



A story about the coming into being of a device for washing hands in Maastricht at the Demotech Lab and in a little village in Ghana

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date: September 10 2007

The need and the reality



In Ghana, washing your hands is traditionally a highly valued custom. Kids at school are taught to do so. But there is scarcity of water, that has often to be hauled from far.

In this school, located on an island in the Volta region, only these two bucket with dirty water were available for the class. Sadly a good custom and proper teaching so becomes a way of transportation of bacteria that can cause diarrhea and other intestinal illnesses.

The innovation and the research



This is a picture of the first prototype for a device for hand washing. A green plastic 20 liter jar was used with the top cut off. In the bottom a hole was punctured, closed by a valve. This valve you just had to push up a bit from under the jar for a little water to stream out onto your hands. Ideal for washing your hands!



Two students of the Student Workforce, Julia and Lisa knew the problem of washing hands and wanted to take the idea to Ghana, that they planned to visit summer 2007. I jumped on the opportunity to get the hand washing device field tested. We started to remove obstacles of cost and complexity of the design, so the girls could easily introduce it. Instead of the not-for-free green jar, I made a big strong bag from thick plastic sheet material. Transparent, it looked nice!



Then Lisa remembered from her year long stay in Ghana the so called "rubber bags". Such bags were handed out by vendors at the market and littered around everywhere. Soup was also sold in it, showing such bags could hold water without leaking.

The Ghanaian "rubber bags" were actually the same polyethylene bags used for the same purpose in the Netherlands and widely available.

Result: I asked the girls to sew a cloth bag same size as the plastic bag as to give it support and protect the plastic against punctures. At the bottom of the cloth bag I fitted a wooden board with the self-closing valve.

So the Hy2U was born. This name is kind of SMS-type writing, meaning a salute to you or when understood more meaningful: the wish of 'hygiene to you'



And then we realized the Hy2U could also be made as a nice looking device, that people would like to display in their homes. This as a start, but real beauty soon to come!



Work at the Demotech Lab in the Netherlands continued with a search for the finishing touch: a basin to collect the spill water and the drain to get it out of the way.



At that time Julia packed the latest prototype of the Hy2U and traveled to Ghana. This picture shows her on board of a boat that took her to one of the islands formed in the Volta dam lake. She was about to make a big success of her trip!

Ghana people discover how it works



At arrival Julia asked people to have a good look at it. She organized that the practical value of Hy2U was tested at the local primary school. Well indeed, there was plenty interest, so she showed to people how the trick was done with the self-closing water valve.



The inner "rubber" polyethylene bag is attached to the wooden board that sits on the bottom of the outer cloth bag. In the very middle of this wooden board the water outlet is made. Rubber strings press a small round wooden pin into the plastic. This pin has a sponge rubber disk attached to it, that was cut from a flip-flop sandal. The big trick is that you can open this valve by pushing up the wooden pin that stick out from under the wooden board, that is from under the Hy2U!



This picture explain better how the "rubber" bag is connected to the board. This connection has to be done is a way as not to puncture the very thin polyethylene. This connection takes a lot of care. Therefore it was further developed to get it done with less risk for such punctures.



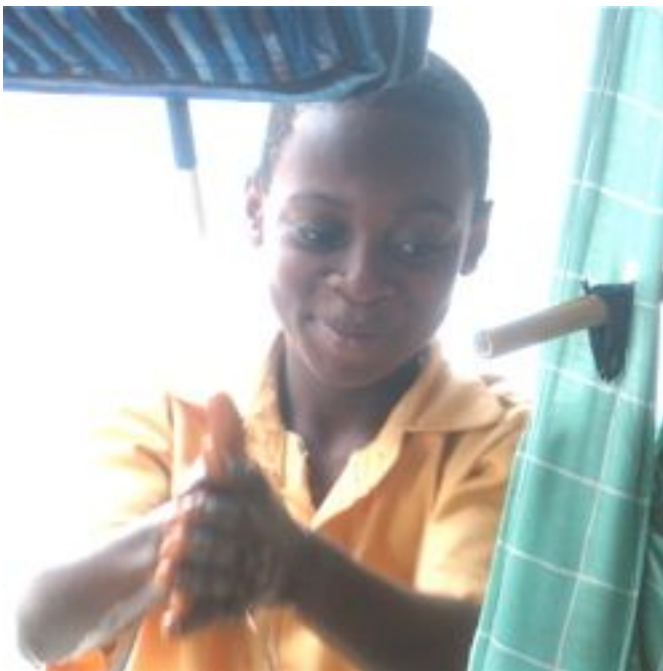
And this picture shows the wooden valve seat that is inserted though a square hole in the bottom of the wooden board. The sharp end of the valve just sticks out of this tube-like valve seat. This sharp end is practical when you have to pierce the polyethylene sheet that covers the wooden valve seat after (renewed) attaching it to the plastic bag. Thus the plastic that covers the valve seat becomes the ideal lining for the little valve disk cut from a flip-flop toe slipper.

The good functioning of the Hy2U depends on very careful design work to get get this crucial valve function properly!

First use in Ghana



Now the school that only had the two buckets of dirty water available for washing hand of its pupils had an alternative. It uses very little water. 100 to 150 kids can wash their hands with a Hy2U bag filled with 5 liters of water.



Boys and girls started using it. Though the Hy2U is unlike anything they knew, specially these kids liked it. Julia reported immediate understanding of the use. That is good for a start!

Made in Ghana!



Julia then invited people to start to make more Hy2U's as there was plenty opportunity for further use. People came with that idea to use a bigger size "rubber" bag. Then it would be very suitable for bathing at home.



As the Hy2U was carefully designed for local manufacture in a situation like in Ghana, the copying of the Hy2U was not difficult to get going. The wood working that was needed did not pose any problems, The crucial valves were produced as if it was a routine job.



To produce the cloth bag was also done with an easy smile. Nicer looking cloth was used and indeed, people decided to make a bigger size bag, to contain more water.



The fun of cooperation came in welcome when the rather complicated attaching had to be done of the rubber bag to the wooden base with its valve seat. Effectively cooperating hands did the job.



The Hy2U with the bigger bag was demonstrated to the public. This lady is clearly aware of the missing spill water basin and something to collect the drip. Well, Julia is in good contact with these people and we will show them how to make the Hy2U complete to solve this problem.



What counts is that these little hands are now safe hands. Safe for handling food, Save guarded against common diseases to a far larger degree then when easy hand washing was still a problem.

The fun and the future



As we are in Ghana, and as kids love music and drumming a second use for the valves was soon discovered.



Now I regard it as Demotech's task to make sure the Hy2U becomes really beautiful. The two to three billion people, -about half the world's population- that miss piped water in their homes, deserves a beautiful looking compensation. We will ask users to apply locally woven fabrics, We will propagate the Hy2U to be decorated like so many other objects as made looking real nice.



May we regard the future as a nice person that takes good care of the need of hygiene for these kid's hands?

The number of hands that need proper care is huge, is a billion hands a good guess? The World Health Organization seems to think so. Study these links to get convinced:

- http://www.who.int/patientsafety/events/05/HH_en.pdf

- [http://jama.ama-assn.org/cgi/content/full/291/21/2547?](http://jama.ama-assn.org/cgi/content/full/291/21/2547?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&fulltext=hand)

[maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&fulltext=hand+wash&searchid=1131644678151_4294&stored_search=&FIRSTINDEX=0&journalcode=jama](http://jama.ama-assn.org/cgi/content/full/291/21/2547?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&fulltext=hand+wash&searchid=1131644678151_4294&stored_search=&FIRSTINDEX=0&journalcode=jama)

- [http://www.scielo.org/scielo.php?](http://www.scielo.org/scielo.php?pid=S0042-96862004000800015&script=sci_arttext)

[pid=S0042-96862004000800015&script=sci_arttext](http://www.scielo.org/scielo.php?pid=S0042-96862004000800015&script=sci_arttext)

Citing this study: According to WHO, 1.8 million children die every year from diarrhoeal diseases and 90% of those are aged less than five years, mainly in developing countries. The study's findings suggest that half of those lives could be saved.

So Demotech is in good company when I want Demotech to campaign the promotion of hand washing. Reason to launch as soon as possible the

Hy2U-campaign

News about this Hy2U campaign will be posted to Demotech's campaign website:

<http://www.hy2U.org>

or mail to:

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