



Leading provider of **water management** solutions for utilities  
**triples water endpoint range** using DockOn's CPL Antenna  
Solution in their wireless **fixed networks**.

## The Customer

*Global leading provider of energy and water management solutions for utilities.*

## The Challenge

*In the highly competitive water metering market, how antenna design can be leveraged to dramatically improve read range for AMI fixed networks.*

## The Background

We were invited to look at better antenna solutions for smart water meter platforms that were migrating from mobile to fixed networks. Innovative solutions were needed to ensure greater range from water endpoints, which sit in rugged conditions in the ground.

Innovation is key to staying one step ahead of competitors in this market. The water market is rapidly evolving, and our client wanted to create new solutions to address the unique and difficult challenges of fixed AMI networks.

In North America, residential water meters are found mostly in the ground, underneath plastic, metal and concrete lids. These are commonly known as 'water pits'. They are one of the most unfriendly environments to place antennas and electronics. Ensuring optimal wireless performance comes with a whole set of challenges including: similar antenna performance above metal lids and below plastic lids, achieving a low-profile for antennas above lids (ADA compliant), and maintaining cost-effective but rugged implementation for high volume manufacturing.

The water pits are on average 90 to 100% humid and on occasion, will completely flood with water. Also, any water vapor will eventually corrode the electronics, which makes it especially difficult to create battery powered products that meet the required 20 year life expectations.

Competitors are pushing forward in the smart water metering market, most specifically in the AMI space - advanced metering infrastructure. The AMI systems measure, collect and analyze energy use, and communicate with metering devices such as gas, electric, heat and water meters.

**"By replacing the existing OEM antenna solution with CPL antennas, our customer has improved their link budget by over +8dB"**

**"Our customer now has a choice on how they want to utilize the 'extra dB's'..."**

- better battery life
- smaller batteries
- greater range
- Reduce Infrastructure



## Enter DockOn

DockOn engineers are an integral part of the customer's product design team. We invite their mechanical designers, R&D managers, techs, etc. to come visit us in San Diego, host them and have real design sessions, just like they would have if DockOn was an internal part of their company.

It's a very close relationship, a true partnership.

We analyzed the unique challenges for antennas in the water pit environment and worked closely with our customer's industrial design team to develop a new product housing optimized for utilizing the full benefits of a compound CPL antenna solution. CPL antennas combine both a magnetic and electric antenna that allows them to achieve far greater efficiency/range than other antennas. Our customer recognized this benefit and was willing to work with us to design the packaging for best CPL antenna performance.

## The Success so far

We have taken very challenging use-case requirements such as making the antenna work exactly the same when located just underneath a composite (plastic) lid and sitting on top of a metal lid.

DockOn has already delivered over **+8dB** link budget improvement over the existing OEM antenna solution.

To really understand this improvement, look at the dB number this way: A +3dB improvement in link budget means:

- The battery life is **100%** better
- The batteries can be swapped out for smaller ones reducing the product size and seriously differentiating the product
- Think about cell phone towers that have circles of coverage areas, think about the surface area inside these circles, +3dB doubles the coverage area which means our customer can win more business by requiring less readers.

**+6dB will double the range of a wireless device, +8dB almost triples it!**

## The Conclusion

*By connecting with the DockOn team and innovative CPL Antenna technology, our customer has now tripled the range of their wireless water endpoints, and now has never before heard of choices in how they want to use this improvement.*

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