



# Potentials of Using Solvent-free Industrial Cleaning (SOFIQ) in Swedish Manufacturing Industry

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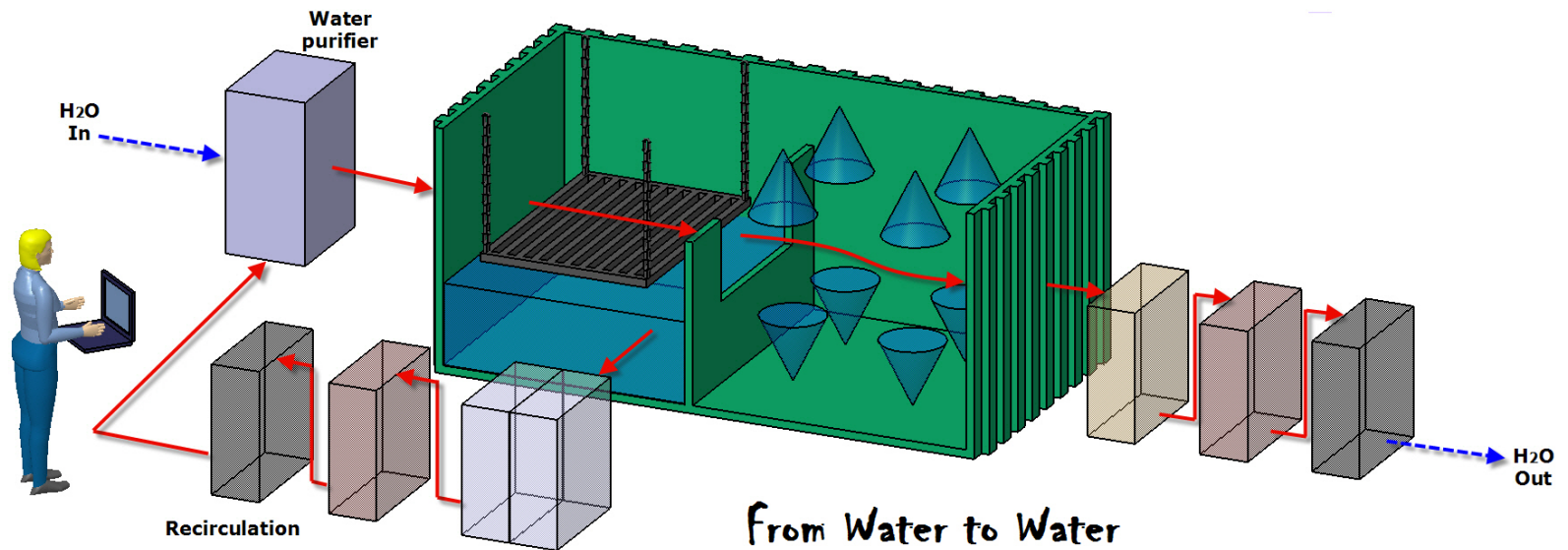


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# Solvent-Free Industrial Cleaning (SOFIQ)

Cleaning machine parts with ultra-clean water



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**ProEnviro**

**MISTRA**  
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# QLEAN SURFACE



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# Example of cleaning result



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# Environmental Potential

- Less chemicals used in cleaning process
- Better working environment
- Reduction of hazardous waste
- Reduction of energy use
- Avoid upstream environmental pressure
  - decrease of process emissions
  - decrease of transportation of chemicals and waste



# Potential Environmental Benefits- example cleaning of circuit boards (1)

- Enhanced cleaning results regarding flux materials
- Better process results in the laquering process
  - Longer life time of circuit boards
- No chemicals needed
  - Less transports of chemicals
  - No transports of hazardous materials





# Potential Environmental Benefits- example cleaning of circuit boards (2)

Cleaning process before:

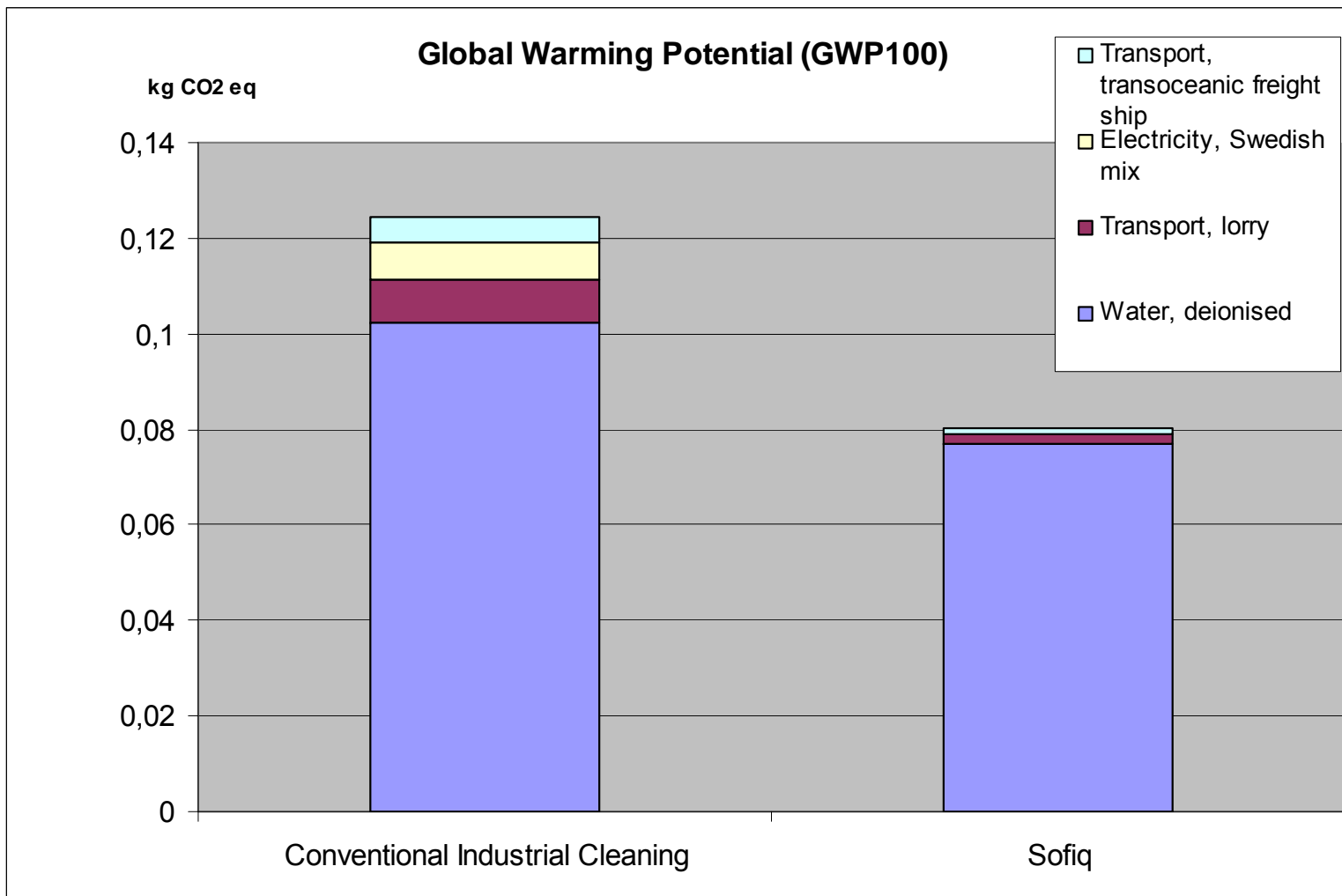
- 8 min cleaning, heated to 60°C
  - 7 l Aqueous Batch Cleaner used for 100 cleaning cycles
  - Used water collected as hazardous waste
- Rinsing in de-ionised water until certain parameters fulfilled, normally 7 times= 100l water
- Drying 30 min with hot-air at 65°C

Cleaning with **SOFIQ**

- 2 min cleaning with old Ultra-clean water at 20°C
- Rinsing 5 times with newly produced Ultra-clean water= 75l Ultra-clean water
- Drying 30 min with hot-air at 65°C



# Preliminary results- Global Warming Potential per washing cycle



CO<sub>2</sub>



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# Future challenges

- Building prototypes for the concept
- Test technique on various companies
- Investigating the customer needs in more detail
- Benchmarking existing technologies
  - Cleaning quality
  - Environmental performance
- Achieve short cleaning process times

