

Improvements of wet chemical etch equipment (SAT) to support Zero Defect Strategy

Dr. Ursula Meyer & team; Infineon Austria AG

restricted

Agenda

- Infineon at a glance
- Equipment Introduction
- Motivation for improvement & Target setting
- Levers & Modifications
- Results



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Infineon at a glance

Global leader

in automotive, power management, energy efficient technologies and IoT

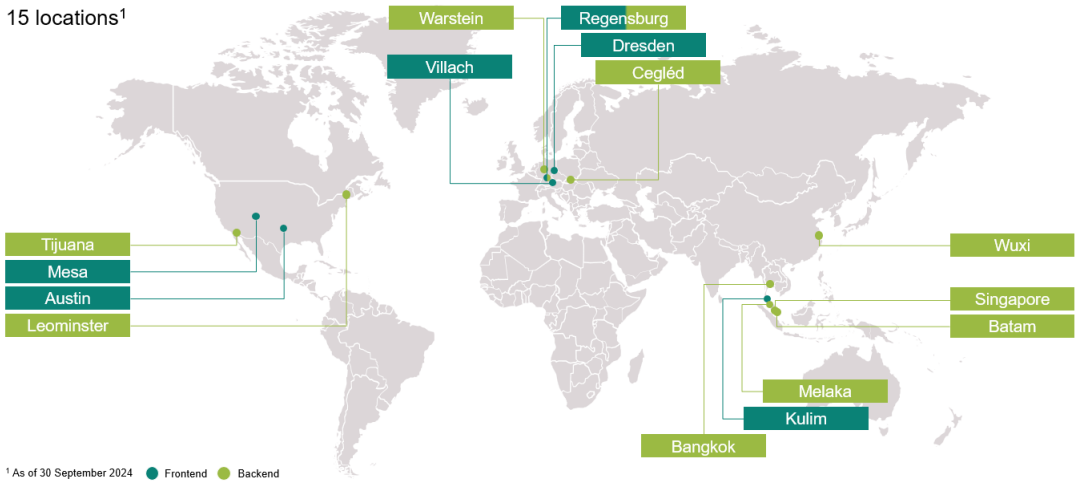
58,060 employees worldwide [1]

[1] As of 30 September 2024

Market position

Automotive	Power	Microcontroller
#1	**#1**	**#1**
TechInsights, April 2024	Omdia, October 2024	Omdia, March 2025

Network of Frontend & Backend facilities



Growth areas



Energy
green and efficient



Mobility
clean and safe



IoT
smart and secure

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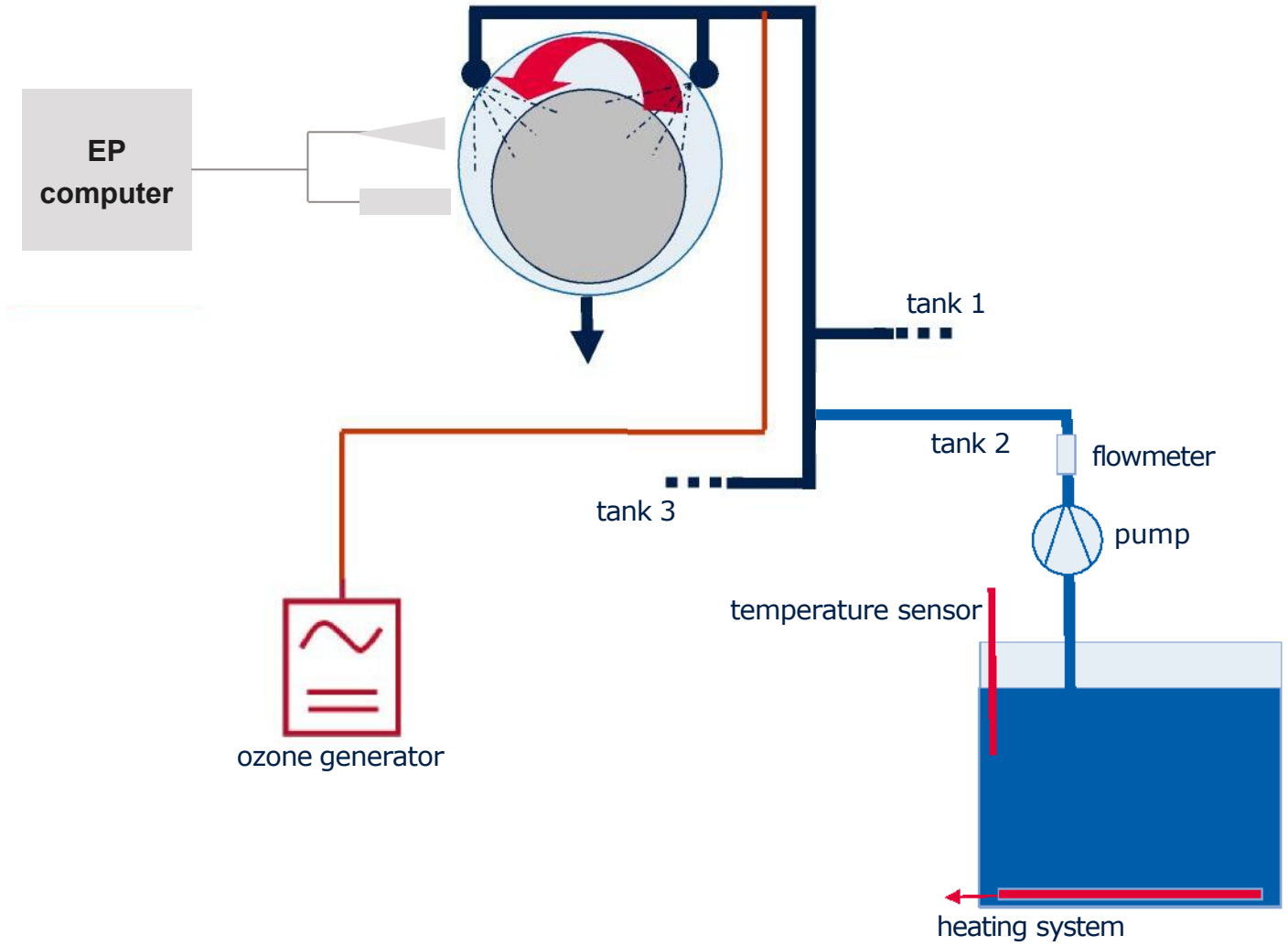
SAT equipment improvement – SAT introduction

SAT: **S**pray **A**cid **T**ool

High throughput tool





SAT equipment improvement - motivation & targets

SAT: **S**pray **A**cid **T**ool

High throughput tool



Critical process application

- Etching: Al, AlSiCu, Cu, W, TiW
- Resist removal
- Rinsing & Drying

Poor performance & improvement targets

- **Process stability**: cpk 30% below target
  → Improve cpk 20%
- **Equipment Stability**: unscheduled down time >10%
  → Reduce Equipment Down 50%
- **Wafer scrap**: 300% above target
  → Reduce Scrap 50%

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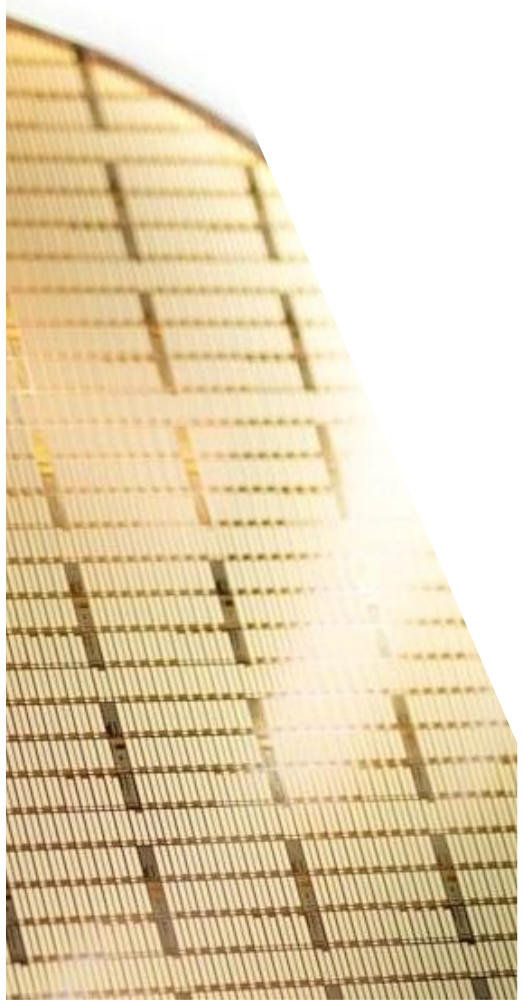
SAT equipment improvement: Levers & Modifications



- Bearingless **pumps** adapted and installed



- Additional **sensors** integrated
- Double quartz **ozone-generator** installed
- **Multiband endpoint system** adapted to improve communication
- **Logic Controller** integrated and programmed in-house

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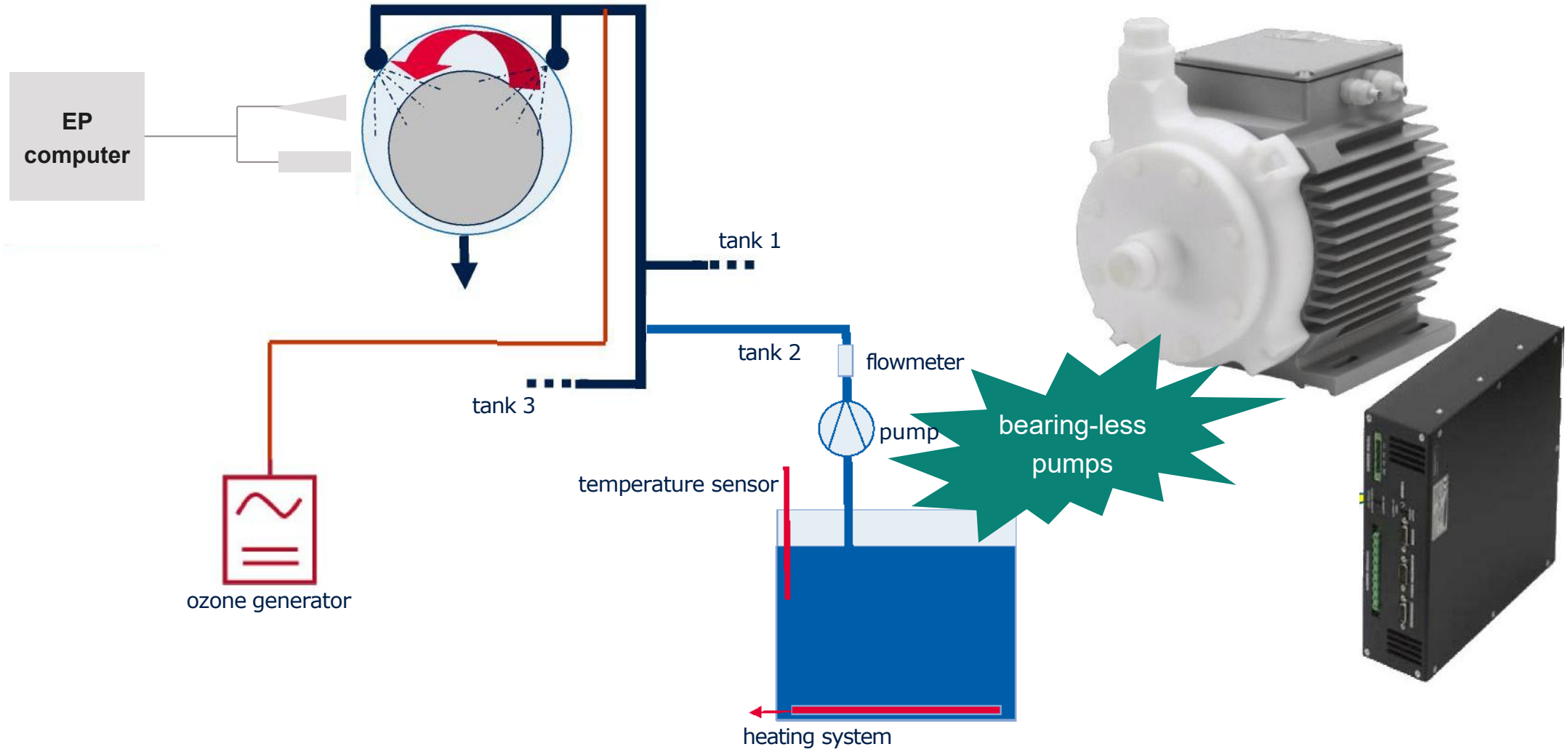
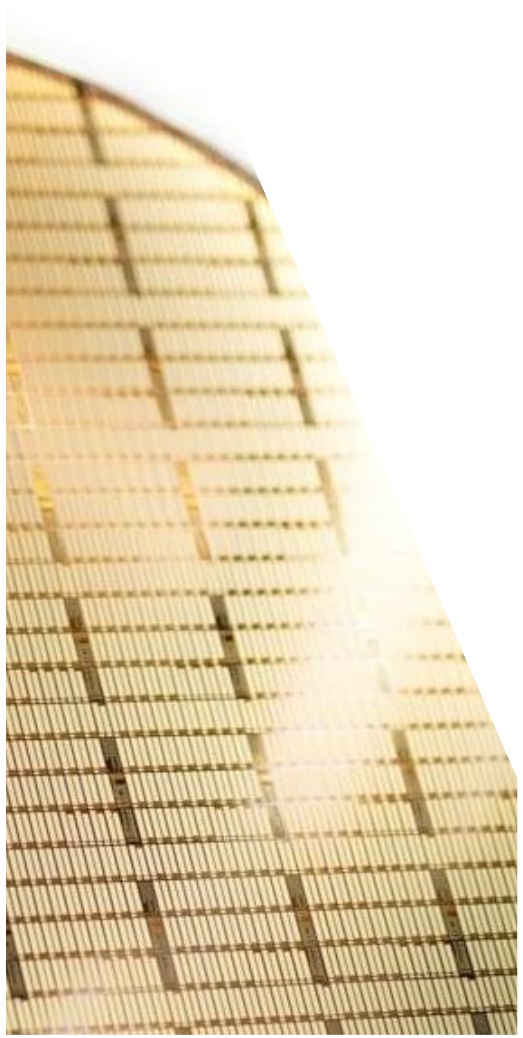
SAT equipment improvement – bearing less pumps installed



SAT equipment improvement: Levers & Modifications



- Bearingless **pumps** adapted and installed ✓



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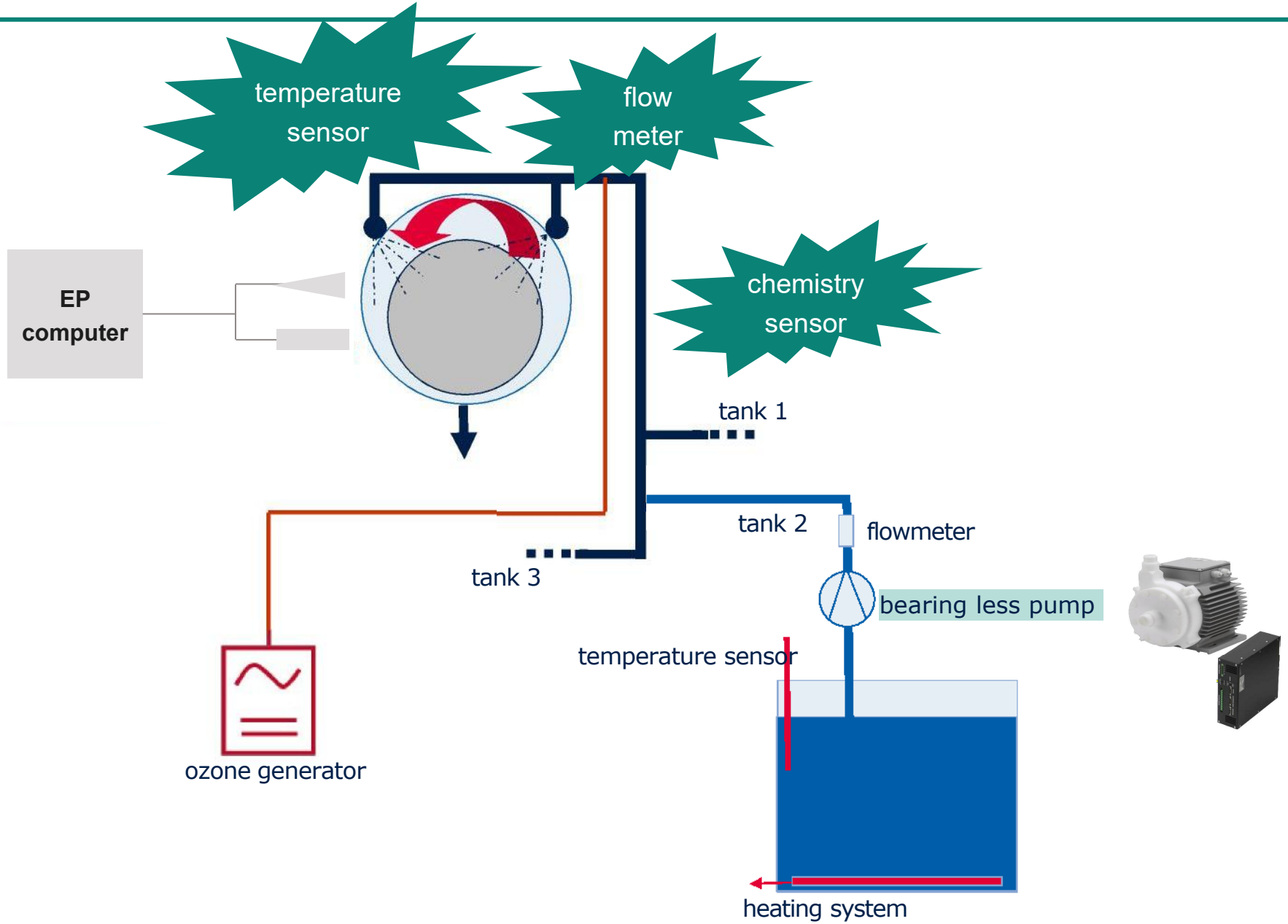
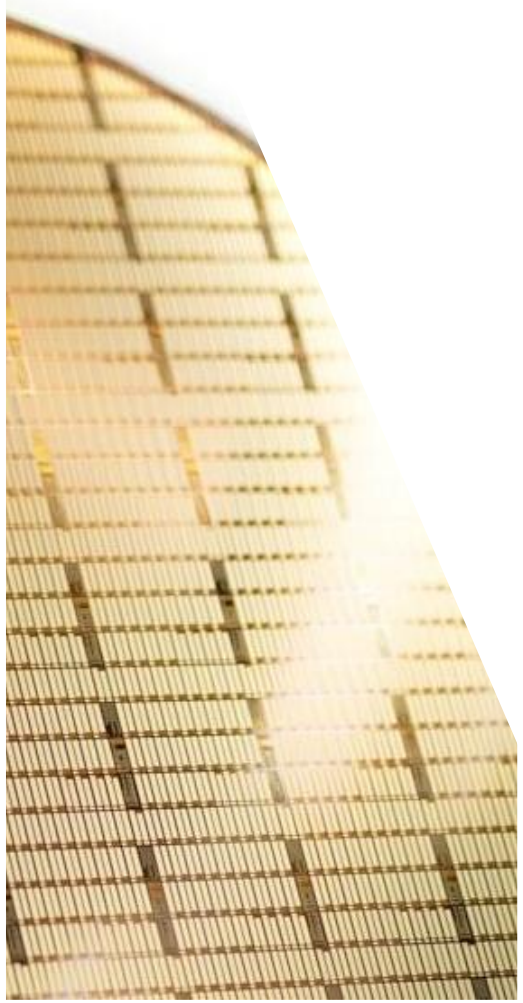
SAT equipment improvement: Levers & Modifications



SAT equipment improvement: Levers & Modifications



- Bearingless **pumps** adapted and installed ✓



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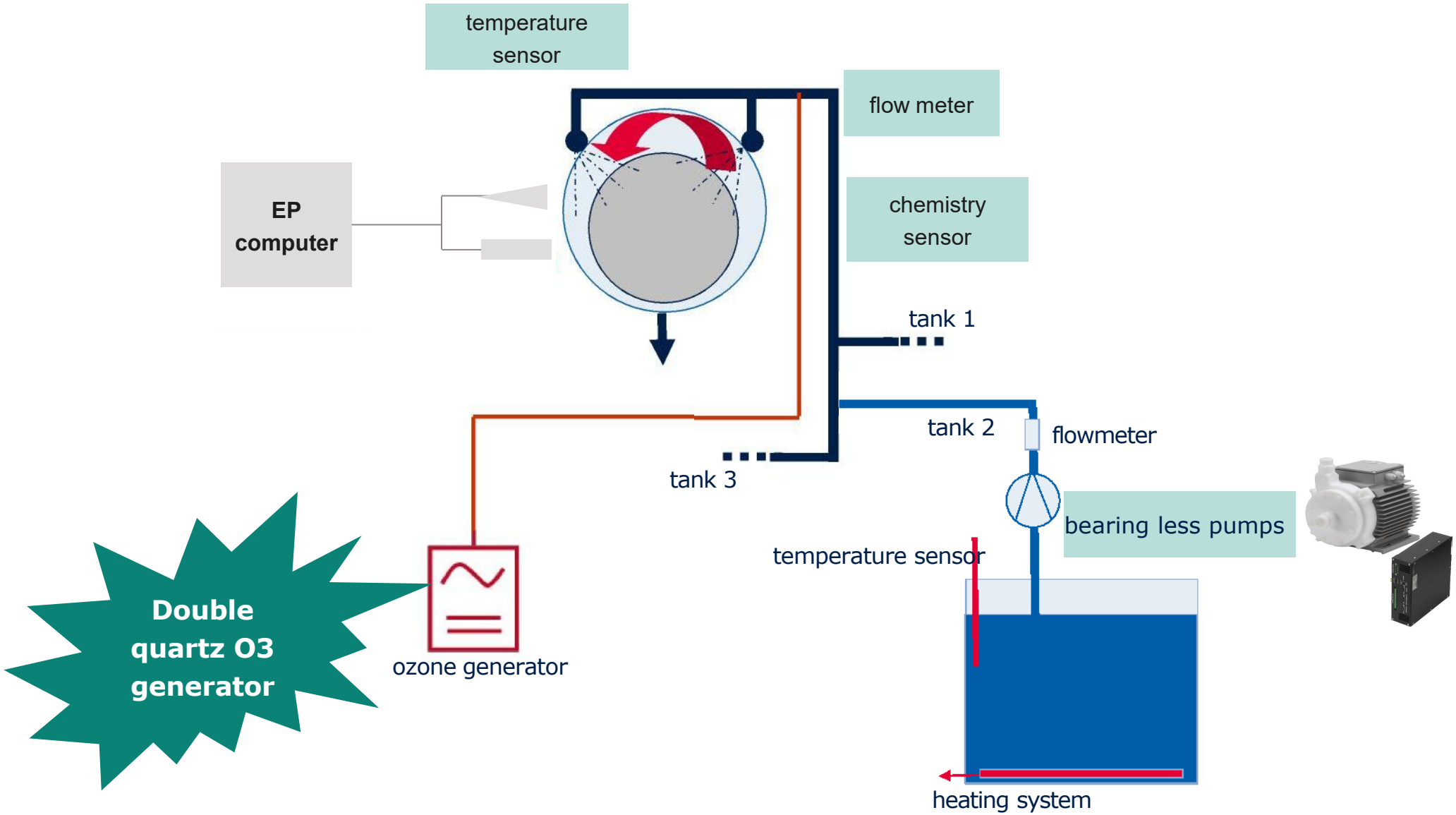
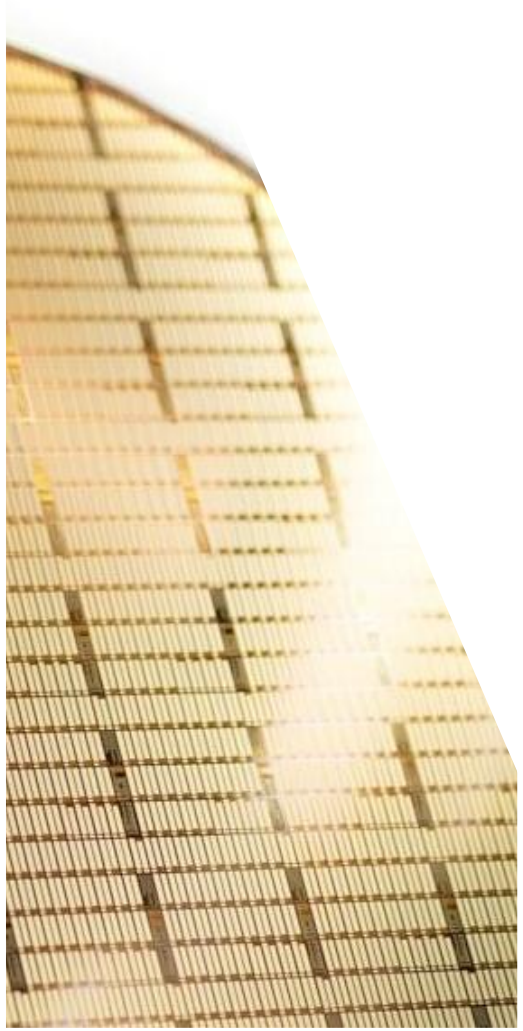
SAT equipment improvement –additional sensors



SAT equipment improvement: Levers & Modifications



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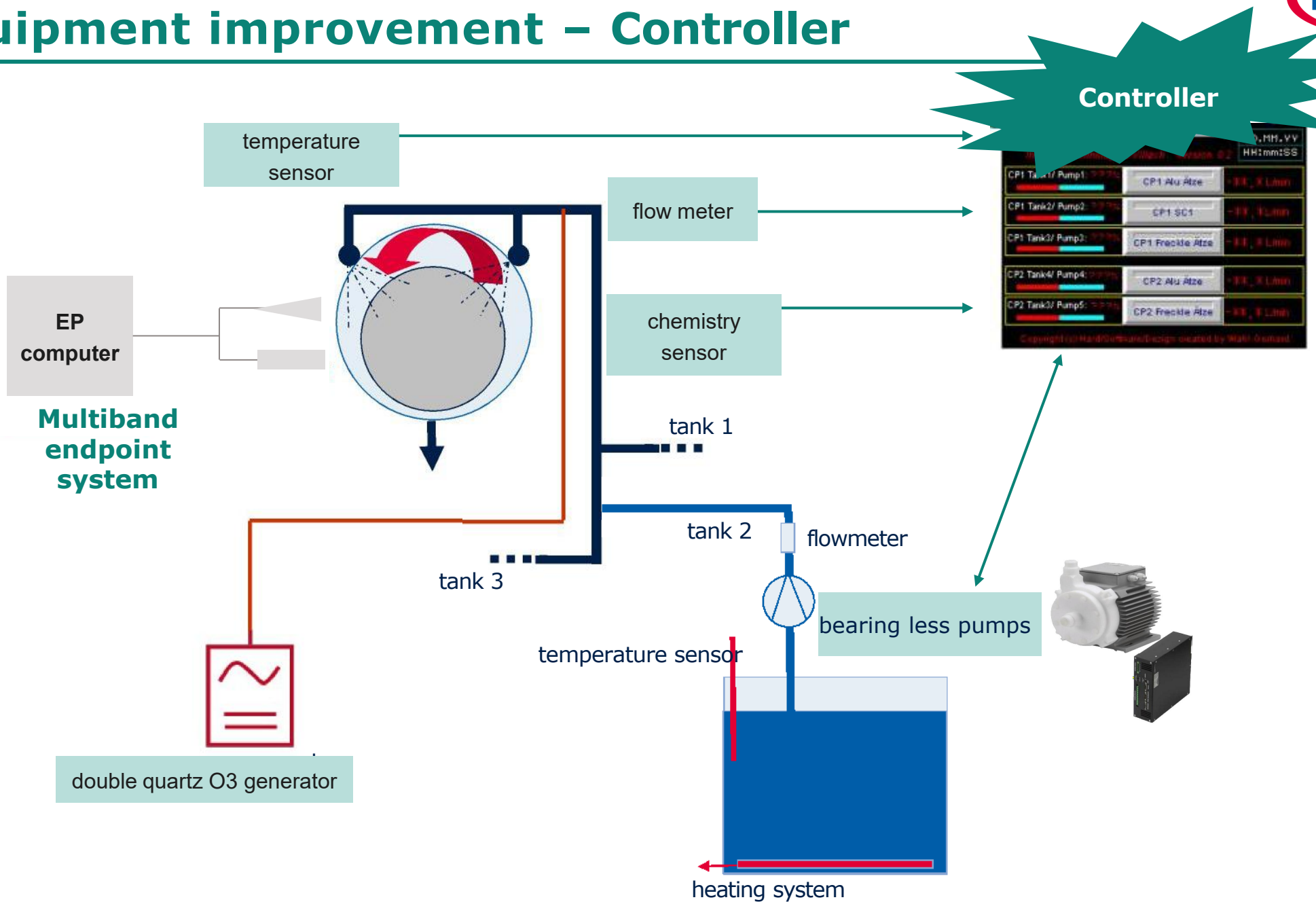
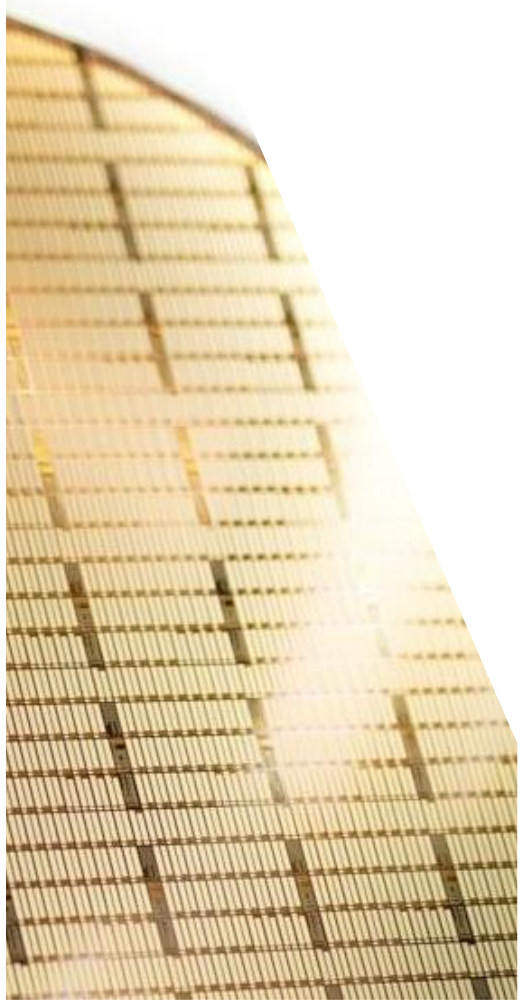
SAT equipment improvement – Controller



SAT equipment improvement: Levers & Modifications



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SAT equipment improvement: Target reminder



- **Process stability**: cpk 30% below target
  → Improve cpk **20%**
- **Equipment Stability**: unscheduled down time >10%
  → Reduce Equipment Down **50%**
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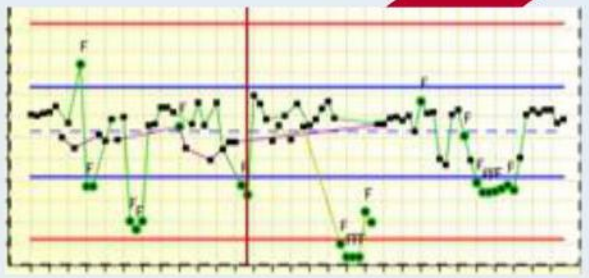
SAT equipment improvement: cpk development

Target +20%



Overachieved



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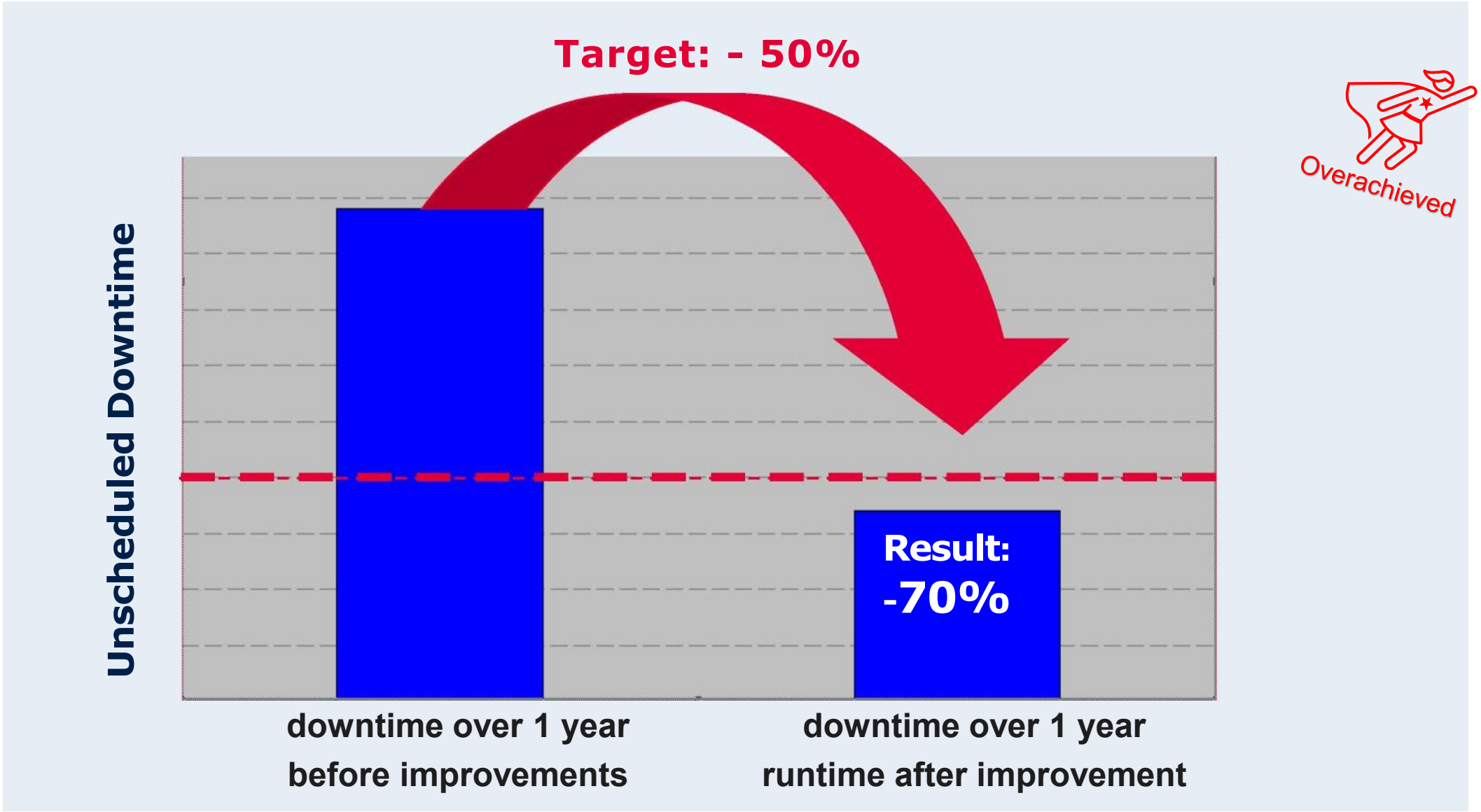
SAT equipment improvement: unscheduled downtime development



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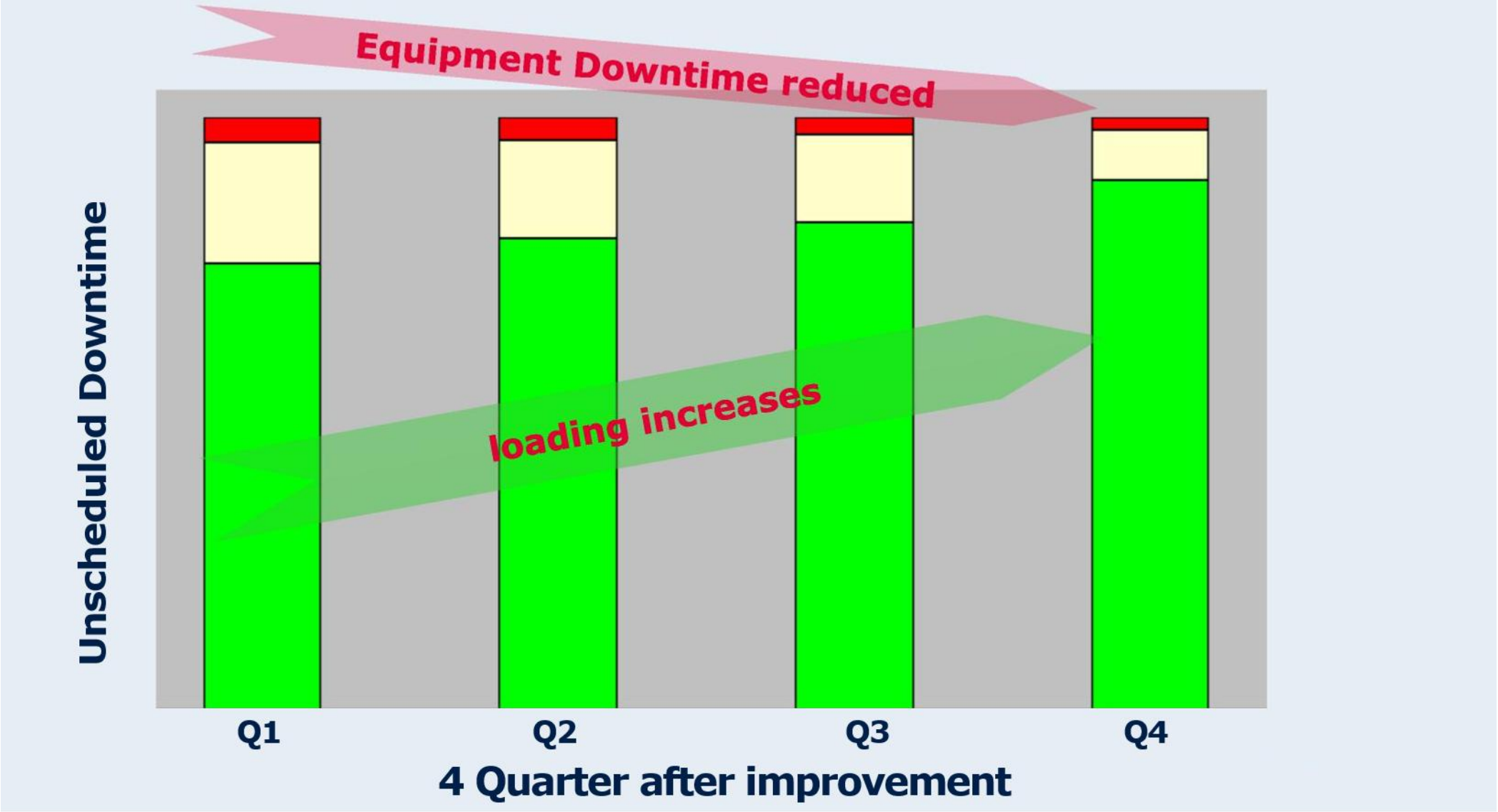
SAT equipment improvement: downtime vs loading



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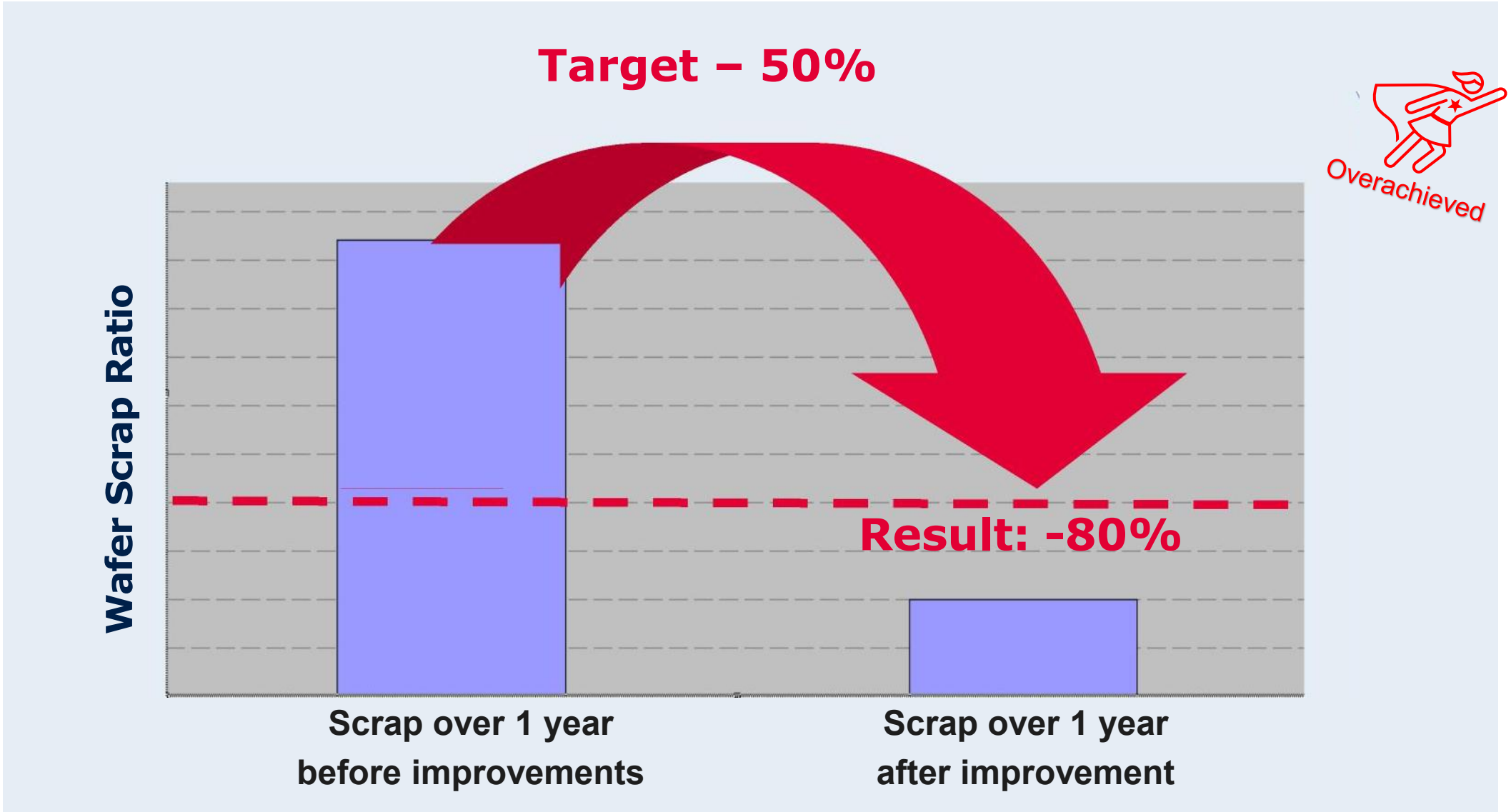
SAT equipment improvement: wafer scrap development



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SAT equipment improvement team



- **Gerhard Wahl**; equipment engineer & system expert
- **Willi Schwarz**; process engineering
- **Ursula Meyer**; process engineering & project management
- **Michi Holzinger**; APC expert
- **Gernot Auer**; IT and system integration
- **Dieter Frank & Team**; IT

Thank you for your attention !

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