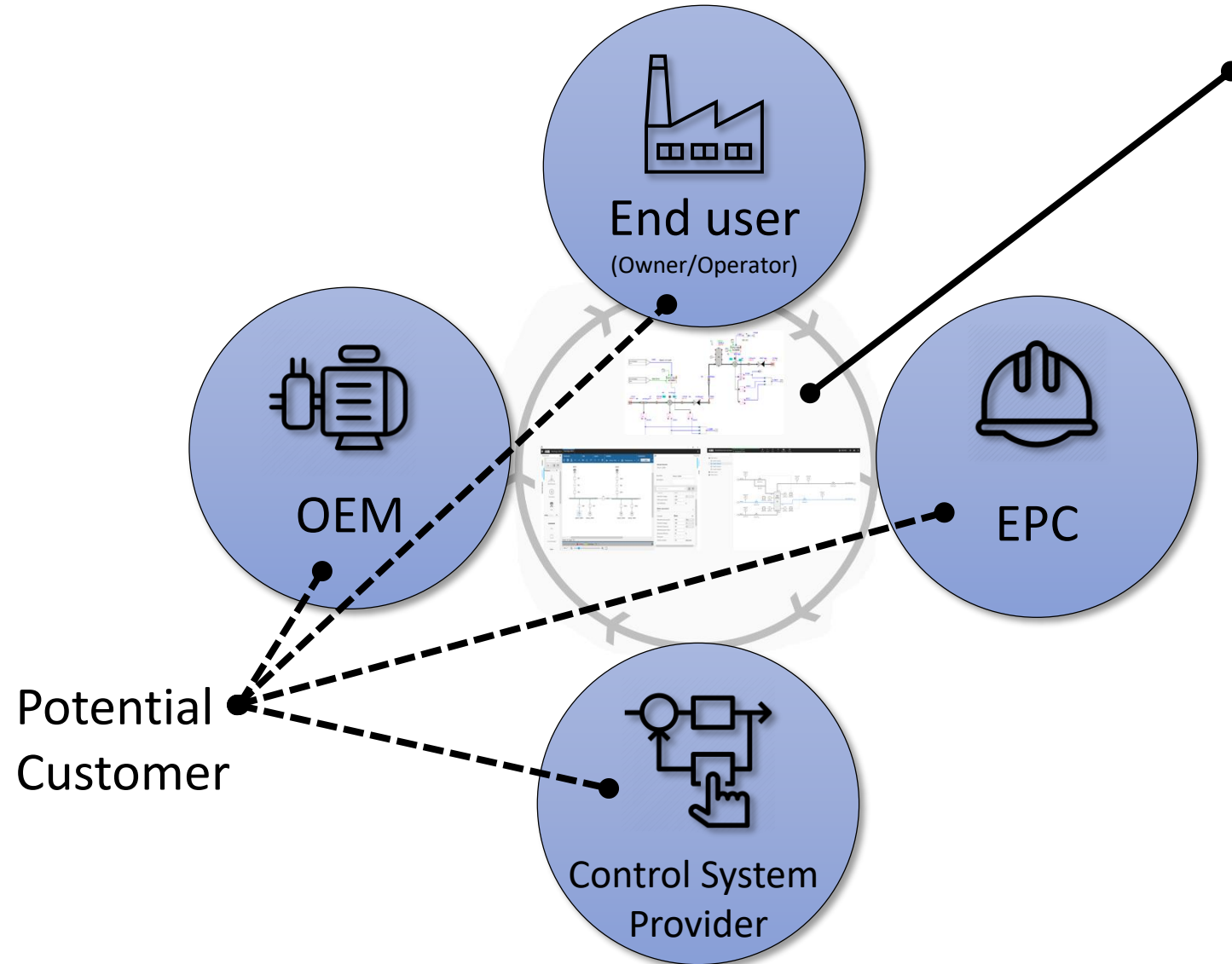


- Clear benefits with advanced computational tools
- Ability to simulate dynamics of the process and control structure required
- Simple steady state simulation is not enough
- Lower both investment CAPEX and OPEX with optimal components

Customer development: Industrial plant projects



Customer development



Collaborative Digital Twin

Value created for all stakeholders

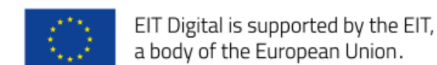
- Efficient collaborative design tool
- Efficient components to fulfil the process-critical requirements lead to costs savings
 - Savings for end-user
 - Improved value-based selling for others
- Possible to analyze system-wide dynamics
 - Ideal for analyses that consider changes on the control and automation system
- Integrated system-wide testing environment for
 - Energy optimization
 - Tackle maintainability issues

Thank you!



Activity official website:

<https://www.semantum.fi/references/TAKEOFF/>



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