

# Water Standard prepares to set sail

Water Standard's purchase of an ocean-going vessel goes a long way towards sealing the future of large-scale ship-mounted desalination. All it needs now is an offtaker.

Large-scale ship-mounted desalination took one step closer to becoming a reality in August, as Water Standard Company (WSC) concluded the purchase of a 48,000 deadweight tonne vessel, on which it plans to install a 50,000m<sup>3</sup>/d seawater reverse osmosis desalination plant, expandable to 75,000m<sup>3</sup>/d.

The move marks a significant milestone for WSC, which has been developing the concept for the past five years. Having secured \$250 million in venture capital from two major US funds earlier this year, the company is now putting its money where its mouth is.

"We are spending money," CEO Amanda Brock confirmed to GWI. "It's the only way you can make this happen."

This is despite the fact that Water Standard has yet to secure an offtake agreement for the ship's output. Nevertheless, Brock is confident that the market is there to justify the "build it and they will come" approach.

"We realised that one of the advantages of a vessel is speed to market, and one of the opportunities that appears in the market is through emergency need, either through lack of planning or through drought," she explains. "All of a sudden the question is posed to us: Do you have a vessel, and is it available?. If we started construction when the opportunity arose, we would never meet the emergency."

Brock cites the recent example of the Barcelona drought earlier this year, when the Generalitat de Catalunya sought temporary solutions to ease the city's thirst. Barcelona is just one of many areas which are looking to mobile desal as a solution to temporary water shortages.

"We are talking to a number of people," says Brock. "One of the issues is convincing people we are committed, that we are not just talking about it, but we are actually in a position to show them completed designs, to give them design audits. We've done the work, we own the ship and we can move very rapidly. We have ratcheted up all of our conversations with potential offtakers. We know with certainty what the price range of water will be, and we know with a level of certainty how quickly we can deliver."

## The build-out

The next step is to get the vessel, named H<sub>2</sub>Ocean I Cristina, to the shipyard

for fitting out. A venue still has to be confirmed, with Asia, Dubai or Turkey the most likely destinations. Water Standard has enlisted V.Ships to carry out the conversion, and is working with marine architects Babcock Engineering on the design. Christ subsidiary H<sub>2</sub>Oil & Gas is also providing project management and technical support.

"We think we have assembled a very strong technical team with unquestionable credentials on the marine side, the power side and the RO side," says Brock. Included in this team is desal specialist and International Desalination Association president Lisa Henthorne, who is taking a lead advisory role on the project.

Henthorne told GWI that the preference is for the shipyard to be near the location of the first water purchase agreement. She acknowledges, however, that "you can't be choosy, because shipyards are busy." Henthorne also indicated that they expect Water Standard to award the EPC contract for the ship-mounted RO plant within a month.

Brock was unable to name names, but acknowledged that "there will be no surprises as to who we have begun conversations and negotiations with".

Water Standard is keen to leave the desal EPC contractor as much flexibility as possible, although the company has begun purchasing long lead items for the ship. WSC recently signed a contract for Wärtsilä diesel generators for the ship's power island.

"The EPC contractors we have talked to have no problem with us purchasing the power island, because everybody recognises that it is such a long lead item, and it really determines everything. If you go to get generators today, the delivery time is 2010. It is a food fight out there trying to secure these engines."

## Calculating the cost

The total cost of the completed ship is estimated at between \$120 million and \$145 million. Brock states that, although the project finance market has been positive towards the initiative, Water Standard plans to fund the project using equity. Given the first-of-its-kind nature, approaching the debt markets poses an additional challenge, especially with regard to the risk premium associated with an as yet unrealised concept. Once Water Standard has removed

the construction risk, it will be in a position to leverage the project, reducing its equity stake and gaining more cash for further investments.

But how much will it cost the client? Brock would only say: "It is competitive. It depends entirely on where we are. We are designing this first vessel to be independent of a grid – in other words, we could move very quickly".

Given the vessel's onboard generation capacity, the need for a shore power connection is not necessary. Nevertheless, if electricity is "readily available, reliable and cheap, we would take an umbilical cord and power from shore", says Brock. Even in places where cheap power is available, it is not always easily accessible. The additional capex needed to establish a connection can be outweighed by the onboard generation opex. "It is a cost-benefit [analysis] every time", says Brock.

The same is true of the contract length. "If someone came in and said 'we want a 20-year contract', and we are amortising over 20 years, that is one price. If someone wants us to hook up and put down pipe or flex hose for a three-year contract, then that's another price."

Water Standard can be flexible with regard to both the contract length and the location. "We are fully prepared to do a three-year, a five-year, even up to a 20-year deal. We can be in one place producing, without having to go into dry dock for up to 20 years, but it gives us the capacity to be a flexible short-term option, while someone is building their long-term option."

## Possible destinations

There is barely a dry place on earth that has not been mooted as a possible candidate for mobile desalination, with the Gulf States, Cyprus, Israel and Australia all mentioned on a regular basis.

Brock acknowledges that Water Standard's home market in the US has been slow to develop, but says: "Florida is looking at us very closely; we believe we will be considered on the Sonora study, and we are being looked at in California."

Elsewhere, Water Standard is in discussions with mining concerns in Chile, and also has India on the radar.

While the champagne may be on ice for the time being, Water Standard hopes it won't be long before the bottle strikes the bow.