The Autarky Toilet
Sanitation off the grid
The Autarky Toilet

Stream separation at the source

On-site treatment of water, urine and feces in the toilet

Off the grid: no connection to electricity, to water supply or to sewer systems

Resource recovery for fertilizer production
On-site treatment in the toilet

**Water treatment**
from handwashing, anal cleansing & flushing

Safe running water 24/7

Approx. 6 users/
1 family

Household level

**Urine treatment**
Stabilization & evaporation

**Feces treatment**
Hydrothermal Oxidation (HTO)

Rendering: EOOS

www.autarky.ch
The modular concept

Urine treatment  Feces treatment  Water treatment  User interface

Renderings: EOOS
1. Bioreactor
Biological conversion of organic matter & ammonia by a biofilm

2. Membrane
Retain of pathogenic organisms

3. Electrolysis
Converts traces of organic matter, ammonia and removes color

4. Residual chlorine
Residual disinfectant produced by electrolysis
Urine treatment

1. Stabilization of fresh urine
Addition of hydrated lime preserves urea and inactivates viruses and bacteria

2. Evaporation of stabilized urine
Excess water is evaporated, dried nutrients deposit on blotting paper

Rendering: EOOS
Feces treatment

Mineralization of feces

By mixing the feces with air and heating it above 400°C under high pressure, the sludge decomposes and is oxidized completely to carbon dioxide and water. This process is called «hydrothermal oxidation» (HTO).

Feces before and after HTO treatment

Rendering: EOOS   Picture: PSI
User interface

Functional design of the user interface
An appealing and intuitive user interface promotes and ensures pleasant and hygienic toilet usage.

Rendering: EOOS
Adaption to existing superstructures

Picture: Max Grau (Eawag)

Rendering: EOOS

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The project

Duration
January 2015 – April 2017

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Partner

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