July 27, 2017

Smart Water and Heat Measurement Technology

NG KIN LAM
REGIONAL SALES MANAGER,
ASIA PACIFIC & SOUTH ASIA

Global



- More than 150 years experience metering technology
- 3,200 staff & 10,000 customers in 42 countries
- 80 million metering end points
- 16 million Smart end points deployed
- World leader in Smart Water metering
  - Over 2 million iPERL deployed
- > 400 Smart Grid projects in process or complete
- Secured 2-year contract (2017-18) to supply PUB Singapore with 4,600pcs of large meters worth SG$3 milllion
- Part of Xylem group today – comprehensive offerings to serve

A comprehensive portfolio

Water and Heat Meters

Residential and commercial meters to measure, and monitor water, air conditioning and radiated heat. Includes sub-metering for multi-unit housing and commercial buildings.



Electricity Meters*

US Certified iCON® A residential and iCON APX commercial meters used with FlexNet™ two-way smart grid communications network.



Gas Meters*

Mechanical meters (Cubix, R275) and advanced ultrasonic (Sonix) meters. Can include smart points for two-way communication and remote shut off.



Communications

Radio systems, endpoints and software applications that provide communications and control of utility distribution operations and equipment.



Software & Services

Managed services and application software to increase network productivity, lower operating costs and reduce risk.



*Products not available in all countries

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Water Meters

Typical environment in Singapore

- **Urban high rises & building complexes**
  - ✓ Multi-tenanted
  - ✓ Submetering in commercial building recommended

- **Why submetering?**
  - ✓ Fair billing
  - ✓ Leak detection
  - ✓ Allow tenants to monitor own consumption

- **Residential – PUB meter directly**

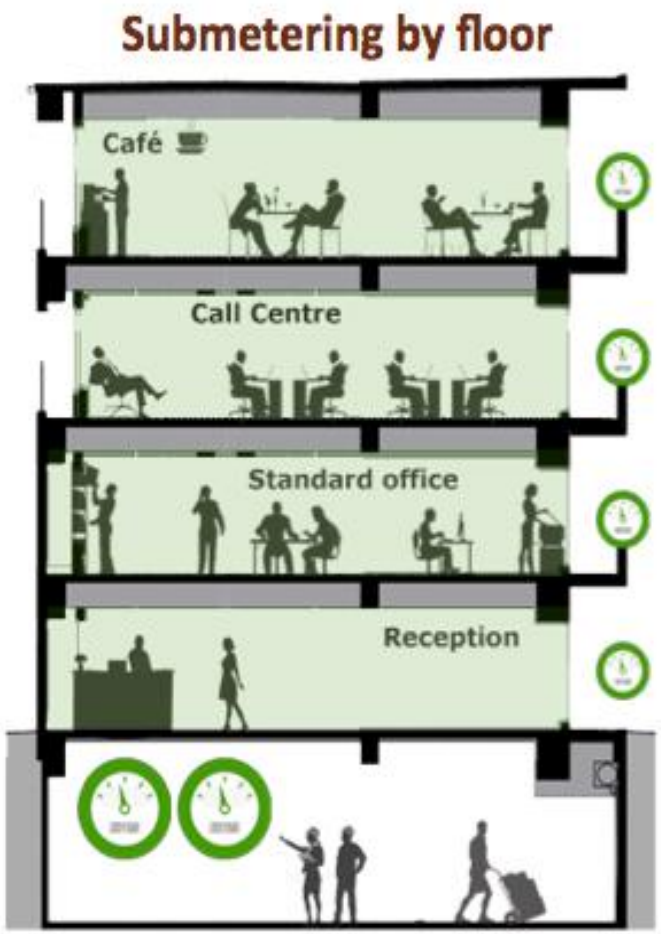


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Sub-metering

- Automated meter reading (AMR) solution connecting water meter to BMS and billing systems.
- Leakage detection requires meter with good accuracy at low flow rate.
- Meters need to be able to accurately measure at 5L /hr.

- How about 1L /hr?
- 20-storey building with 1L /hr leak each floor
- 1L/hr x 10 hr x 20F x 30d = 6000L !!!



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Sensus iPERL – Extremely Low Starting Flow



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Sensus iPERL – Intelligence On-board

Product Features

- High measurement accuracy offering R800 metrology
- Starts registering from 1 L/hr
- Solid state technology – no moving parts
- Does not get affected by trapped air, sand or particles
- 15 year expected operational life
- Integrated two-way communication for AMR
- 2,880 point data logging function
- Alarm functions
- Tamper proof and fraud resistant
- Resistant to network incidents such as water hammers and high peak flows





Sensus HRI - enabling AMR on mechanical meters

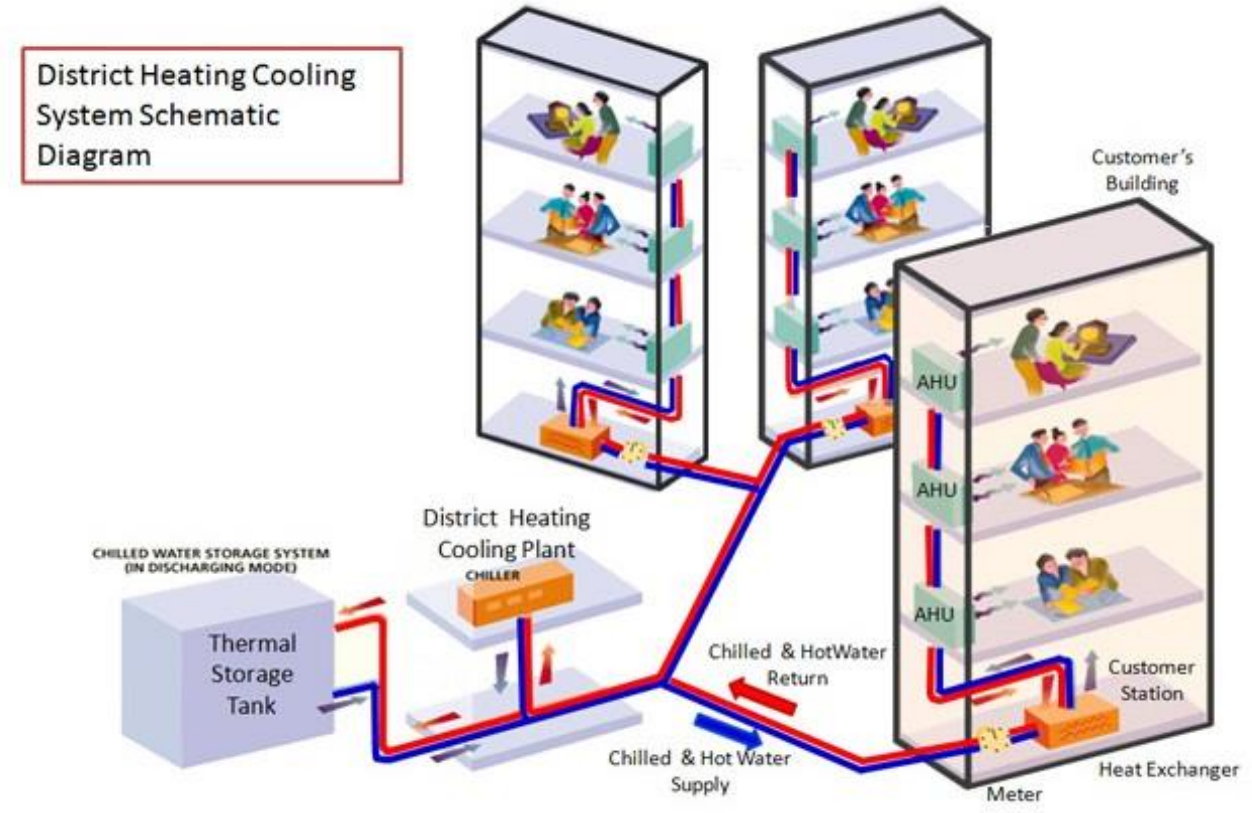


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Heat Meters

Heat Meters / BTU Meters

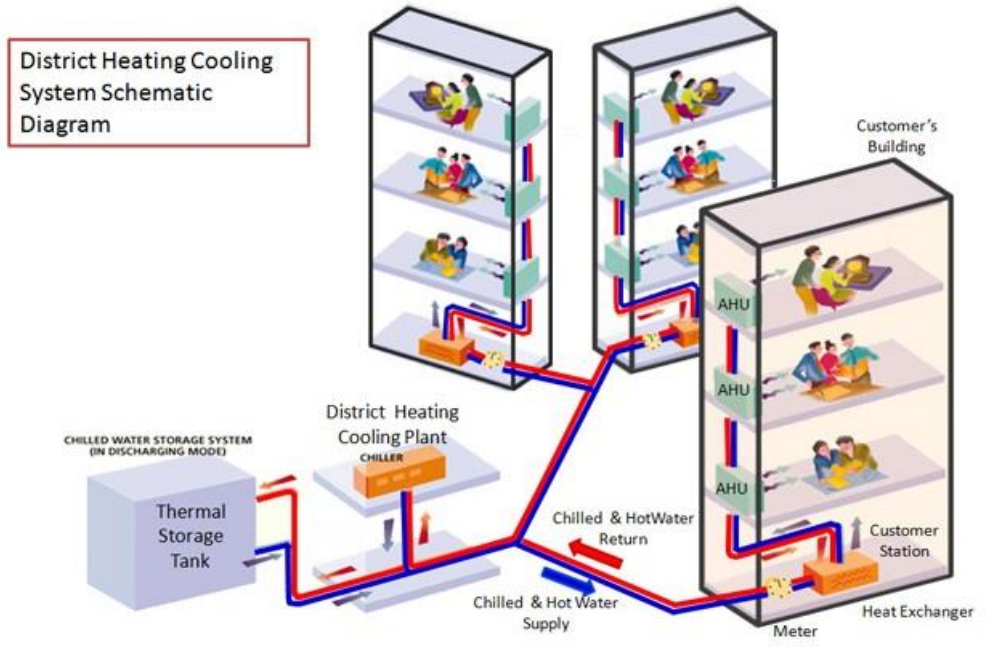
- Typical heating / cooling energy supply system setup
  - ✓ Main BTU meter
  - ✓ Sub-metering at individual units



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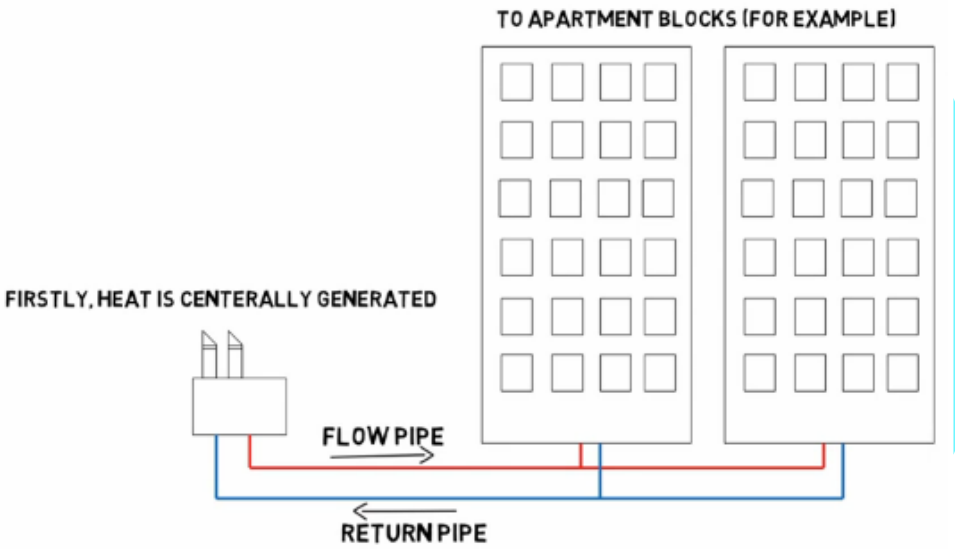
Why Use BTU Meters?

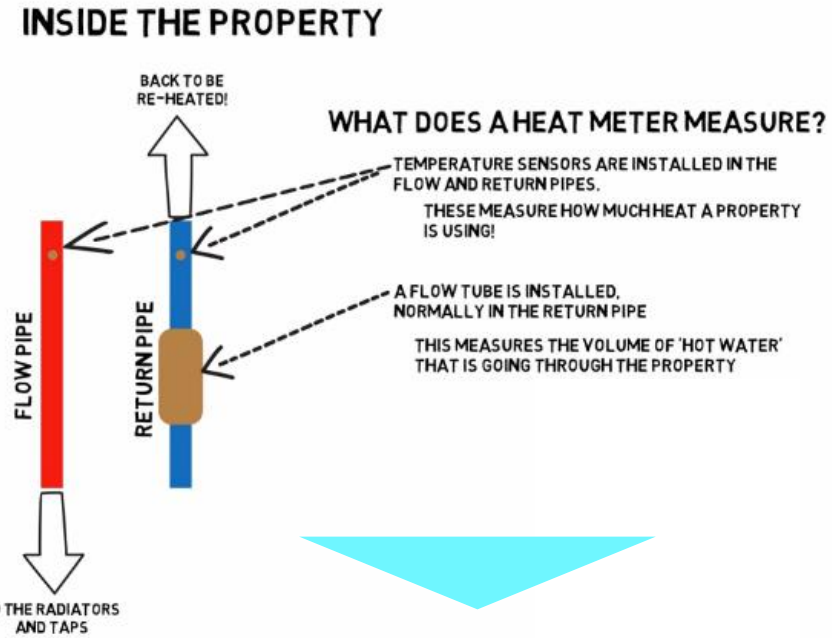
- Fair billing
- Encourages user behavioral change to conserve energy
- Allow tenants to monitor own consumption
- Leak detection - yes energy transfer also has leakages!



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What is a Heat Meter?





HEAT ENERGY = V x DT x K

THE HEAT METER CALCULATOR USES THE FLOW AND RETURN TEMPERATURE TO CALCULATE THE TEMPERATURE DIFFERENCE (DT)

MULTIPLED BY THE VOLUME OF 'HOT WATER' (V) MEASURED BY THE FLOW TUBE

MULTIPLED BY THE 'THERMAL COEFFICIENT' (K) OF THE 'HOT WATER'

THE FLOW TUBE AND TWO TEMPERATURE SENSORS ARE WIRED INTO THE CALCULATOR



Source: https://www.youtube.com/watch?v=LR0rQ5vK8do

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What is a Heat Meter?

1) Compact Type (DN15/20)

Mechanical heat meter



Ultrasonic heat meter



Temperature sensors

Ultrasonic flow sensor

2) Combination Type (All sizes)

Mechanical heat meter



Mechanical water meter used as flow sensor for measuring volume



Mechanical industrial water meter - used as flow sensor to be combined with calculator

Ultrasonic flow sensor with calculator



Calculator - measures heat energy consumption based on the values obtained from flow sensor and temperature sensor

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Heat Meter Products



PolluCom E



PolluCom C



PolluTherm



PolluCom M



PolluStat E



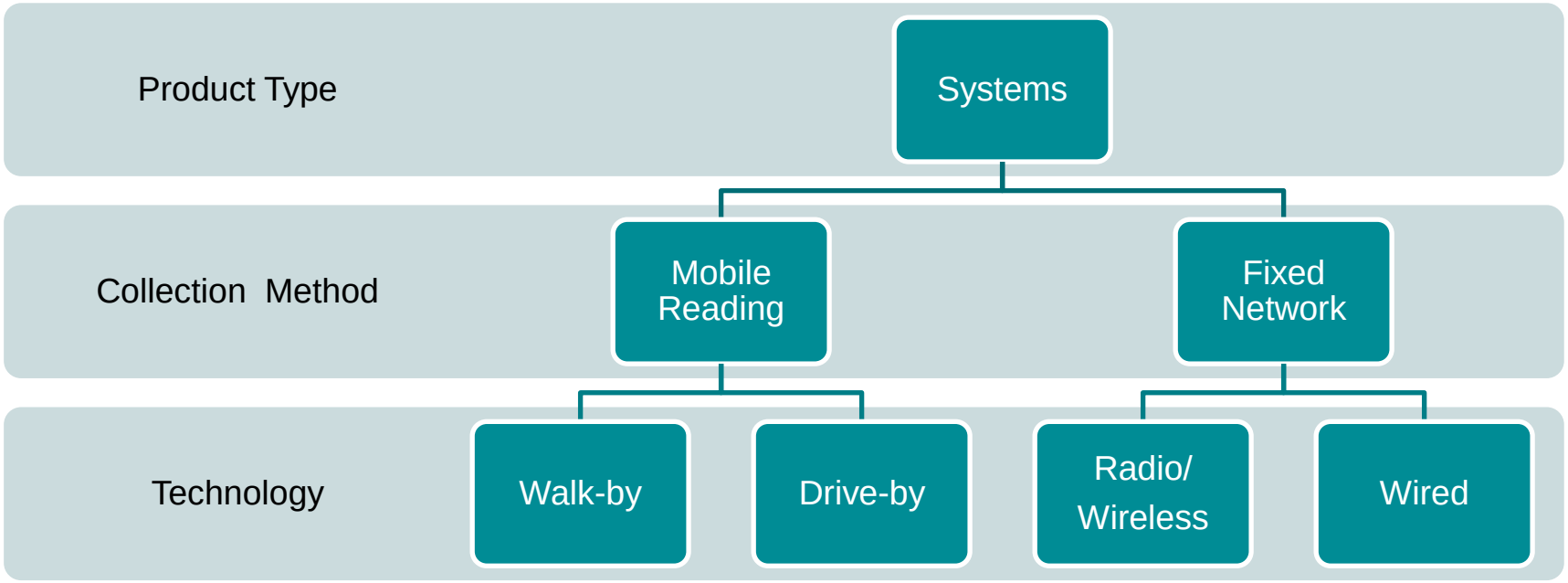
PolluStat

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Systems & Software

Data Collection Segments

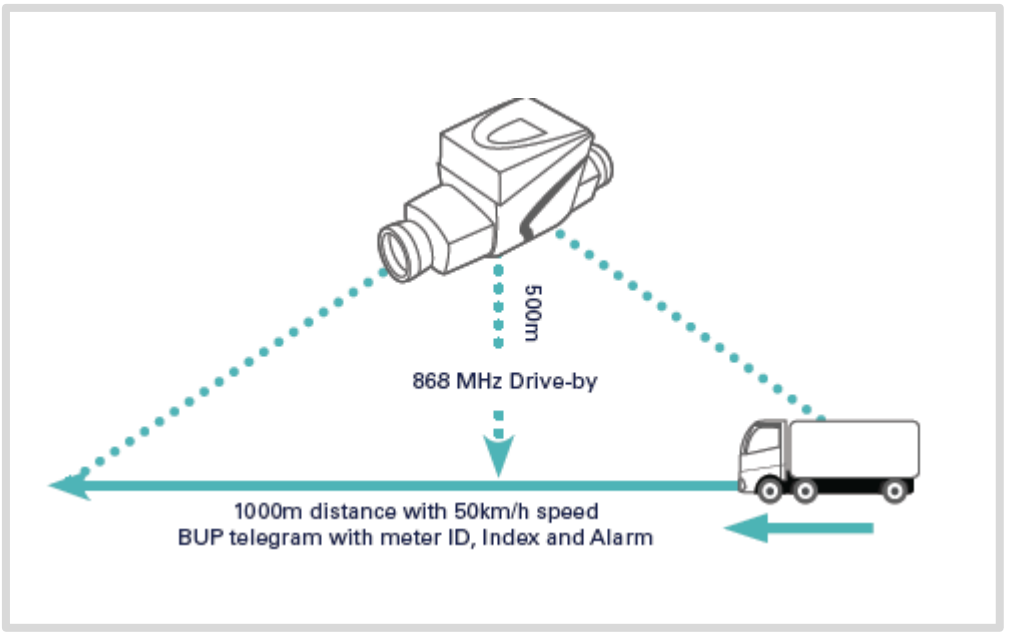


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SensusRF Radio



Walk-by meter reading



Drive-by meter reading

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SensusRF Fixed Network



Water Utility

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NETWORK MANAGEMENT& ANALYTICS



Water MDM

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FIXED NETWORK



Repeater



Gateway

GPRS/Ethernet



Gateway





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FlexNet Fixed Network



Water Utility

SENSUS
RNI APPLICATION SERVERS

Device Manager

Water MDM

SENSUS
RNI SOFTWARE SERVERS

Database

FlexApp Router

Network Control

WIDE AREA NETWORK

FlexNet™
LONG RANGE RADIO

Base Station

LICENSED SPECTRUM

Smart Point

Smart Point

Smart Point

SensusRF

WBDB & FIXED NETWORK

MDM

HHD

SIRT

640C

640C

iPERL

MeiStreamRF

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SEBVF Smart Water Solution

- **Configuration:**
  - ✓ iPERL static water end point
  - ✓ RF on Drive by
- **8000 smart water meters in Faulquemont, North eastern France**
- **SEBVF is made up of a group of 84 wastewater ities, 670 km of water networks**
- **Challenges**:
  - ✓ Difficulties in reading hard-to-reach meters over a large geographical area
  - ✓ Improve metrology on low flows
  - ✓ Comply with French regulations
  - ✓ Educate their end customers on water consumption



Key Takeaways:

Meter readings increased from 400 to 3,000 per day giving SEBVF:

- Understanding of end customer usage
- Rapid detection of leakages

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Satu Mare Smart Water Solution

- **30,000 smart water meters in Satu Mare, north west Romania**
  - ✓ 30,000 iPERL on Drive By
  - ✓ 10 HHU & docking
  - ✓ 2 Car kit
  - ✓ 1 Software
- **Total budget EUR4.83m including installation**
- **Challenges:**
  - ✓ Old meter technologies
  - ✓ Inefficient reading/billing process
  - ✓ Difficult to access meters
  - ✓ High water loss
- **Next steps**
  - ✓ Move to Fixed Network in selected areas



Key Takeaways:
2.5k mechanical meters took 10 men 7 days to read
2.5k iPERL took 2 men 2.5 hours to read

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Any questions?

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Let's Solve Water

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