SAVE ENERGY

Hospital - Utility Optimization

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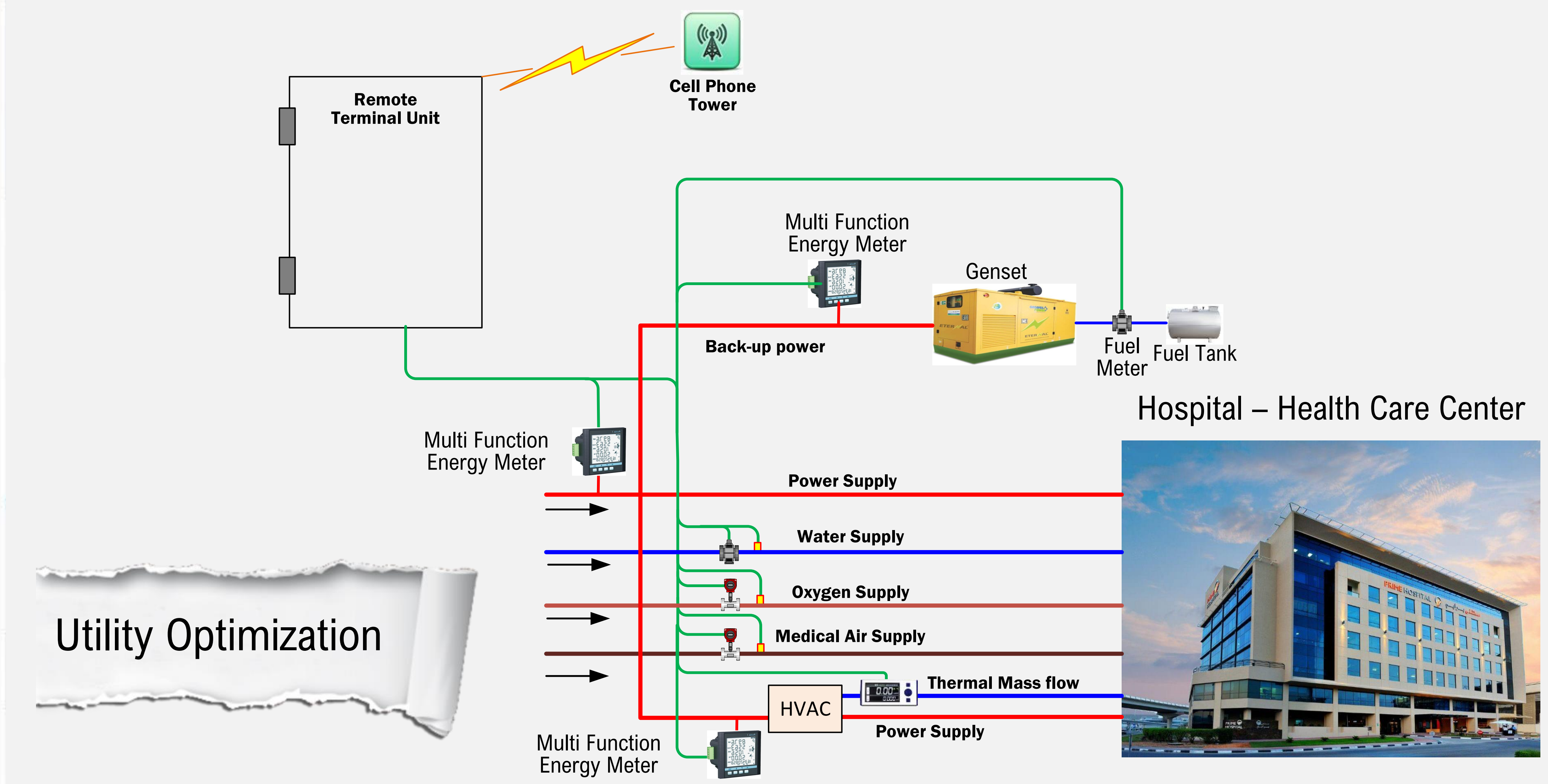
Utility Optimization

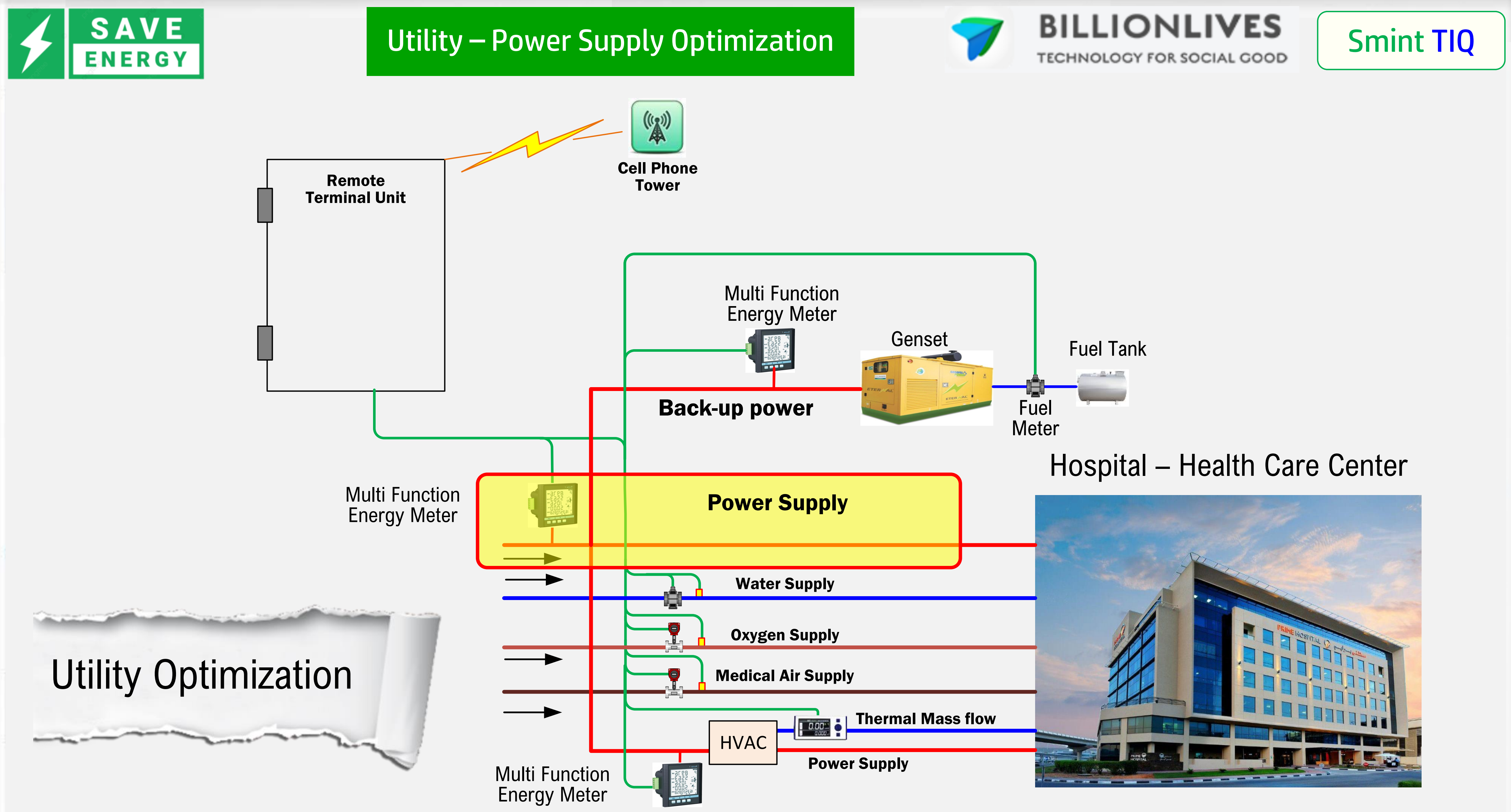
- Electrical Power Supply
- Water Supply
- Oxygen Supply
- Medical Gas Supply
- HVAC Efficiency
- Thermal Energy
- Genset power generation

Utility Optimization

Hospital - Utility Optimization



Utility – Power Supply Optimization



Present Condition of the Utility – Power Supply

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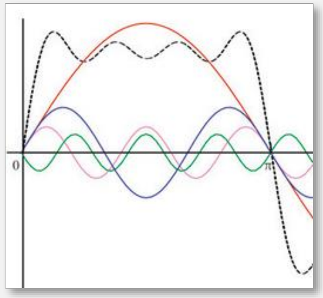
Power Supply

The absence of - Power Supply – Voltage, Current, Power, kVA, Energy, Power factor and other parameters anomaly – leads to frequent failures of electrical system and damage to switch gear.

Inefficient HVAC System

Un metered power supply in HVAC – cooling tower, primary & Secondary pumping – user not able to calculate the effectiveness – efficiency of the devices in the premises.

Harmonic Distortion



UPS, Compressor, Computer, monitor and other equipment's connected in the mains power supply distorts the 50Hz waveform and the non linear waveform – creats harmonics distortion.

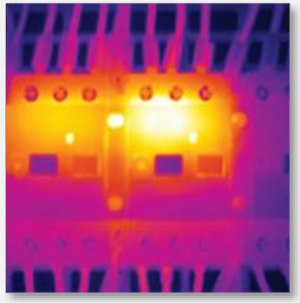
Poor - Pump Efficency

The absence of energy consumption monitoring in the pump house leads to the pump running in poor efficiency and absence of data the user not able to optimize the pumping system.

Feeder Main Anomaly

The absence of feeder mains monitoring – not able to quantify the power consumption of various devices and their efficiency leads to inflated electric energy consumption bills leads to wastage of money.

Poor Power Quality



Poor power quality leads to electrical switch gear heating and burning of components and leads to damage of components, increases losses in the distribution network.

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Multi Function Energy Meter - Parameters

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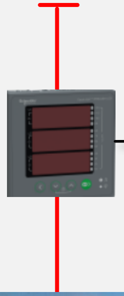
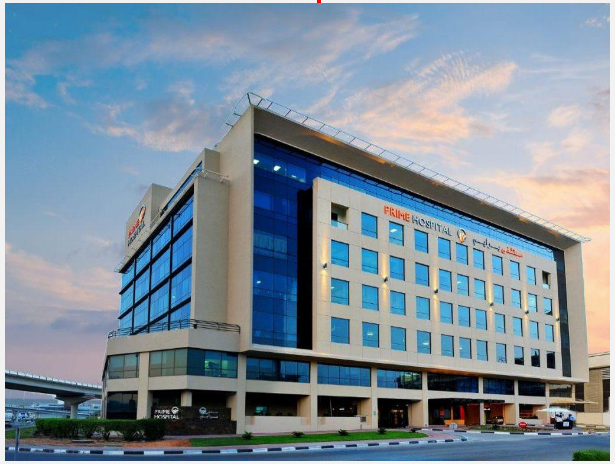
Electrical Power - Supply

Multi Function Energy Meter





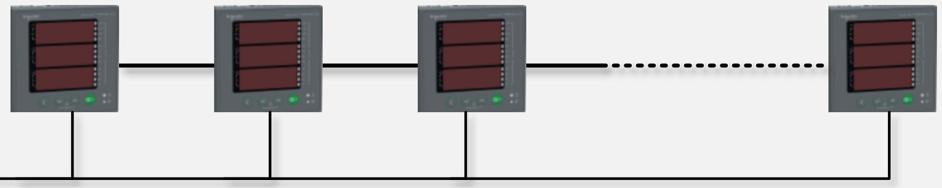
Hospital – Health Care Center

Utility Optimization

- Voltage (Volt)
- Current (A)
- Power (kW)
- Energy (kWHr)
- Imbalance RY (V)
- Imbalance YB (V)
- Imbalance BR (V)
- Frequency
- Voltage (Harmonics)
- Current (Harmonics)
- Power Factor (PF)
- Demand (kVA)
- Other Essential Parameters
- from other equipment -devices

Alert	
Minium Trip Voltage-Alert	SET
Maximum Trip Voltage-Alert	SET
Minimum Trip Current - Alert	SET
Maximum Trip Current - Alert	SET
Imbalance Trip Voltage - Alert	SET
Imbalance Trip Voltage - Alert	SET
Imbalance Trip Voltage - Alert	SET

Feeder main and other devices MFEM



Utility Power Supply Optimization

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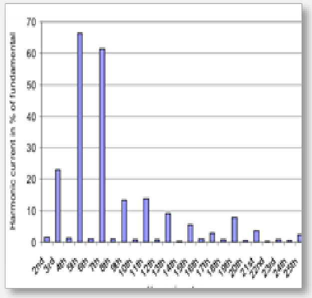
Power Supply - Monitoring

Real time monitoring of - Power Supply – Voltage, Current, Power, kVA, Energy, Power factor and other parameters anomaly – shall be detected and predicts the failures before breakdown.

Harmonic Distortion



The harmonic distortion measurement leads to quantifying the hormonic content and user to mitigate the harmonics by implementing the suitable filter & eliminate the switch gear heating.

Feeder Main - Monitoring

Branch, equipment, floor – wise consumption monitoring predicts the consumption pattern – predicts – any increase in consumption compared with the previous history.

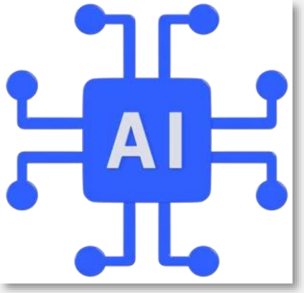
HVAC-Efficiency Improvement

Metered Power Supply in HVAC – cooling tower, primary & Secondary pumping – leads to – optimization of the HVAC system and resulted in energy saving and improve the efficiency.

Pump Condition

Monitoring of pump efficiency leads to timely upgrading – restoring the pump efficiency by implementing various measure. Ultimately resulted in energy saving.

AI Based Anomaly Prediction



AI based power parameters anomaly prediction leads to detection of the failure well in advance, and prevents the breakdown and costly repair. The system automatically prepares the report for events, anomaly.

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Utility – Water Supply Optimization

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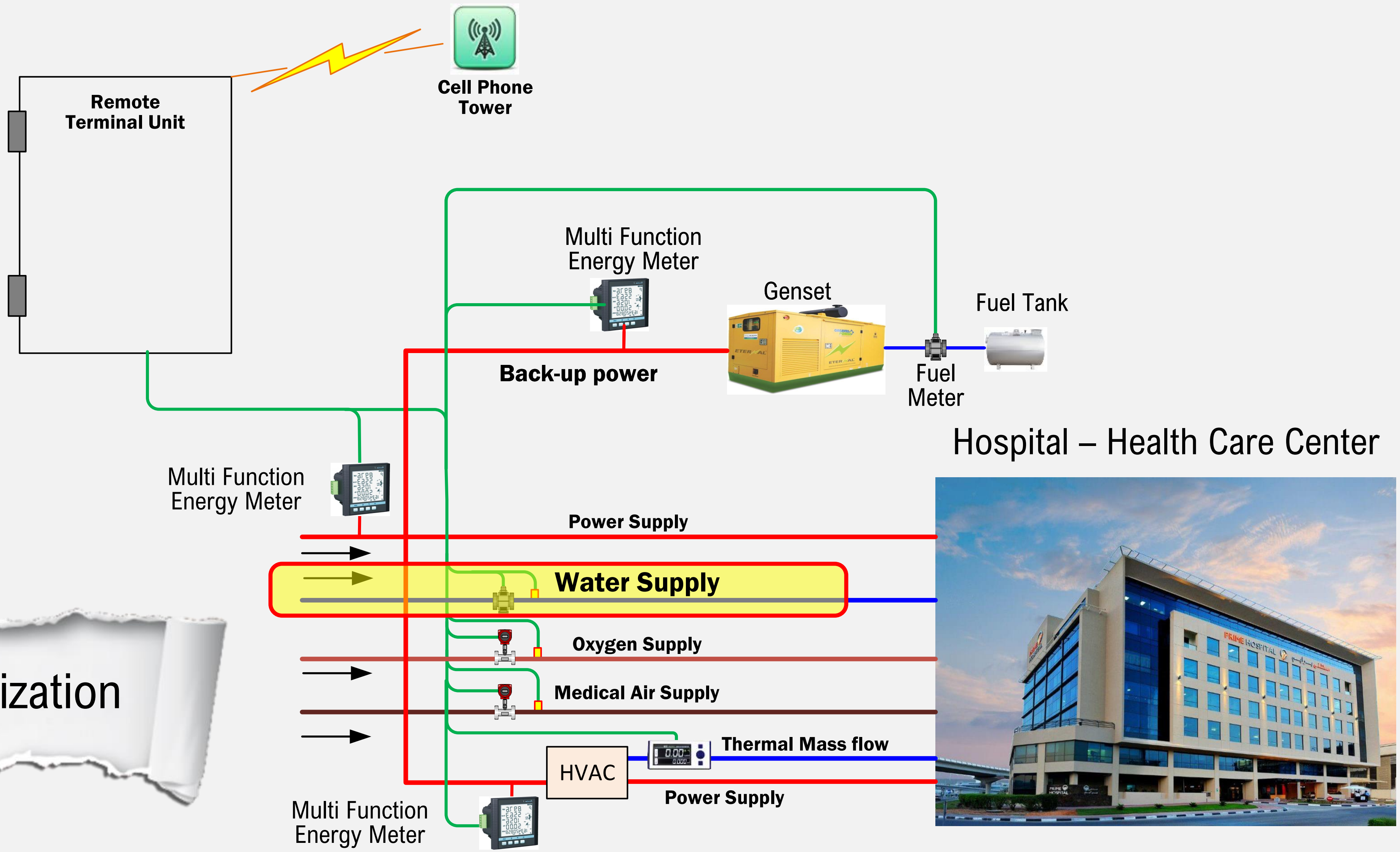

Utility Optimization

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Present Condition of the Utility – Water Supply

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Unmonitored Consumption

Un monitored water consumption leads to over consumption, accountability, no idea about water leakage, night time water consumption

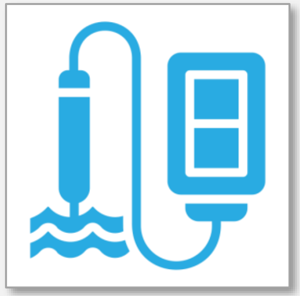
HVAC

HVAC – cooling tower, primary & Secondary pumping – unmetered water consumption – leads to inflated bill and absence of data – optimization of HVAC is not possible.

Pipeline Leakage

Without Quantification of water leakages leads to higher water consumption, and inflated bills. The user priority shifted to some other job due to absence of leakage data

Water Quality



Manual water quality testing leads to error and missing out and unable to find out random water contamination in the water supply network.

Branch wise

The absence of water meter – and consumption details in - individual Floor, high water consuming devices, coolers, HVAC system – the absence of data user unable to optimize the consumption

Multiple Pump

The absence of pump logic controller, pump efficiency monitoring – the user is not having any clue – what efficiency the pump is operating? Unable to optimize the pumping system.

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Monitoring Utility Water Supply

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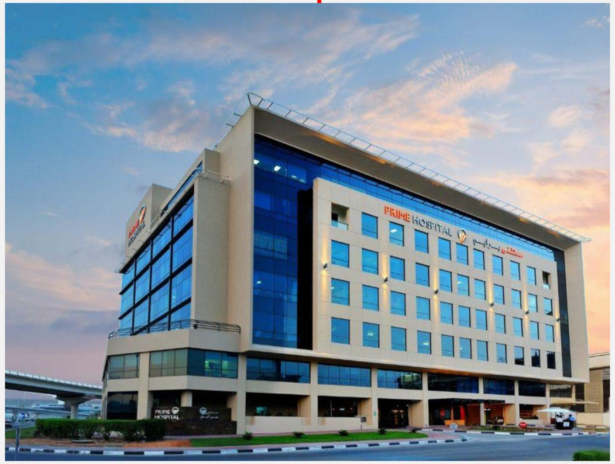
Water Supply

Pressure Sensor

Electromagnetic Flow Meter



Hospital – Health Care Center

Pressure (Bar, Kg/cm²)
- Min. Pressure (Bar)
- Max. Pressure (Bar)
- Maximum Alert Value ← SET
- Minimum Alert Value ← SET

Flow Rate
- Maximum Alert Value ← SET
- Minimum Alert Value ← SET

Flow Quantity (Litre. KLD, MLD)

Flow Quantity (m³)

Flow Quantity (Ft³)

Flow Quantity (Gallon, KG, MG)

Flow rate Maximum
- Maximum Alert Value ← SET

Flow Rate Minimum
- Minimum Alert Value ← SET

Other Essential Parameters

from other equipment -devices

Utility Optimization

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Utility Water Supply - Optimization

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Water Supply Monitoring

Water Supply – flow rate – volume of consumption and pattern of consumption monitoring leads to the optimization of water consumption and reducing the peak hour consumption.

HVAC

Metered water supply in HVAC – cooling tower, primary & Secondary pumping – leads to – optimization of the HVAC system and resulted in energy and water saving.

Pipeline Leakage

Night time leakage quantification and floor wise leakage quantification and indexing the pipeline segment having more leakage – leads to mitigate the leakage issues.

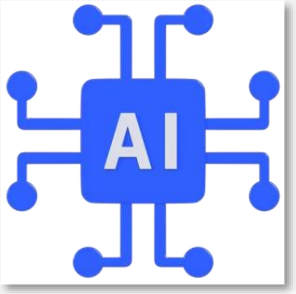
Pump Logic Control

Monitoring of pump efficiency leads to timely upgrading – restoring the pump efficiency by implementing various measure. Ultimately resulted in energy saving.

Branch wise Monitoring

Branch, equipment, floor – wise consumption monitoring predicts the consumption pattern – predicts – any increase in consumption compared with the previous history.

AI Based Anomaly Prediction



Ai based anomaly prediction leads to detection of the failure well in advance , and prevents the breakdown and costly repair.

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Utility – Oxygen (GAS) Supply Optimization

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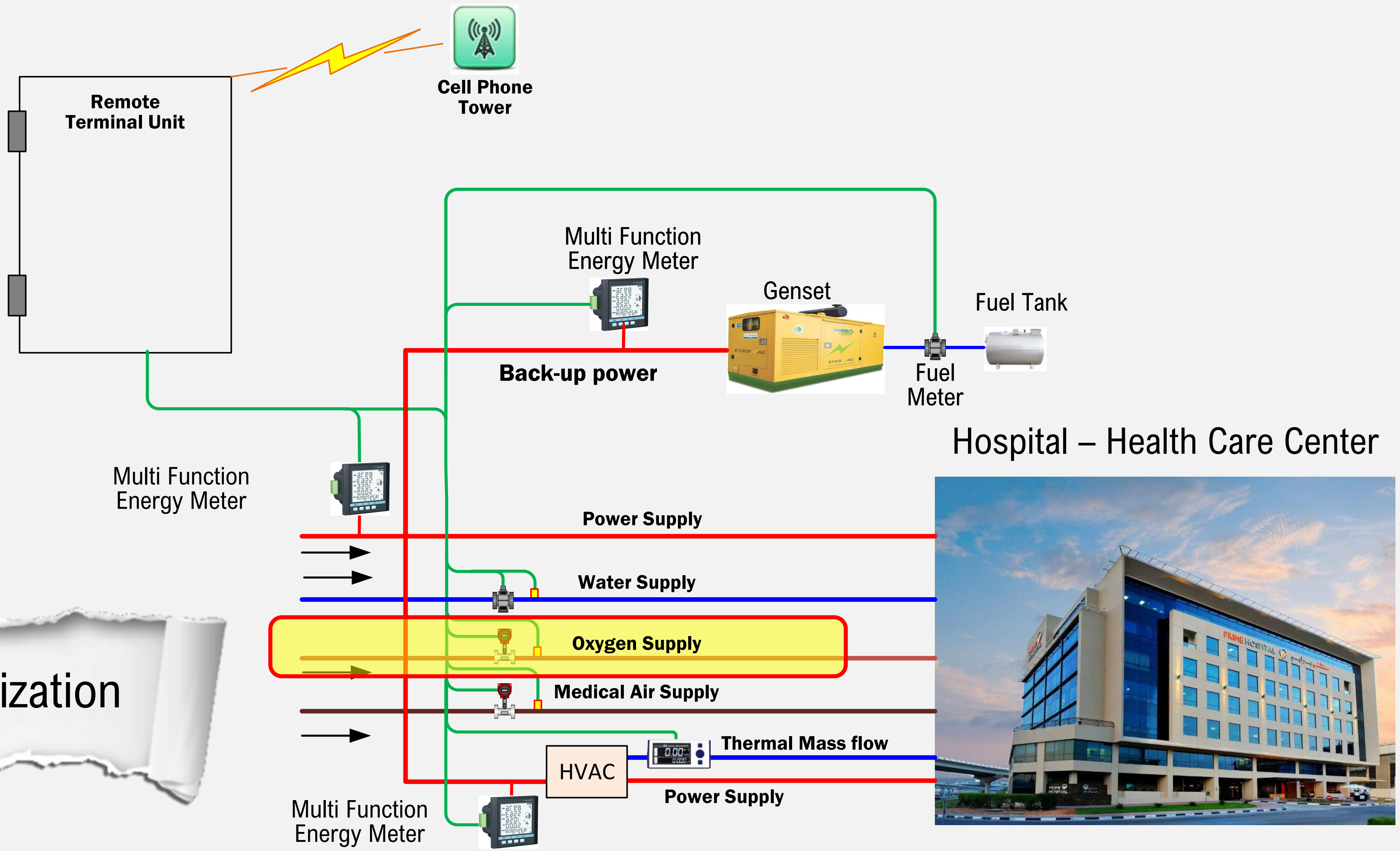

Utility Optimization

Present Condition of the Oxygen (Gas) Supply

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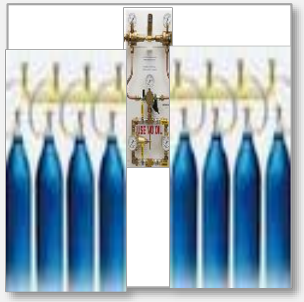
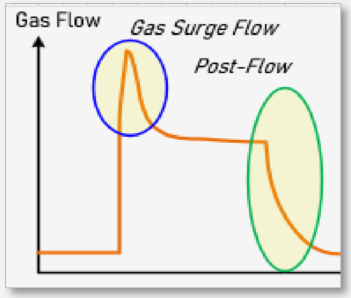
Manual Oxygen Changeover



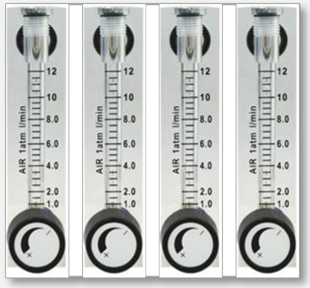
Main Oxygen Cylinder and redundant cylinder - changeover shall be carried out manually. Based on the outlet pressure the changeover takes place.

High Surge (Open)



During opening of the gas flow valve – the surge increases the gas pressure and start flow rate also increases – this leads to increases in gas consumption.

Manual Flow Regulator



The point of usage – unit shall consists of flow indicator and mechanical gas flow regulation unit. In this type of flow regulation unit – during opening of valve – the surge gas flow increases the gas consumption or wastage.

Manual Pressure setting

The mechanical manual pressure setting (ferrule) leads to the outlet gas pressure decreases during inlet pressure is low.

No pressure regulation

The gas source pressure, branch pressure and point of use (POU) pressure is not monitored, due to this the user is not having any clue about the gas pressure in the distribution point.

No Oxygen Measurement

The individual gas flow is not monitored only indicator is available, the flow regulation is accurate – the manual regulation unit increases the surge flow.

Pressure & Oxygen (GAS) Mass Flow - Parameters

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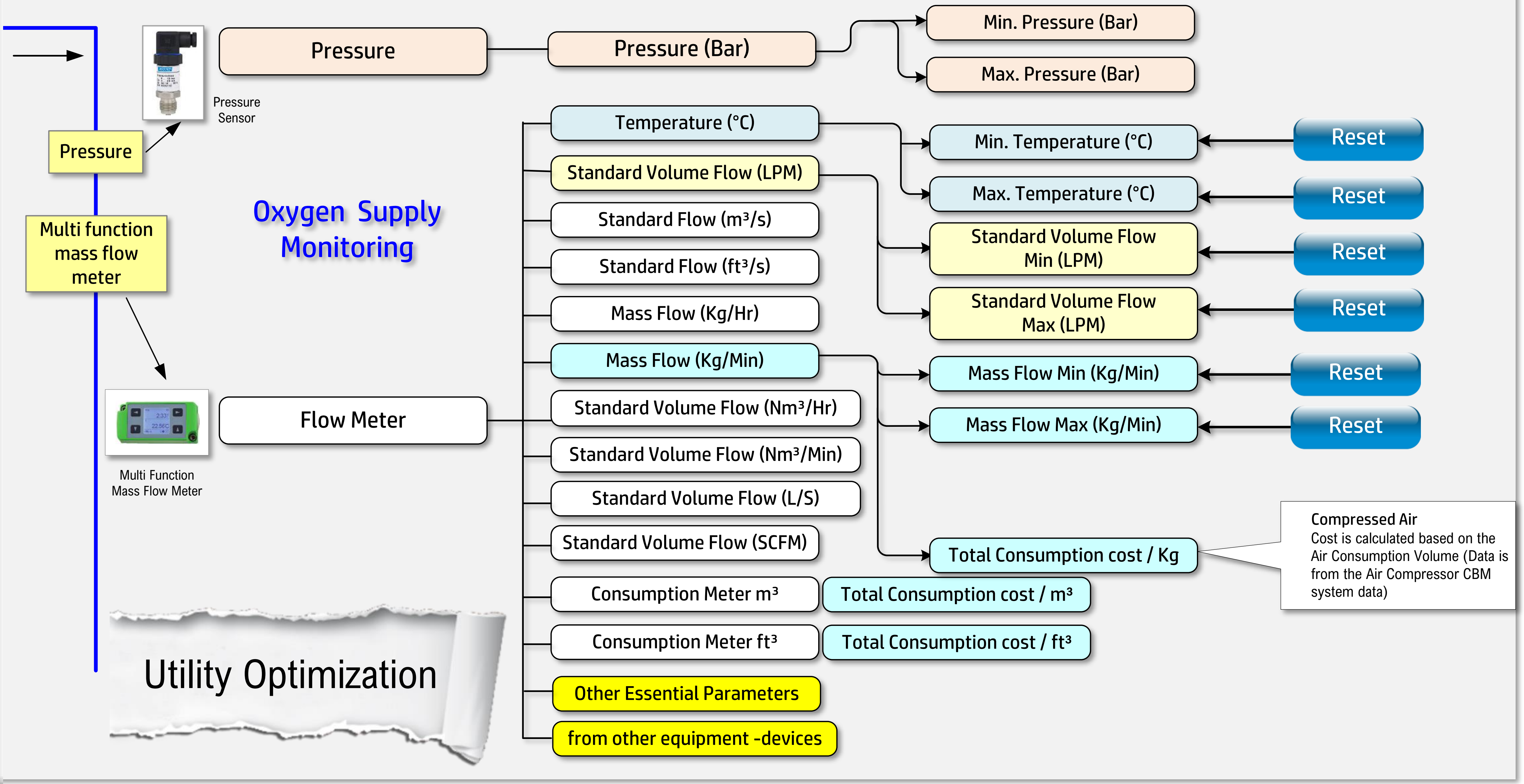

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Oxygen (Gas) Supply Optimization

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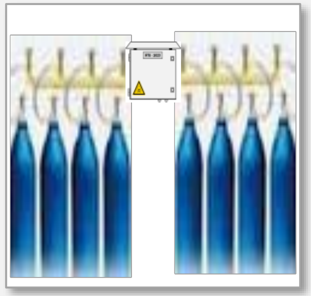
Automatic Changeover



Factory Gas Outlet Monitoring
Gas flow rate, Peak flow rate, Minimum flow rate, Gas Flow Quantity, Gas Temperature, Gas Moisture, Consumption Pattern Graph, Pressure Pattern Graph, Flow rate Graph, Consumption Chart-Table, Machine, Idle-Night time consumption report, Analysis report

Automatic Plant Gas Pressure Regulation

Irrespective of gas consumption in the hospital, the Gas source outlet pressure is constant, the branch outlet and up to the point of usage the system maintains the constant pressure – this leads to energy saving.

Gas Volume Monitoring

By monitoring Gas Flow volume, and quantifying the gas leakage in the gas distribution network. The proposed system monitors the gas consumption in each pipeline segment, equipment, floor – wise consumption monitoring predicts the consumption pattern.

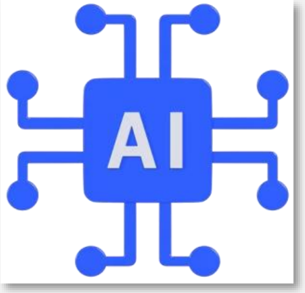
Point of Usage Monitoring

In the gas Point of usage – the gas flow rate and flow quantity shall be monitored remotely. The proposed system enhances the gas flow rate accurately, leads to service performance improvement.

Branch Gas Pressure Regulation

Apart from the gas source regulation, the individual branch, up to the point of usage – irrespective of the flow rate or gas consumption – the distribution gas pressure is adjusted as per the set valve.

AI Based Gas Optimization



AI based gas parameters monitoring and anomaly prediction leads to detection of the failure well in advance, and prevents the breakdown and costly repair. The system automatically prepares the report for events, anomaly.

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HVAC Optimization

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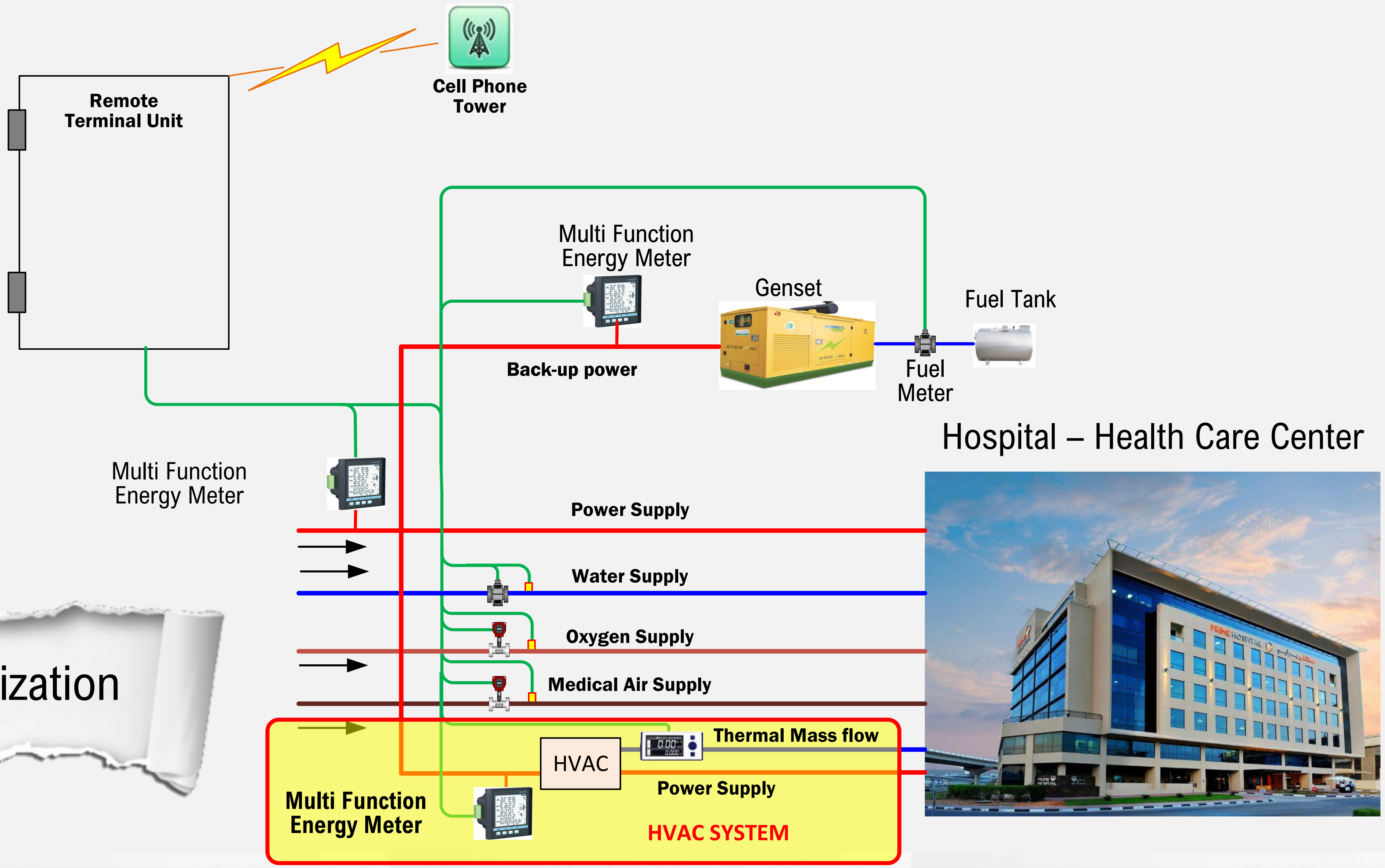

Utility Optimization

SAVE ENERGY

HVAC – CBM & Possible Improvement

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Cooling Tower

Cooling Tower – CBM

- Cooling range deviation
- Approach range deviation
- Liquid/Gas (L/G) ratio
- Heat Load
- Energy Consumption deviation
- Fan Status
- Fan Motor - Vibration in 3 Axes (Displacement, Velocity & Acceleration)
- Water Quality deviations – optimize chemical use. Cycle of Concentration.
- Fan Motor Electrical Signature Analysis
- Heat Rejection
- Evaporation Rate-Loss
- Bleed-off or Optimize Blowdown Flow Rate
- Make-up water Loss/requirement

Possible improvement after CBM - Data

- Replace Cooling Fan – with IE5 Efficiency motor
- Reduce water consumption based on the Ambient Conditions
- Reduce number of Blow down Cycle – Basin Water
- Increase the water quality to increase the number cycle of cycle of concentration.

Increases the Hospital Infrastructure Efficiency (HIE)

Saves Energy

Chiller

CHILLER – CBM

- Condenser approach Temperature
- Evaporator approach temperature
- Chiller COP, EEP
- Incorrect cooling tower operation
- Irregular water flow to chiller
- Net Refrigeration Capacity
- Electrical Anomaly
- Chiller Efficiency – Related with Ambient Temperature & Humidity

Possible improvement after CBM - Data

- Improvement of scaling removal in the chiller condenser and evaporator coil.
- Optimizing the power by introducing of Heat Exchange Economizer.
- Optimizing the Chiller by introducing VFD drive – fine tuning the existing VFD for better performance
- Operating the Chiller in the maximum Efficiency Operating Point,

Increases the Hospital Infrastructure Efficiency (HIE)

Saves Energy

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CONDENSER & EVAPORATOR -APPROACH

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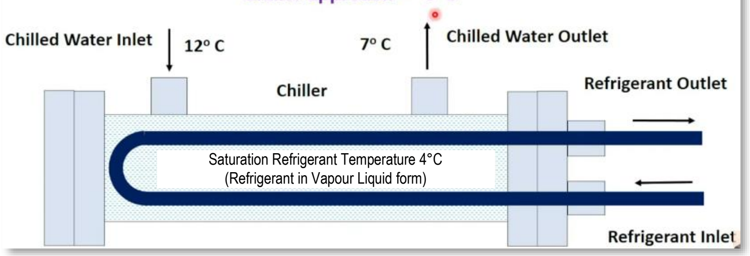
Evaporator Approach Temp.

Evaporator approach temperature is the difference between the evaporator refrigerant temperature and the leaving chilled water temperature.

Chiller approach = Chilled water Outlet temperature – Saturation refrigerant temperature

Chiller approach = 7° C – 4° C

Chiller approach = 3° C



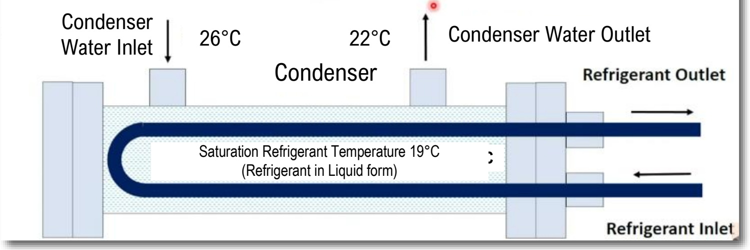
Condenser Approach Temp.

Condenser approach temperature is simply defined as the difference between the condenser liquid refrigerant temperature and the outlet condenser water temperature.

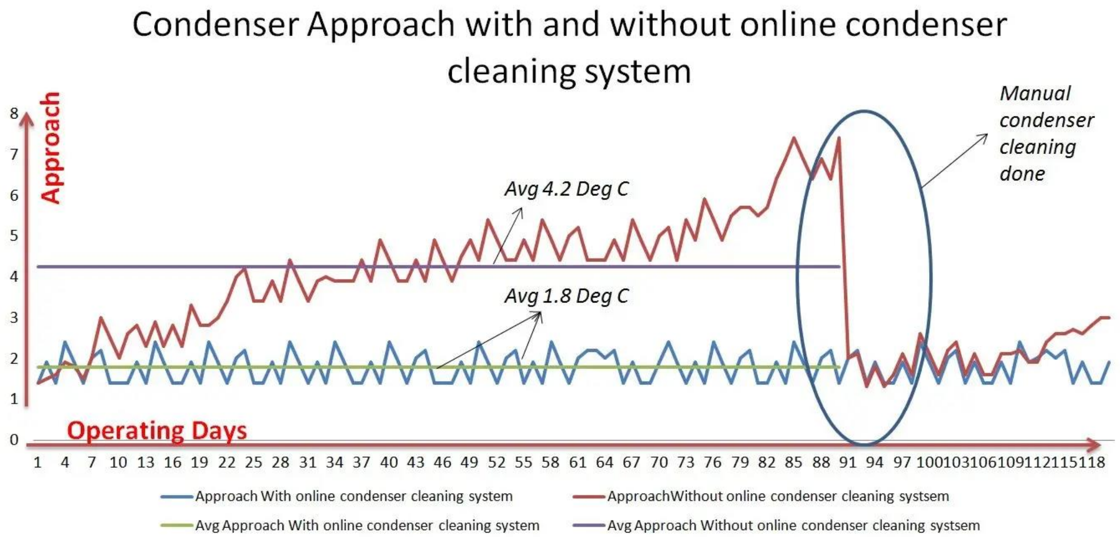
Condenser Approach = condenser water outlet temperature – Condenser liquid refrigerant temperature

Condenser Approach = 22°C – 19°C

Condenser Approach = 3°C



Condenser Scaling – affects the Approach Temperature



- ❑ High chiller approach temperatures usually mean reduced heat transfer, increased energy consumptions, and a reduction in refrigeration capacity. High approach temperatures should be investigated as they are usually an indication of a severe problem:
- ❑ Fouled/Contaminated tubes (biofilm, scale, sludge, corrosion, etc.)
- ❑ Non-condensable gases present (Air in the refrigerant)
- ❑ Low refrigerant charge or altogether loss of charge
- ❑ Incorrect cooling tower operation
- ❑ Irregular water flow to chiller

Chiller COP, EEP

$$\text{Net Refrigeration Capacity (TR)} = \frac{m \times Cp \times (Tin - Tout)}{3024}$$

Where m – mass flow rate of chilled water, kg/Hr

Cp – Specific heat, kcal/kg°C

Tin – Chilled water temp. at evaporator inlet °C

Tout – Chilled water temp at evaporator outlet °C

BTU/hr	= (GPM*Delta T*499.8)
Tonnage	= (BTU/hr)/12000
EER	= 12/(kW/ton)
COP	= EER/3.412

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HVAC – Condition Based Monitoring & Possible Improvement

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Condenser Pump

Condenser Pump – CBM

- Individual Pump Run Hours
- Individual Pump Efficiencies
- Electrical Anomaly
- Per KWHr pumping of water quantity in Cubic Meter of volume.
- For Volume of One Cubic Meter -the energy consumption in KWHr.
- Indexing of pump wise efficiency
- Individual pump pressure suction head
- Delivery head of individual pump
- Individual pump - power, current consumption and the anomaly.
- Individual Pump Vibration Level
- Individual pump energy consumption
- Individual pump flow rate and flow quantity
- The power consumption per ton of refrigeration.

Possible improvement after CBM

- Poor efficiency pump shall be improved with – impeller trimming and Coating
- Reducing the number of pumping operation.
- Reducing the electrical anomaly and improving the power quality.
- Addressing the scaling formation
- Inefficient pump motor shall be replaced by IE5 efficiency motor

Increases the Hospital Infrastructure Efficiency (HIE)

Saves Energy

Evaporator Pump

Evaporator Pump – CBM

- Evaporator Pump efficiency
- Individual Pump Run Hours, Efficiencies
- Electrical Anomaly
- Individual pump energy consumption
- Individual pump vibration level
- Individual pump flow rate and flow quantity
- The power consumption per ton of refrigeration capacity

Possible improvement after CBM

- Poor efficiency pump shall be improved with – impeller trimming and Coating
- Reducing the number of pumping operation.
- Reducing the electrical anomaly and improving the power quality.
- Addressing the scaling formation
- Inefficient pump motor shall be replaced by IE5 efficiency motor
- *Using economizer – the return water of evaporator shall be utilized to cool condenser water outlet.*

Increases the Hospital Infrastructure Efficiency (HIE)

Saves Energy

SAVE ENERGY

HVAC – Condition Based Monitoring & Possible Improvement

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Air Handling Unit

AIR HANDLING UNIT – CBM

- Supply air temperature
- Return air temperature
- Fresh air temperature
- Ambient air temperature & humidity
- Duct air temperature, pressure & air velocity
- AHU chill water - inlet & outlet temperature
- AHU – Fan – motor vibration sensor
- AHU Energy Consumption
- Differential pressure across air filter – to know the blockage of filter.
- AHU Motor – electrical anomaly
- The efficiency of the AHU system
- CO2 level of return air.
- Delta 'T' of the chill water across AHU

Possible improvement after CBM

- Maintaining minimum air flow 30% as per ASHRAE Standard
- Fresh air modulation according to the return air CO2 level
- Implementing IE5 efficiency motor
- AI based AHU monitoring system – optimize the - chill water pump, chiller, condenser pump – in real time.

Increases the Hospital Infrastructure Efficiency (HIE)

Saves Energy

OCCUPANCY

OCCUPANCY – CBM

- Individual room temperature
- Room temperature
- Hospital – exhaust fan – monitoring of temperature
- Window opening sensor
- Occupancy Sensor
- Heat map sensor
- Movement Sensor

Possible improvement after CBM

- Occupancy based cooling requirement prediction
- *Ambient temperature, room temperature, CO2 based – Cooling prediction.*
- People heat map and mapping the diffuser air control system.
- Calculating the light load (Power dissipation) and compensating cooling requirement.
- Automatic adjusting the airflow to the minimum level when persons are not occupied the room

Increases the Hospital Infrastructure Efficiency (HIE)

Saves Energy

EFFICIENCY IMPROVEMENT AND ENERGY SAVING

DIFFUSER

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TRADITIONAL VAV BOX SYSTEM

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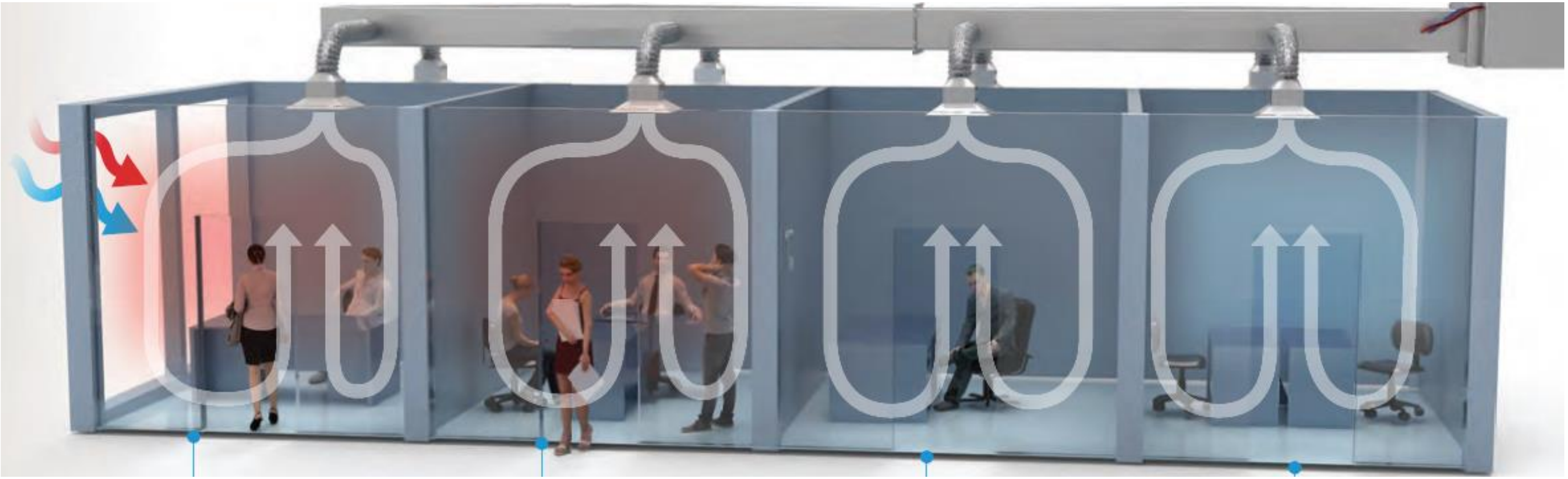
Limited temperature control with one thermostat in areas with multiple offices



Inconsistent Temperature

An office space with external windows becomes too hot or too cold since the centralized thermostat cannot detect fluctuating temperatures.

Too Hot

A thermostat placed away from an area or office cannot detect an increased load such as additional staff occupying the space.

The only Comfortable Office

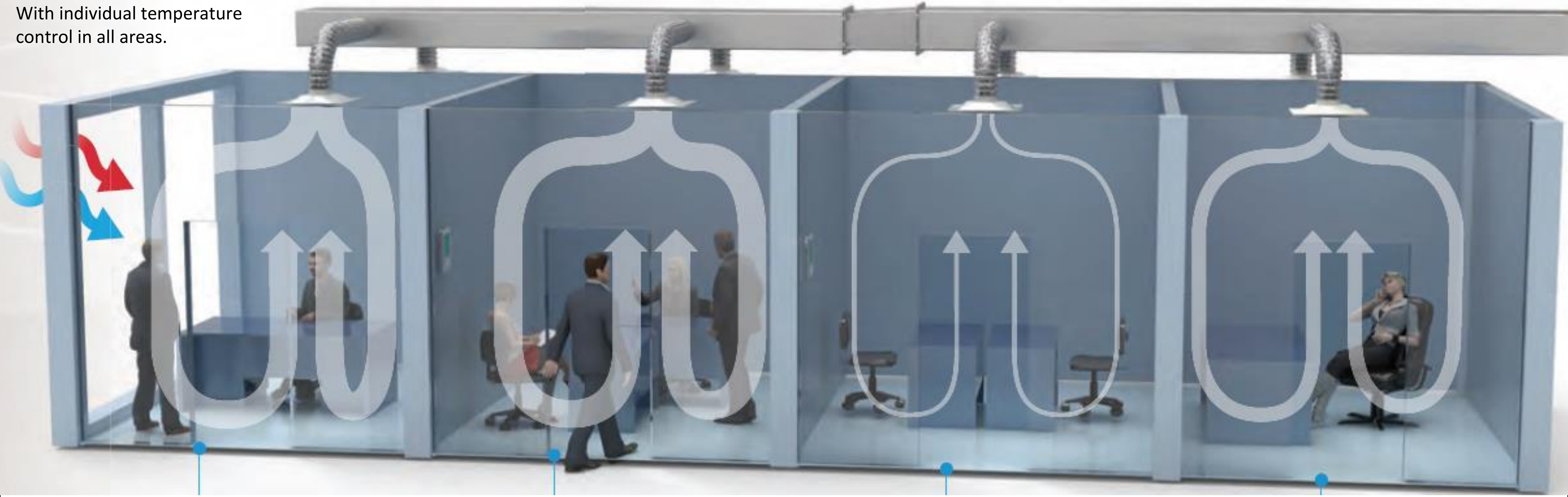
Typically one thermostat will be allocated for a number of offices. The immediate space with the thermostat is typically the only area that maintains a truly comfortable temperature.

Wasted Heating and Cooling

Traditional VAV box systems can waste energy by over heating or over cooling unoccupied spaces.

Intelligent VAV Box System

With individual temperature control in all areas.



Optimum Comport

Features individual temperature sensing to meet varying conditions and individual zone control.

Controlled Ventilation

Each diffuser automatically matches the air supply to the load requirements of an area such as additional staff occupying an office.

Occupancy Sensing

Diffusers with on-board occupancy sensing will automatically back off when a space is unoccupied.

On-board Temperature Sensing

Temperature sensors built into the diffuser can be used in place of wall thermostats to monitor individual zones

SAVE ENERGY

Real Time Monitoring & Control of Diffuser

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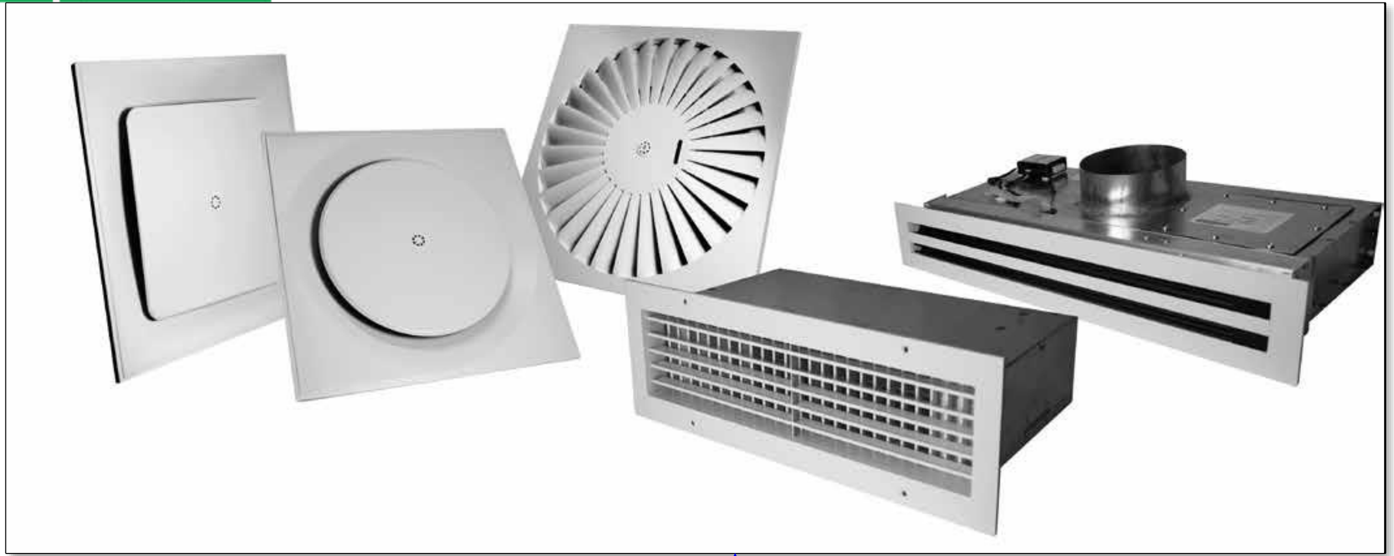


A key benefit of VAV diffusers is their ability to reduce the energy consumption of a building by reducing the demand on the air handling system. This is achieved by allowing only the required volume of hot or cold air to enter a conditioned space according to the set point. If the required air volume reduces, the diffuser's aperture size also reduces which creates additional pressure in the ductwork

The accumulated pressure signals to the air conditioning system to slow down which in turn saves fan energy. When the required air volume increases, the diffuser's aperture opens allowing more conditioned air to enter the space.

The diffuser's variable geometry enables thorough air mixing, uniform temperature distribution and better air balance

Condition Monitoring & Control

Pressure Reduced from 250Pa to 100Pa

Fan Energy Reduced from 2229W to 1714W

30% Reduced Energy

Energy Saved

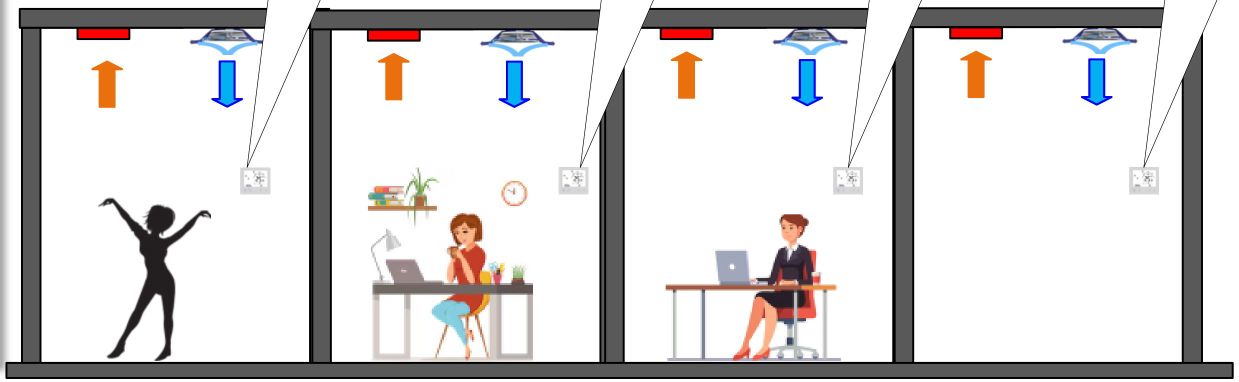
- ✓ A lower pressure duct system reduce the load on the air handling system
- ✓ Smaller thermal zones for better thermal comfort control
- ✓ Has a lower turndown to match reduced loads

Air Flow
Maintains flow as required
Temperature
Room temperature is set 24 Deg.C

Air Flow
Maintains flow as required
Temperature
Room temperature is set 23 Deg.C

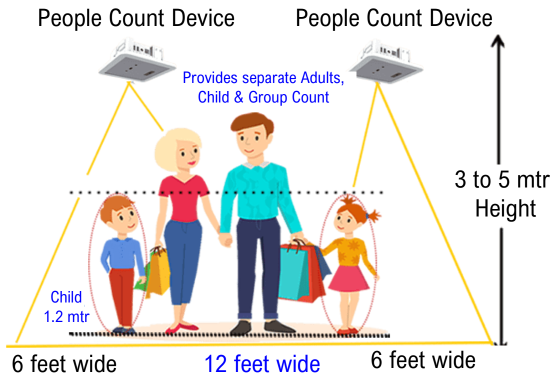
Air Flow
Maintains flow as required
Temperature
Room temperature is set 25 Deg.C

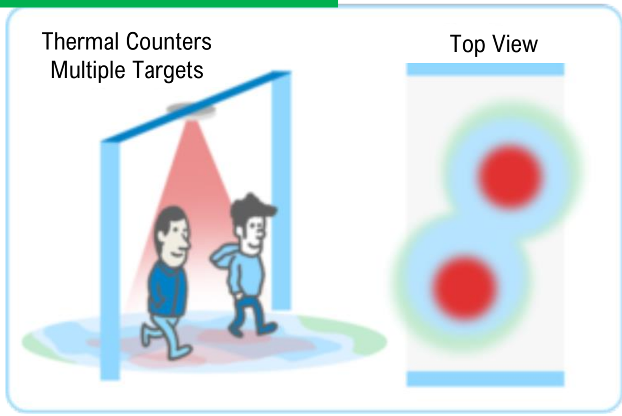
Air Flow
Maintains 30% flow as per ASHRE Standard
Temperature
Un-occupied room temperature is set to 4 degree high

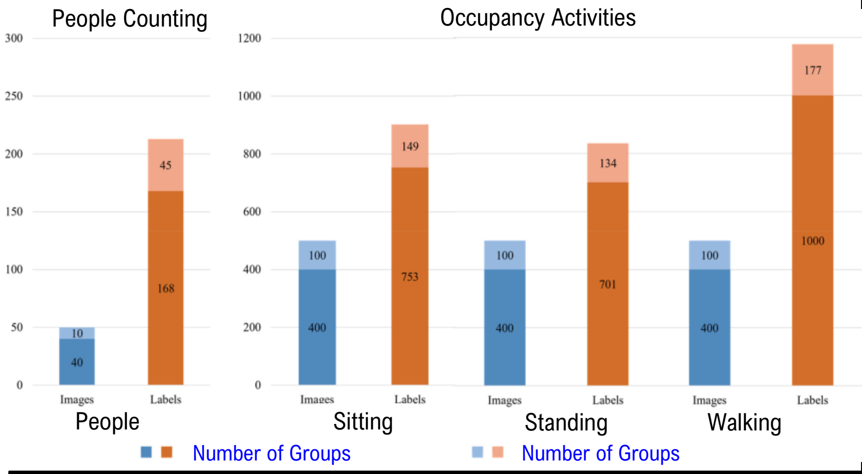


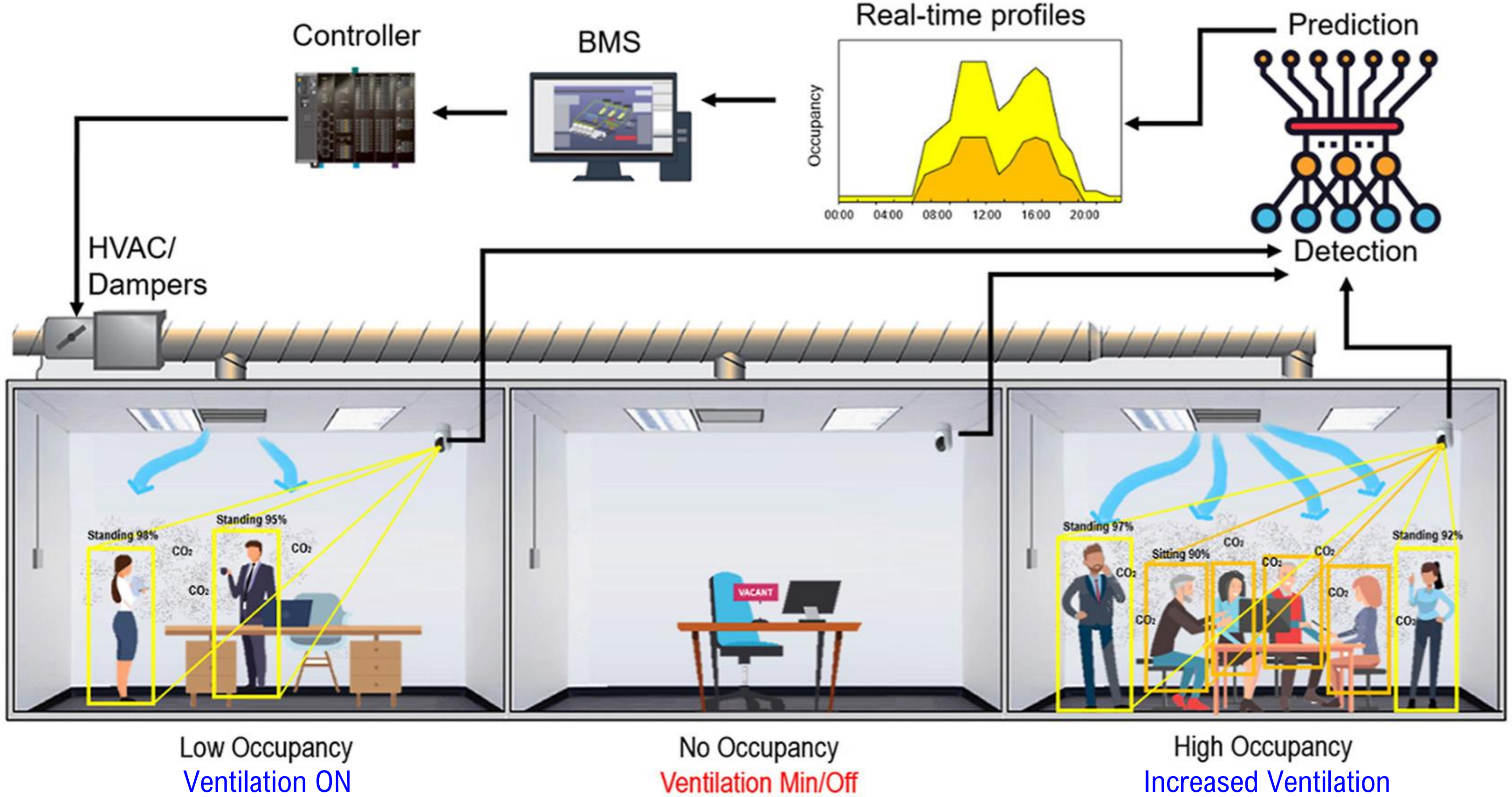
PEOPLE COUNTER – Occupancy - HVAC

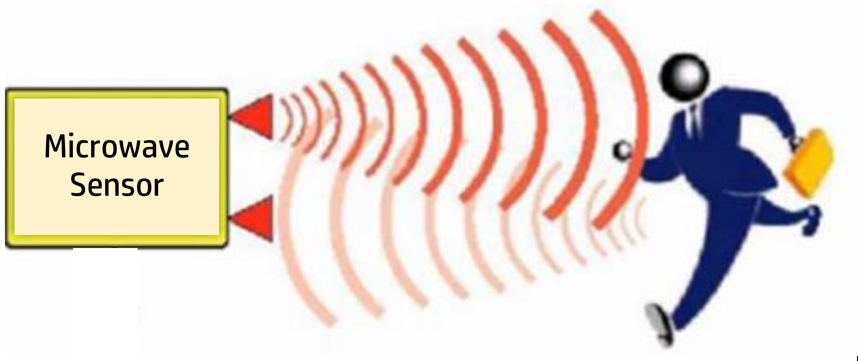
Smint TIQ

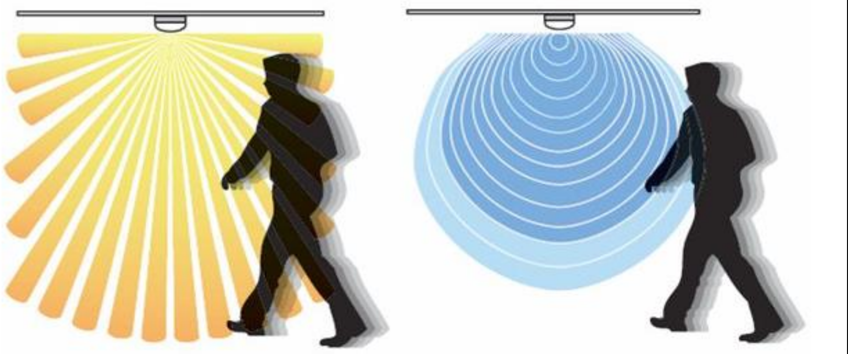


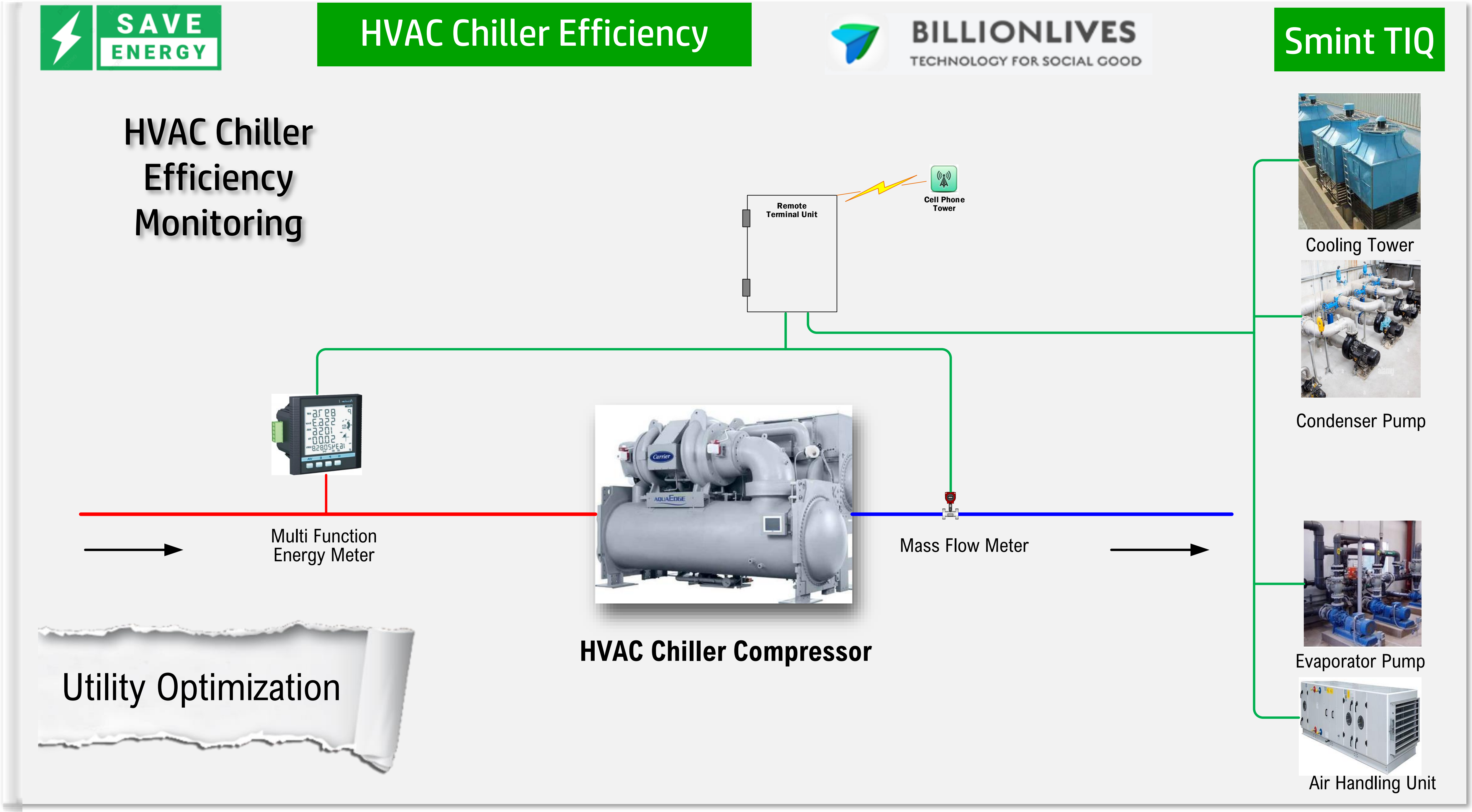












SAVE ENERGY
HVAC Chiller Efficiency
BILLIONLIVES
TECHNOLOGY FOR SOCIAL GOOD
Smint TIQ
HVAC Chiller Efficiency Monitoring
Remote Terminal Unit
Cell Phone Tower
Cooling Tower
Condenser Pump
Multi Function Energy Meter
Mass Flow Meter
HVAC Chiller Compressor
Evaporator Pump
Air Handling Unit
Utility Optimization

SAVE ENERGY

Hospital - Utility Optimization

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TECHNOLOGY FOR SOCIAL GOOD

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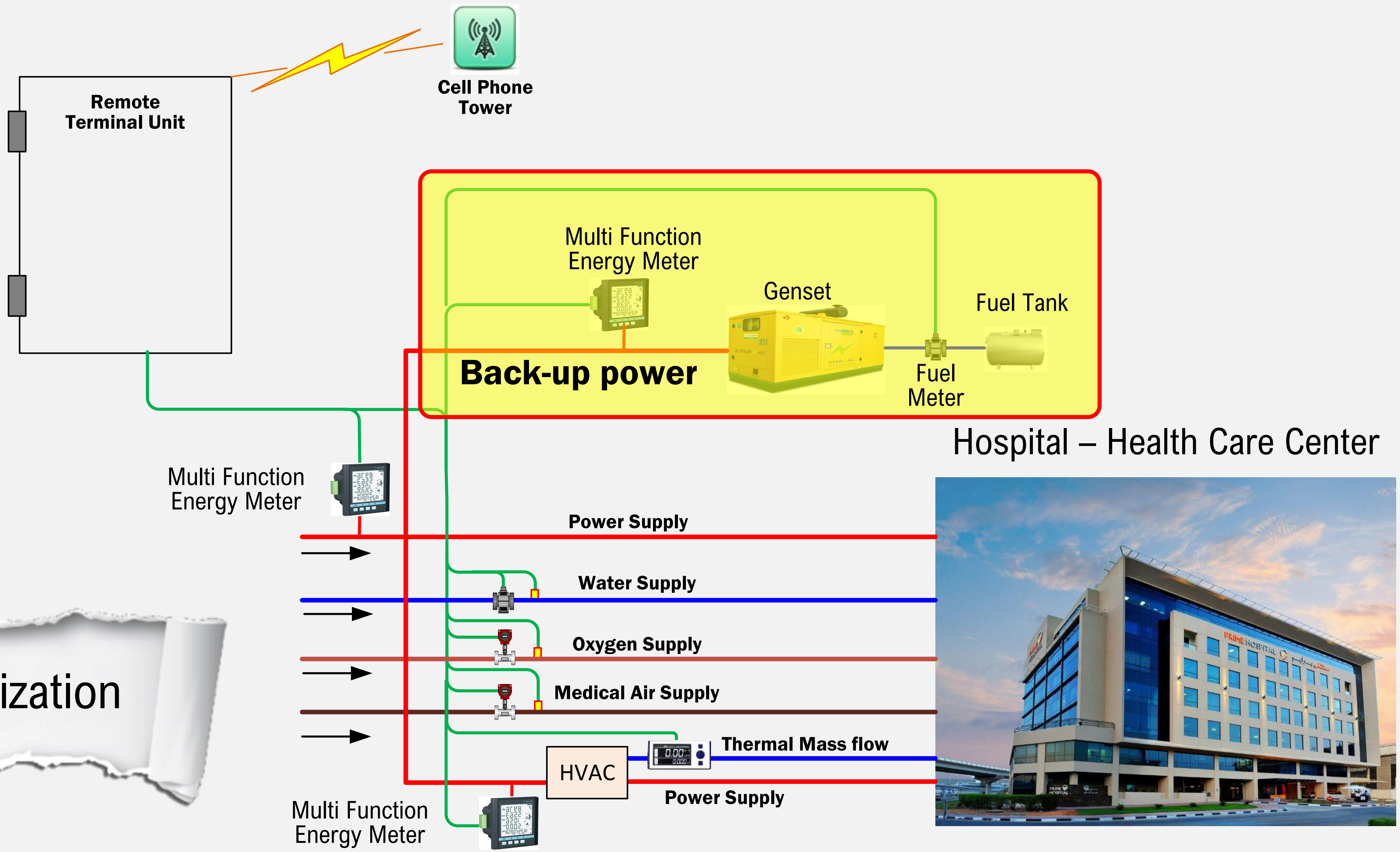

Utility Optimization

SAVE ENERGY

GENSET Efficiency Monitoring

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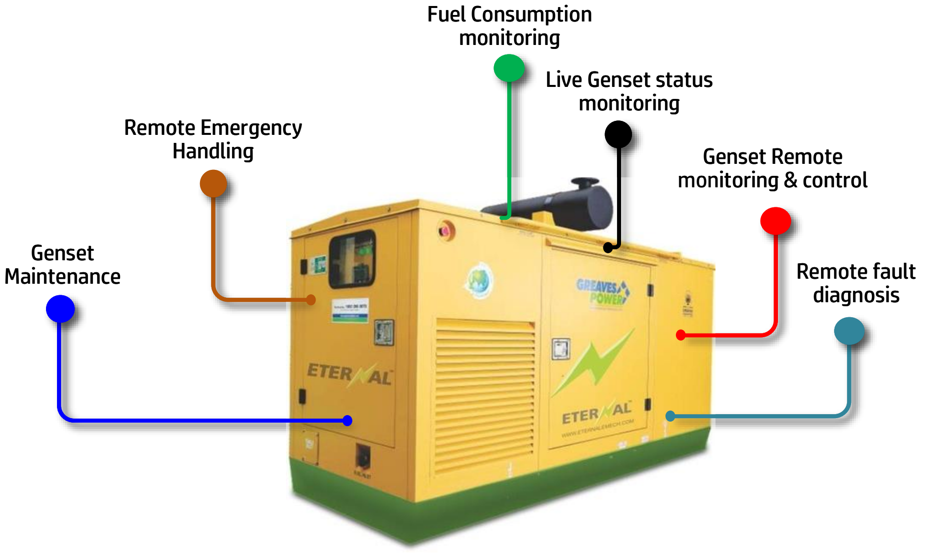
SENSOR-COMPONENTS - USED

- Lubricating Oil Level Sensor
- Jacket cooling water temperature
- Fuel Level – Transmitter
- Lubricating Oil temperature – Transmitter
- Lubricating Oil Pressure Transmitter
- Vibration Sensor X, Y, Z AXIS cum Transmitter
- Generator RPM Sensor
- Multi-Function Energy Meter

KPI

- Generator Loadability
- Generator Fuel Flow Rate/Quantity
- Generator Fuel Efficiency
- Fuel Level
- Generator ON/OFF
- Load Response
- Over Current, Over Voltage, Phase Loss, Under Voltage - Alert/Trip
- Hormonic Content Anomaly
- Excitation Voltage - Regulator Response
- Excitation Failure
- Battery Charge – SOC level
- Generator RUN Hour
- Generator Idle Hour
- Generator Breakdown Hour
- Generator Switched ON due to EB Failure
- Generator Switched ON due to excess load demand
- Fuel Low Level Alert
- Fuel Consumption per kWHr Generated



OUTPUTS / DELIVERABLES

- Real Time - Monitoring and Control
- Early Fault Prediction
- Fuel Procurement Alert
- Automatic Fuel Request Indent email and message
- Fuel Consumption per kWHr Unit generation cost
- Generator M & S Cost per unit of Power Generation
- Schedule Maintenance Alert
- Generator Temperature – Real time alert
- Early maintenance prediction - warning
- Automatic Report and emailing
- Thresholds based alerts
- Trend, event, history – analysis

Condition Based Monitoring

Monitor & Control Generators from Anywhere

All KPI performance parameters shall be analysed and performance deviation parameters shall be reported to the user

Real-time alerting the user if there is major deviation

Automatic reporting through Email / SMS / Whatsapp msg / Discord message Alert Notification.

Cut-down maintenance cost and fuel consumption

Fuel monitoring and tracking
Monitor fuel top ups

Optimize DG utilization and identify cost leakages
Remote management

Monitor parameters like engine temperature, oil pressure, battery voltage, power output, engine run-time, engine RPM, diesel levels

Scheduled Reports
Lower fuel consumption by determining factors resulting in excess fuel use

SAVE ENERGY

Information Retrieval System

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Automatic Report Generation & Emailing

Automatic Report

Performance

Performance Monitoring System

Analtics

Warning, Alert

SAVE ENERGY

Information Retrieval System

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Automatic Report Generation

- Daily Monitoring & Reporting of all parameters
- Consumption report – co-related with other parameters
- Gas, water, electrical power Consumption and anomaly report
- Gas / Water Leakage Monitoring & Reporting
- Water & Gas - Leakage Volume and Wastage of Money
- Report Generation and Emailing

ALERT

- High Pressure Alert
- Low Pressure Alert
- Electrical Anomaly Alert
- Flow Anomaly Alert
- Deviation Alert
- Event Alert

Reporting

- Daily, weekly & monthly report
- History Report
- Trend Report
- KPI Report
- Event Report

Information Retrieval System

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Alarm Message
Today

12:32 Oxygen Plant -1,
Pressure Low Alert

14:22, Oxygen Plant -1
Pressure Normal

Yesterday

07:01 Water Flow Rate
Water Flow Rate High
2700 LPM

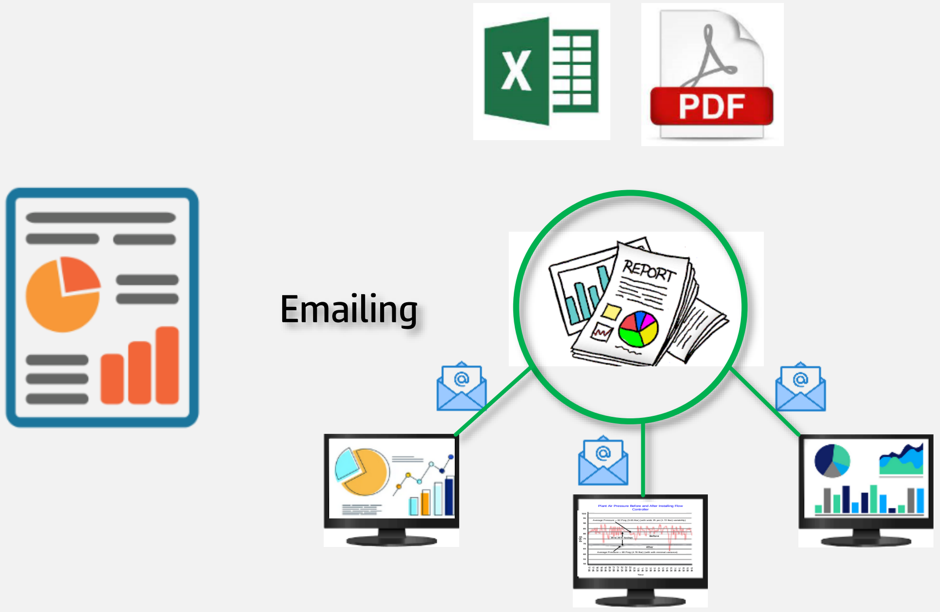
11:37 Incomer Electrical Supply
RY Phase imbalance voltage is High – High Alert – 12Vac (Trip level is 15Vac)

Automatic Report Generation & Emailing

Analyze Data

Discord Messages

Char Bot



Alert, Warning Message

Alarm, Warning to Mechanical M&S Team

Alarm, Warning to Management Team

Alarm, Warning to Electrical M&S Team

Alarm, Warning to Supplier Service Team

SAVE ENERGY

Solar Thermal Power Harvesting

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Saving 25% to 40% Chiller Energy

SAVES 25% TO 40% ELECTRICITY

Savings can go up to 60%, depending on the amount of sunlight. When averaged over the year the savings is between 25-40%

ROI OF ~36 MONTHS

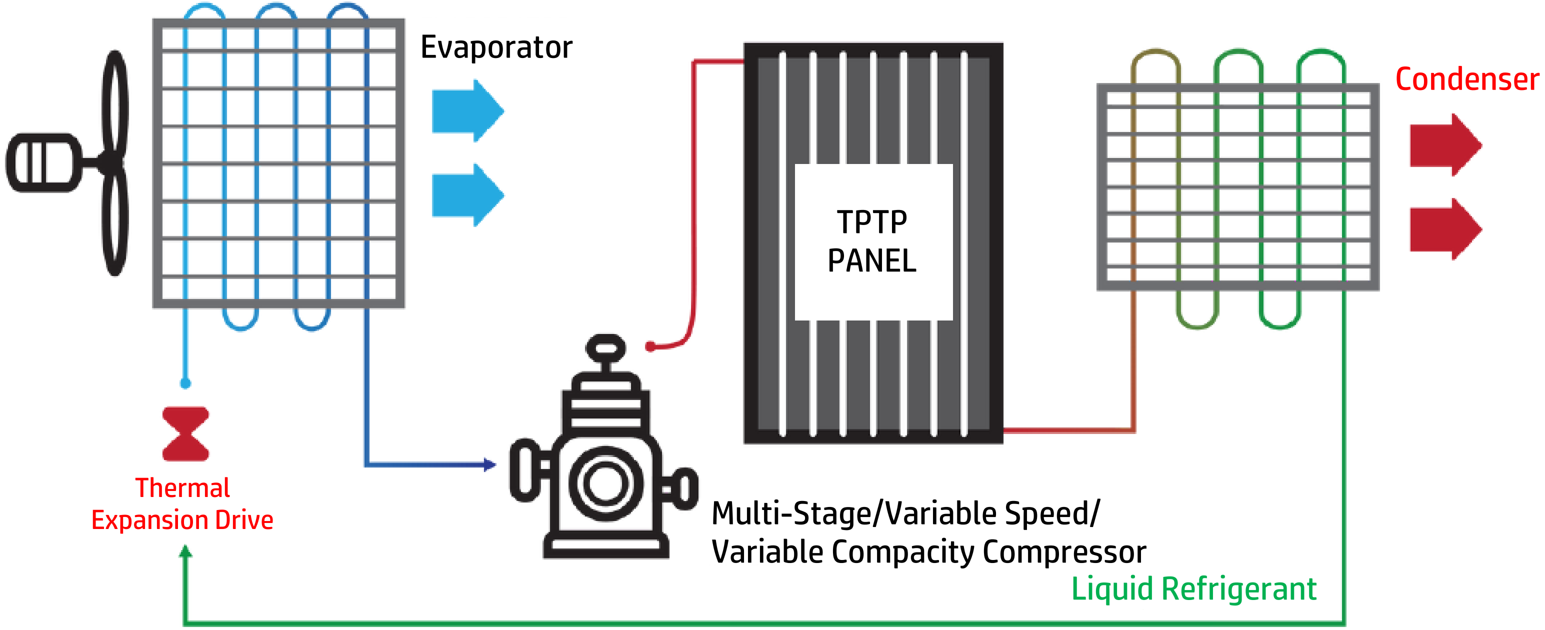
While life of Panel is 15+ years

~10 times MORE SPACE EFFICIENT THAN PV PANELS

The Tracking Parabolic Trough Panel (TPTP) takes ~32 sq ft of space, saving ~3,500 watts while a comparative PV Panel will produce just ~300 watts in the same space.

LIFE OF THE HVAC SYSTEM IS IMPROVED

Since the TPTP Panel is doing the work of the compressor, it always runs on partial load. This reduced RPM over time results in enhanced life of the machine



Refrigerant flow diagram with TPT Panel (Tracking Parabolic Trough Panel)

- Single Panel is suitable for 7.5 ton | 10HP |90,000 BTU | 24,000 Kcal/h | 28Kw of cooling capacity
- System is scalable to any size HVAC project with variable / inverter compressor ACs (VRF, chiller, ductable or package)
- **12% GST and accelerated depreciation for tax benefits**
- **Refrigerant gas** with high temperature and pressure **leaves the compressor** and enters the TPT **Panel**
- The TPT Panel **harnesses the sun's energy** by reflecting the light on parabolic mirrored concentrators. The light is **focused on the copper pipes** that are coated with specialized absorption paint.
- By **adding heat using the TPT Panel,** Perfect can **reduce the electricity consumption** of any Inverter AC **by 25-40%**
- Works with multi-stage, **variable speed, and variable capacity compressors**, including tandems, and single speed compressors with Variable Frequency Drives