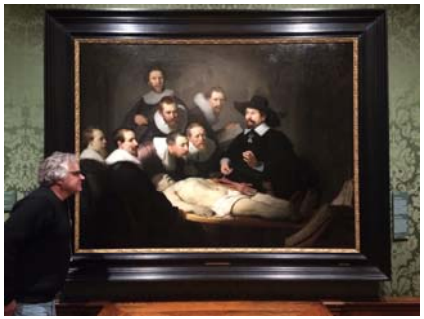
Anatomical Lecture on a Dishwasher

EGU2016-1878

Nick van de Giesen
Delft University of Technology, Netherlands, n.c.vandegiesen@tudelft.nl

Introduction

The dishwasher died after faithfully serving the household for over seventeen years. One would expect a MacGyver treasure trove of parts to be found inside. Here, we will present what could be salvaged from a dishwasher that could be of use to hydrological research.



Author preparing for work presented here by studying the "De anatomische les van Dr. Nicolaes Tulp" (photo courtesy John Selker, OSU)

What will be presented is a hydrology oriented anatomy lesson of a dishwasher that would make Dr. Nicolaes Tulp proud.

Methods

The dishwasher was an AEG ÖKO FAVORIT, type 3430, from 1998. There are plenty of YouTube movies on how to take apart and even repair dishwashers. However, as Dr. Tulp did not have this luxury, we decided simply to dig in. Phillips- and flat-blade screwdrivers, combined with pliers and a pipe wrench sufficed. All parts of potential experimental interest were retained. The remaining parts were recycled (see also "Cost / benefit").

Digging in

As a courtesy to the reader, it should be mentioned that, just as with a real anatomy, there is quite some liquid that continues to ooze out, even when you think there can possibly not be any left. So a bucket and some rags are more or less a must. It is also recommended to perform the autopsy relatively quickly after the demise, unless one is more interested in biology than hydrology.

Results

Sensors
1 Float sensor (on/off)
1 Pressure sensor (switching)
2 Thermostats
1 Hydrometer (analogue)

Actuators
1 Heating element (1500 W)
2 Centrifugal pumps
2 Micro-dosage pumps
1 Electrical valve
1 Electrical latch
1 Signal lamp

See demonstration panel for sample circuit using the pressure sensor, signal lamp, and micro-dosage pump.

Useful parts

Cost / benefit

Recycle

The naïve method deployed here is near optimal from a cost / benefit point of view. Total dissection took about two hours. Unless one knows exactly what to go for, a web search will not greatly reduce this time.

The benefits are a bit meagre. Unless one has access to very cheap storage, only a few parts are of interest. Street value of the materials is estimated at $20. When certain parts, such as heaters, pumps or valves need to be purchased as new, benefits would rise to $100-$200.

An additional cost concerned the recycling. Normally, one can dump a broken dishwasher at one point in the recycling facility and go home. In this case, we had building materials (the concrete plate in the back of the washer), cloth (isolation material), metals, plastics, etc. A total of five stops needed to be made, adding another 20' to the costs.