



The worlds leading provider of energy and water management solutions for utilities shifts to **DockOn's** Smart Meter CPL Antenna Solution to meet critical regulatory changes for gas usage data management and **increases their product margins.**

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

**The Challenge** - Recent regulatory changes require all customer gas usage data to be encrypted when transmitted wirelessly.  
An entirely new set of features was needed, whilst also minimizing the impact on battery performance.

The new features required would put a huge strain on the battery life of the gas endpoint - the wireless radio attached to the gas meter. The gas endpoint battery is required to have a minimum usage term of 20 years, any increase to the frequency of wireless transmissions, or to the volume of data being sent would have a damaging impact on the battery life.

It was quickly realised that this increased strain on the battery could reduce it's life to 13-15 years. The large energy utilities expect these products to have a shelf life of at least 20 years, anything less and the impact on market share would be devastating.

Product managers and engineering teams were struggling to find a solution to maintain the expected 20 year battery life, whilst increasing the battery power consumption.

There were 3 main options open; 1. Add an extra battery to manage the additional power consumption. Whilst this would enable the battery to stay well within the minimum industry expectations, it would also

add an additional BOM cost of between \$1-3 per unit. With profit margins in this market being the make or break point, this was a highly undesirable option.

The 2nd option would be to increase the number of base stations. These are the readers or receivers that listen for all the gas endpoints to send the usage data. These readers are anywhere between \$15-30k each, and the high installation costs involved would mean losing competitive bidding (?).

The last option was to try and squeeze more power out of the existing design by finding a more efficient antenna. This option, though difficult would not attract a higher BOM cost, and there would be no loss to competitive appeal.

## How DockOn's revolutionary CPL Antenna Technology helped

**DockOn** were invited in to help solve this problem. For DockOn to solve this, we needed to analyse the situation through a disciplined approach; We worked with our client, and fully listened to their needs. It was clear quite early in discussions that there was a need for a CPL antenna that would fit inside the existing volume, there could be no changes to the current plastic enclosure.

We then characterized the existing OEM antenna solution for coverage - were there any nulls; where did the pattern point - straight up to the sky or out from the wall to give it optimum performance?

Next step was to characterize the existing OEM antenna to determine it's total efficiency. Efficiency is measured as follows: if the antenna is 50% efficient, and it receives 1 watt of power from the radio, only 0.5 watts gets radiated out into the air, essentially wasting half the power! That means to have a 20 year battery life with a 50% efficient antenna, you need batteries that run 40 years with a 100% efficient antenna.

DockOn designed, and optimized several new CPL antenna concepts. We pulled from the CPL technology's strengths of being "compound field" in that objects very close to the antenna do not attenuate and detune the antenna as much as a "simple field" or "traditional" antenna.

DockOn then performed the same characterization on the CPL antenna and determines a +2dB efficiency improvement - a huge **63% better than has been delivered to date utilizing a 100% printed antenna solution.**

The OEM solution was a 3D stamped metal antenna for which the high-volume assembly process included a custom insertion machine worth about \$1 million dollars. The need for this machine has been eliminated with the CPL solution.

### The Success:

*Through the professionalism of the **DockOn** team, and the innovative CPL Antenna and design technologies, our client is able to stay highly competitive in a challenging market and even increase their product margins.*

**DockOn**

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***At DockOn, we are absolutely dedicated to making your wireless product development faster, leaner, and more effective.***

***In fact, we think helping you be "on time and on budget" is setting a pretty low bar for wireless product development success. We want you to be in control of your own destiny, because no matter how fast things change, you've got the speed and agility to move to the front of the pack.***