**Case-Study on Flecto Sense water management system.**

A Body Corporate in Olympus, Pretoria East suspected that they had a leaking pipe on the property. The water bill was growing higher and higher each month.

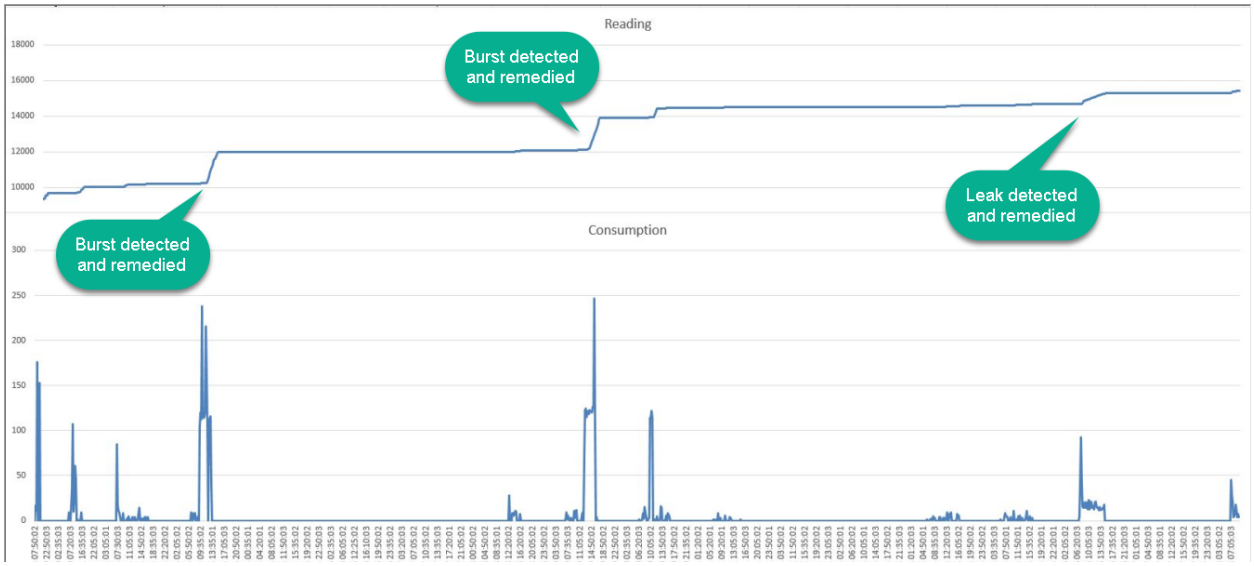
Flecto Sense submitted a quote for the main connection 'check-meter'. The purpose of this meter will quickly make it possible to argue with the city council about water usage on the site. This meter will be placed between the pressure reduction device and the municipal water meter.

The meter will communicate its reading to the Body Corporate who can then monitor for leaks and cracks before finding out on the municipal account (it's usually too late)

Flecto Sense appointed a master plumber (GDM Plumbing) to install the necessary components.

A few months went by and the Body Corporate approved the proposal.

After installation of the water meter, several small leaks were detected and remedied.




A few days later pipes started to burst as municipal pressure problems plagued the suburb. Problems were detected within the hour after occurrence and alerts were sent out via our notification system. The plumber was sent to investigate and on every event reported, a problem was detected and could be fixed within hours with minimal water losses. Most of these events would have gone unnoticed until the municipal bill was received.

High pressure: GDM Plumbing did a survey with a pressure gauge taking readings throughout the complex. What they found during the day was a nominal pressure of 12 bar at the high end of the complex situated on the hill, and readings of greater than 14 bar at the gate. The night time pressure passed the 22 bar mark. This is 150% higher than what the water reticulation was designed for. Testing the new reticulation without a pressure reduction unit will definitely cause couplings to fail and incur costs on repairs. These costs to fix the damages are not just pipe couplings but could also lead to burst geysers and plumbing inside the homes. The plumber that will fix the couplings will bill for time spent looking for the leaks and digging for them could take hours.

Based on the above savings we also proposed metering per block to further pin-point smaller leaks at the residential units. The appropriate solution was approved and installed.


An additional 7 internal meters, one for each block, also sends their readings to the data concentrator unit. It was very easy to determine where the origin of any leak may be. These devices have proved themselves within a 2 week period where 2 units have sprung leaks and the culprits were easily identified and pointed to the exact block.

Because the system is so versatile and modular, the scope of work can be adjusted as the project unfolds. There are a large number of add-ons that can easily be fitted as and when the need arises.

**Financials:**

Working with real numbers recorded from this Body Corporate account, (a typical estate 102 units): The bill for December normal usage was R16 000. On the 10th of January 2019 a pipe started to leak. The bill for January was R24 000. People are used to readings being estimated and believed that next month's bill would be lower covering the difference. February's bill comes in at R30 000, so the investigation starts, plumbers are called to look for the problem. Water disruptions are imminent. They find the problem coupling within a day or two. They start to dig and replace the coupling and invoices for the 3 days and materials. The March bill comes at R18 000 and the total money spent on leaking water and plumbers is R47 000. Without managing the inlet pressure major leaks like these will occur more frequently from once a year to one a month.

Installing the devices proposed will pay for themselves on the first instance of a leak or burst pipe. Proven in this case for the estate 2 weeks after installation. Because Leaks, Busts and a number of other alerts are being sent as they occur, it is difficult to guess how long a problem would have gone unnoticed. The best case of finding a non-obvious (under pavement) leak is 2-3 months as the water bill grows higher and higher each month.

To put this example in perspective this Body Corporate water bill was R90 000 a month going into the 8th month before the Flecto Sense system was installed.

After our smart devices were installed and all leaks and burst pipes were repaired, the water bill came down to R17 000 average per month. R90 000 - R17 000 = R73 000 wasted per month. If the body corporate only saved one month of water, the savings paid for all hardware purchased to detect problems early on. If they had acted quicker than the 8 months (taken for deliberations) they would have saved R292 000 in 4 months by not having to pay for water losses.

### Why Ultrasonic and not mechanical meters:

The reality is that short term you will be paying less for the cheaper product. In the long run, however, you would be paying nearly three times more money because of the cheap version.

As a mechanical meter ages, the readings produced from that meter become very inaccurate. In sub-metering the difference gets paid by the body corporate or common use area tab.

Lets say a complex has 50 units. (residential sectional title) 1 liter in this example cost R1. Municipality supply and bill on monthly bulk usage. Each unit pays for their own water but the meters are inaccurate. The Municipality charges R5 000 (just for example with easy numbers). 50 units x R99 plus common gardening water at R50 pm. The body corporate pays the R50 from levies charged. 2 years down the line the same amount of water usage per unit only returns R66 (50 units at R66) the municipality still bills R5000 so the deficit is now R1700 instead of R50. So the levies go up.. after 5 years those mechanical meters are so worn out that they only recover 30% of the actual usage.

This pushes the levies up even more. The common use area is now "consuming" R3500 per month. Experts are called to find the leak and after a week they could not find any leaks. They still charge the call-out fee and hourly rate. The monthly common area usage would remain high. At this point the cheap water meters drove out tenants because of the high levies.

There is no reward for tenants to try and save water. There is also no way a tenant could know the hourly usage unless they go to the meter and write it down manually every hour.

On mechanical meters, if a tenant wants to pay less for water they can pull out the wire that counts the liters, a week later reinsert the wire, you've just saved a week's worth of water.. In some cases they cut the wire with a side-cutter free water for months or until found by inspectors. A call-out fee, labor and parts later the tenant is now months behind on paid water. Flecto Sense doesn’t use wires, every device is wireless and reports usage readings accurately.

Those solenoid valves on mechanical submetering are easy to bypass. Once the pressure on the supply side falls away, the valve returns to the open position. Tenants don't have to pay for water as they simply close the water supply and wait for the pressure to drop. The valve opens and the pre-paid money never comes. Municipality still charges R5000pm for usage and this needs to come from somewhere.

Our "more expensive" solution is equipped to handle leaks and will warn you within 12 hours of a leak. It will report bursts and dry pipes within 30 minutes. Our valve does not start in an open state, it starts in the last state it was in, and knows what that state was. It could be adjusted to anywhere, from close to fully open in less than 5 seconds under full pressure. Allowing you to throttle high users as you wish.

There is no way to tamper with the readings or active parts. If someone tries to break something the water will be shut by the valve, or else there will be water everywhere. With the CIU the user can see what the last usage was, they will get alerts on leaks and excessive usage and challenge themselves to conserve water.

If a pipe starts to leak, the meter will report it. The user pays for the water consumed and the call-out fee but because they knew that there was a problem and could therefore shut the valve remotely from the CIU. No need to scratch in muddy pits for shutoff valves.

Herewith some links and attachments to familiarize yourself with how much greater a SMART solution can be when compared to mechanical counterparts.

**MULTICAL21 Ultrasonic Water Meter**

- Brochure: https://www.flecto.co.za/product-pages/kamstrump-mc21-water-meter
- Datasheet: http://products.kamstrup.com/download.php?uid=515d4ab700278
- Overview video: https://www.youtube.com/watch?v=zME8ZZheLIE
- https://www.kamstrup.com/en-en/products-solutions/water-meters/residential-water-meter

https://www.kamstrup.com/en-en/water-solutions/themes/mechanical-vs-ultrasonic

I hope you take the time and investigate the solutions and realize that paying half price twice is not a saving, not to mention the extra burden on management and tenants.

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