WATERCONE®

The Watercone® is a simple device for solar seawater desalination (solar still) which is designed for cheap mass production. The Watercone can desalinate up to 1-1,5 l per day, enough for a child to survive.

Philosophy of the concept

„Many peripheral small units will ensure a better supply of freshwater than one central big generator. If the big one fails, there is no water for the people. If a small one fails, the other ones still keep on working.“

Background

The Watercone® is a simple device for solar seawater desalination (solar still) which is designed for cheap mass production. It has been developed and patented worldwide in 2002 by the industrial designer Stephan Augustin from Munich, Germany
The development and patent application has been financed with loans by the Hans Sauer Foundation from Deisenhofen near Munich.

In 2002 the marketing department from the Bayer AG Leverkusen decided to support the project by sponsoring the material (Makrolon sheets) togehter with the integration into their global PR network.

To make sure that the water from the Watercone is safe, Stephan Augustin hired the German TÜV Rheinland in 2003 to provide a laboratory report. The testing was done at the TÜV institutes in Germany and India with positve results. The water quality is conform to the WHO requirements and “Beside eliminating salt from base sea water, the Watercone also does NOT transport highly toxic elements such as mercury, arsenic or cadmium from the pan into the cone.”. (Test documents in German language can be delivered on request)

Together with CARE in the year 2004 Stephan Augustin provided a fisherman's hamlet by the sea in Yemen, which normally struggles for every drop of drinking water, with a set number of Watercones per family and thereby tested the Watercone's viability in real daily life of a developing country community. Bayer sponsored the plastic sheets and the Zeltec GmbH made 100 Watercones® out of a sample tool.

The lab results by CARE essentially confirmed the findings submitted by the German TÜV and indeed, it become a very emotional moment for all involved when the village leader said (original quote): **“The water from the Watercone® has a much better taste even then our local bottled water.”**

Extract of the 26 page CARE report with its final conclusion (see also Final Report)
"...Considering the above results and recommendations, CARE thinks that the principle underlying the construction of the watercone is a very good idea which in certain circumstances will prove its worth in the purification or desalination of contaminated or sea water. The watercone has been quickly accepted by the users, is robust and easy to understand and to handle, and the quality of the harvested water is very good. The emergence of the sea as a new source for the easy production of good drinking water is an interesting path for the fishermen villages involved in this operation. If developed further, a solution for water supply in difficult areas on the basis of the watercone is absolutely conceivable."

Than it took some years to find the right partner who can produce and distribute this innovative new product.
In 2008 the Mage Industrie Holding AG form Germany got the exclusive world wide licence. The Mage Watermanagement GmbH as part of the Holding is responsible for the executuion of the licence until today.

Function

1. Pour salty / brackish Water into pan. Then float the Watercone on top. The black pan absorbs the sunlight and heats up the water to support evaporation.

2. The evaporated Water condensates in the form of droplets on the inner wall of the cone. These droplets trickle down the inner wall into a circular trough at the inner base of the cone.

3. By unscrewing the cap at the tip of the cone and turning the cone upside down, one can empty the potable Water gathered in the trough directly into a drinking device.

Production

Since 2008 the Watercone will be produced in Shenzhen near Hong Kong by a contract manufacturer . A local replication of the tools is possible within weeks.
With the the new Watercone 2.0 design the manufacturing and shipping costs could be cut down radically.
The Watercone is now made out of two parts which allows a much better stacking in the boxes and containers.

The size of the boxes is adjusted to the US-PS tariff for small and cheap parcel. This made it possible to fit 840 Watercones in a 20 feet container.

From the beginning, the production concept of the Watercone® was based on the simple and world wide available technology of vacuum forming with plastic sheets. This makes it possible to get a very thin skin which is necessary to initiate an effective condensation process on the inner side of the cone.
The Watercone 1.0 was made out of a 4mm sheet which caused hight costs and lots of waste. The new Watercone 2.0 is made out of two sheets with 0,8mm each and reduced manufacturing cost more than 50%. To improve the price, the polycarbonate sheets for the new product come from Sabic (Lexan) instead of Bayer (Makrolon)

1. Watercone 1.0 (old, in one piece)

Factory side current maximum can make 150set /days around, per month – 150*30days =4500set , per year – 4500*12 = 54000set. Expansion is easy possible.

Watercone 1.0 – Current maximum production can be 54K set per year.

Material China FDA PC - NOT use Sabic PC sheet, Container order and cost around EUR42.9/set , including EUR2.5/SET manufacturer commission . (400set / 20GP Container , Minimum order 1000set)

PC made in China, SPEC at 1M*1M*4.0MM , One Side UV , FDA Approval PC Material, Cost RMB35.5/KGS, which is much cheaper than Sabic PC, but only big size and thicker.

For watercone 1.0, PC raw material cost still have 51.6% around in all costs.

2. Watercone 2.0 (new since December 2012, made out of two pieces and clipped together)

Factory side current maximum can make 250set/days around, per month – 250*30days =7500set , per year – 7500*12 = 90000set per year.

Watercone 2.0 – Current maximum production can be 90K set per year.

Watercone 2.0 – have to use Sabic FDA PC as China PC supplier can
NOT make the 0.8mm thin sheets with one side UV protection coating – Container order and cost around EUR28.0/set, including EUR2.5/SET manufacturer commission.

Sabic PC last year Price was RMB70.5/KGS -
(Base on yesterday rate 7.8174, that is EUR9.018/KGS, if base on today rate 7.9912, that is around – EUR8.822.KGS) EUR Rate is very important.

Order Sabic PC SPEC: 850mm*850mm*0.8mm size, FDA approval Material, one side with UV, 2 side with high temperature film protect which is very special and Sabic just made for us on the SPEC .
The PC will be used on Top & Middle Cone, all PC material cost have 45.8% around in all watercone 2.0 costs.

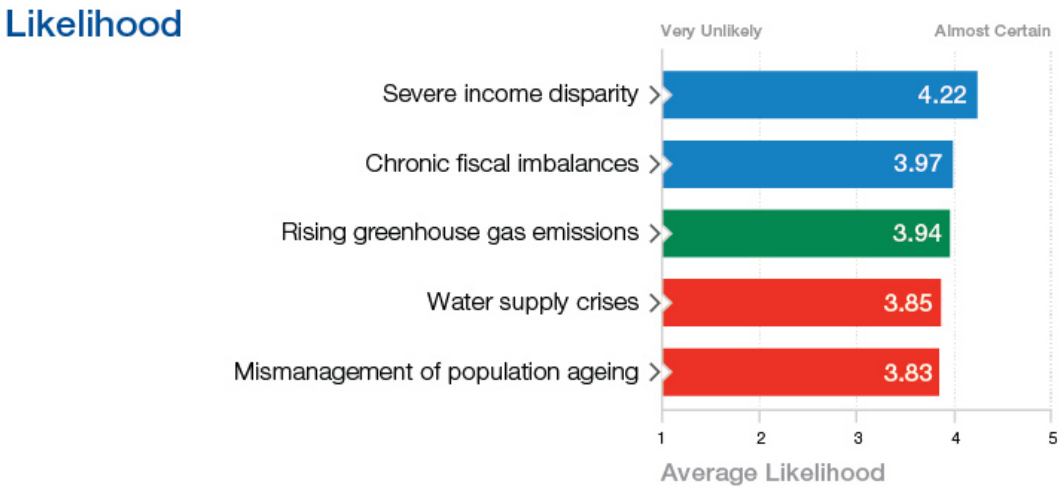
Rest of the costs:
Rest for ABS Pan / Factory fee / Special Tree Pack / Special big CTN and Protect / Cap / Plug / Nut / Handle / Transfer Truck / Container Truck fee Port and FOB Cost / manufacturer Commission /

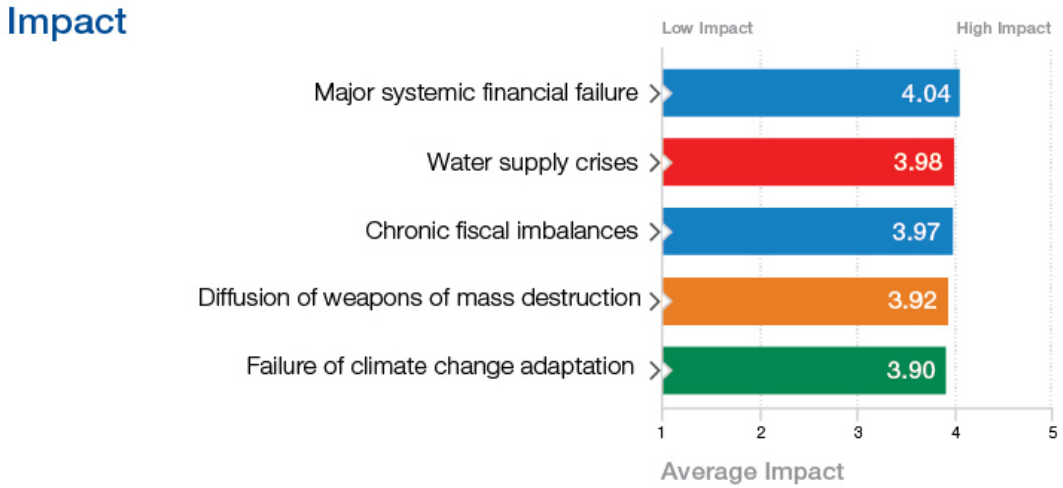
Market

The global need for safe potable water is enormous, about one billion people have no access to this essencial source of life.
The increasing ecological destruction, stronger natural disasters and countless trouble spots intensify the situation more and more.
But the Watercone® is not only an object for people in emergency, more an more people place orders from emerging and industrialized nations.

The economic success of the Watercone® is based on a global disribution network in combination with a close cooperation with NGO`s and governments. Some more pilot projects and well-directed relief operations can be the key to global success.

The top five global risks in 2013 by likelihood and impact





Source: World risk report 2013, Davos, World Economic Forum

Intellectual property

Patent
The validated and issued patents cover a population of more than 3 Billion people and are still valid the next 10 years.

Country	Day of application	Application No.	Patent Documet No.	Date of issue
AU (Australia)	07.11.2002	2002 337 185	2002337185	02.10. 2008
EP Europe (DE/ES)	07.11.2002	02772409.5	1448481	08.02.2006
CN (PR China)	07.11.2002	02822260.1	ZL 02822260.1	05.07.2006
IN (India)	07.11.2002	1441/DELNP/2004	001/13557	23.11.2010
MX (Mexico)	07.11.2002	PA/a/2004/004421	258990	22.07.2008
US (United States)	07.11.2002	10/493,373	US 7,534,327 B2	19.05.2009
ZA (South Africa)	07.11.2002	2004/4202	2004/4202	28.09.2005

Trade Mark: Watercone®
The validated and issued trade marks cover a population of more than 4 Billion people and the validity can be extended endlessly.

Country	Trade Mark document No.	Date of issue
EU (Europe)	003140076	24.03.2005
IR (Australia, China, Russia, Egypt, Kenia, Morokko, Turky, Vietnam)	808130	22.04.2003
US (USA)	2,847,518	01.06.2004
ZA (South Africa)	2003/06603	25.08.2010
IN (India)	588643	11.01.2007

The Watercone® has been rewarded with several international awards, exhibitions and press coverage.

The most important mile stones where: the Gold Award from the Business Week, USA in 2003, the "Kyoto World Water Grand Prize" in 2009 and the Energy Globe -The World Award for Sustainability, in 2008 which has been handed over in the European Parliament in Brusseles with presence of Kofi Anan and Michael Gorbatschow. Furthermore the Watercone has been accepted into permament collection of the Museum of Modern Art in New York and the Centre Pompidu in Paris.

Exhibitions:
Neues Museum Nürnberg, 2004
Designpreis der Bundesrepublik Deutschland, 2004
Aid and Trade, Genf, Januar 2004
Hypo Kunsthalle München, 2005
Material Connexion, New York, 2005
Centre Pompidu, Paris, 2005
Vancouver Art Gallery, Canada, 2005
Tansformation AGO, Vancouver, Canada, 2005
Massive Change, The future of global Design, USA 2005-2006
The Museum of Moden Art, MoMA, New York 2005 and 2012
TED Conference, Monterey, USA, 2006
Museum of Contemporary Art, Chicago, 2006
Zeche Zollverein, Entry 06, Essen
PopTech Conference, Camden, Maine, USA Oct. 2006
BMW Markenschaufenster,1con, Berlin & München, Feb-Mai 2008
Oregon Museum of Science, USA 2008
Weltausstellung EXPO Zaragossa, Spain, Juni-Sept. 2008
11th Biennale Architecture Venedig, UNESCO Regional Bureau 2008
Well-Tech Award Exhibition in Milano, Italy ,April 2009
West Coast Green – Innovation Pipeline, San Francisco, California, USA 2010
Roca foundation "We are water" Barcelona, Lissabon, London, Madrid 2012-2014

Accepted into permament collection:
Centre Pompidu, Paris 2005
The Museum of Moden Art, MoMA, New York, 2006
Museum Haus der Geschichte der Bundesrepublik Deutschland, Bonn 2010

International Awards
Interieur`02, Kortrijk XPO Award, Belgien, 2002
World Waterforum Kyoto of United Nations, Finalist „Water Action Contest“, Japan, 2003
1. Materialica Design Award, München 2003
Good Design Awards, G-Mark, Japan, 2003
Gold Award, IDSA und Business Week ,IDEA, USA, 2003
IF Design Awards, Best of the Best Silver, Hannover 2003
ID Design Magazine, USA 2004
Energy Globe , The World Award for Sustainability, 2008,
5th World Water Forum, "Kyoto World Water Grand Prize", Istanbul, Türkei, 2009
Nominee for the Tech Awards, The Tech Museum, San Jose, California, USA, 2009
World Technology Award 2009, New York, USA, Finalist Social Entrepreneurship 2009

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TECHNOLOGY

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