

FUTURE GEN TECHNOLOGIES

MEP Engineer is a Single-Level Professional Classification Responsible for Planning and Design in the areas of Mechanical, Electrical and Plumbing (**MEP**) Systems Including Developing Policies, Standards, Inspection Procedure and Evaluation Tools.

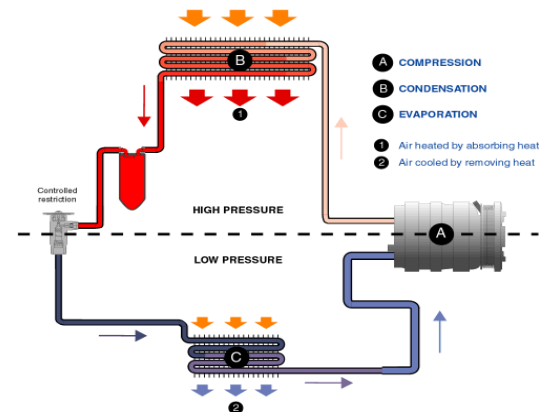
HVAC (HEATING, VENTILATION & AIR-CONDITIONING)

- Introduction to HVAC
- HVAC Introductions
- Human Comfort Condition
- Application of HVAC Systems



Basic Components of Air-Conditioning and Refrigeration Machines

- Basics Refrigeration System of Vapor Compression Cycle
- Pressure-Enthalpy Chart
- Function & Types of Compressor
- Function & Types of condenser
- Function & Types of Expansion Valve
- Function & Types of Evaporator
- Accessories used in the system



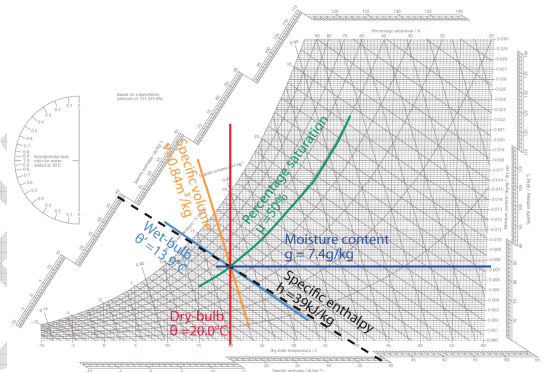
Air-Conditioning Equipment's

- Classification
- Windows A/C System-**Project done by Students by using Window A/C**
- Split A/c System-**Project done by Students by using Split A/C**
- Package A/C System
- VRF/VRV System
- Central Air-Conditioning -**Project done by Students by using Central A/C System**

- DX System

Study of Psychrometric Charts

- Dry Bulb Temperature
- Wet Bulb Temperature
- Dew Point Temperature
- Relative Humidity
- Humidity Ratio
- Processes
- Heating
- Cooling
- Cooling and Dehumidification
- Heating and Humidification



Categories of Air Conditioning

- All air system
- All water system
- Air-water system
- Direct Refrigerant system.



Heat Load Calculations

- Source of Heat
- Building Survey
- Heat Load Formula
- Finding U value for Walls, Roof, Glass etc.
- Finding ΔT (Temperature Difference) values for Walls, Roof and Glass etc.

- Ventilations Requirements
- Infiltration Concept
- Heat Load Estimate (Manually & Software-E20)
- Heat Load Estimate (HAP Software)
- Tonnage (TR) & Air Flow (L/S) for Project

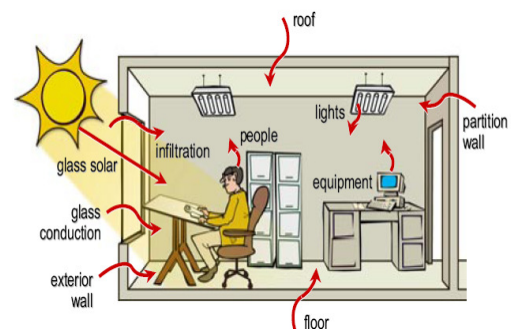
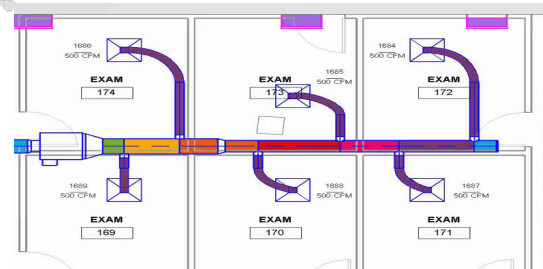
Selections of Machines

- Selection based on Heat Load Results
- Selections as per Applications
- Selections as per Projects Specification
- Placing Location of Equipment



DUCT DESIGN

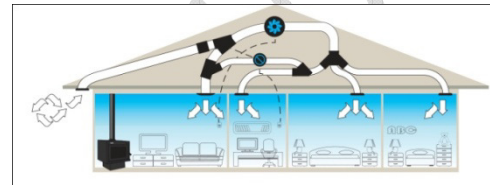
- Duct-Definition & Terminology
- Duct Design Consideration
- Duct sizing methods
- Duct sizing as per Aspects Ratio
- Finding Duct size using MC QUAY DUCT sizer
- Calculation of Number of sheets for Duct
- Gauge selection for Sheet Metal
- Bill of Materials for Duct Network
- Legends and Symbols used in the HVAC Industry
- Selection of Diffusers and Grilles
- Duct Materials and Insulation materials used in HVAC Industry
- Study of Overseas Drawings
- Duct Routing-Preparations of single line diagram(SLD)
- Preparations of Layouts (Double line Diagram-DLD)
- Openings for Duct passing through Wall
- Sectional drawings @ Duct supports
- Concept of CAV & VAV



- Duct Accessories (Sound Attenuators, VAVs, VD, FD, AD, FC etc.)

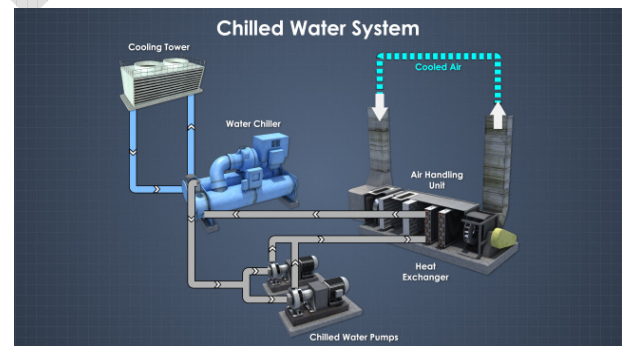
Fresh Air System

- Concept of Fresh Air
- Mixed Air System - Fresh & Return
- 100% Fresh Air Handling System
- Heat Recovery Air Handling Unit
- Fresh Air Fan Selection



Chilled Water System

- Concept of Chilled Water System
- Classification of Piping
- GPM Calculations
- Pipe Sizing of Chilled Water System
- Valves used in Chilled Water System
- Pipe Routing & Levels
- Pump Head Calculations
- Selections of Pumps
- Bill of Quantities



HVAC SOFTWARE

- Carrier E-20 Heat Load Form
- HAP-Hourly Analysis Programme
- McQuay Duct Sizer
- McQuay Pipe Sizer

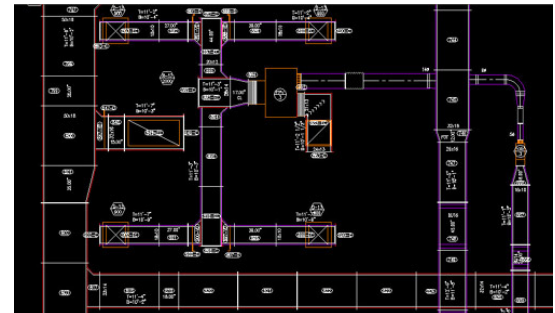
- Master Converter
- PDF Professional
- MS-Excel
- Auto CAD-Expert Level

HVAC DRAFTING AUTOCAD

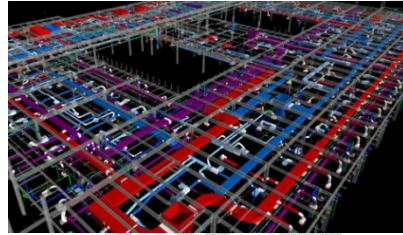
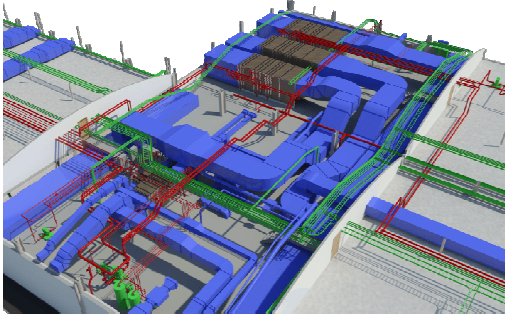
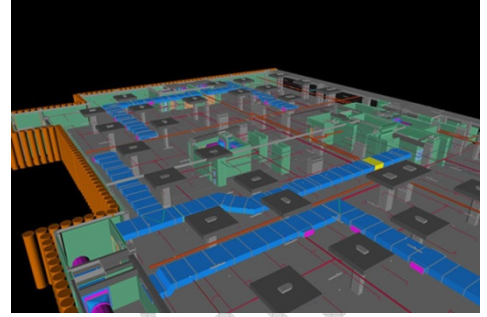
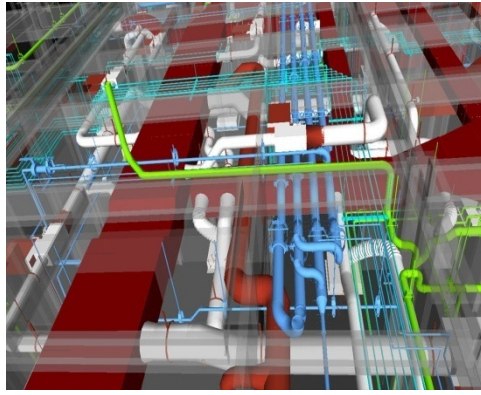


- Introduction to AUTOCAD
- Single line drawing
- Builders work
- Double Line Drawing
- Shop Drawing - SAD, RAD, FAD, EAD, KED, CHSR
- Chiller Detail Drawings
- FCU & AHU Detail Drawings
- As-Built Drawing
- Scales Setting & Plotting
- Sections & Schematic Drawing

- Co-Ordination Drawing
- Model Management
- Layout Management
- Equipment Schedule
- Installation of Air Side Component
- Vibration & Sound Components Installation



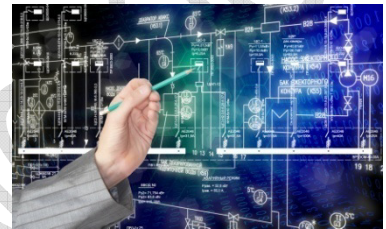
TWO LIVE PROJECTS



FUTURE GEN TECHNOLOGIES

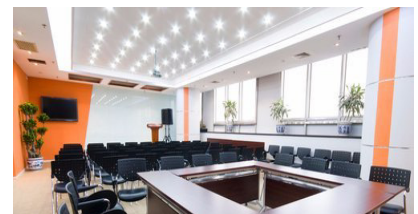
Introduction to ELECTRICAL

- Electrical Basics
- Electricity – Generation
- Electricity Transmission
- Electricity Distribution
- Electricity Equipments – Transformer, Motor, Generation, UPS etc...
- Codes & Standards – NBC, BS, NEC, DEWA



LIGHTING SYSTEM

- Introduction
- Types of Lighting Fixture
- LUX Level as per Project
- Light Fixtures calculation as per Standards
- Standard method of Lighting Placement in Project
- Preparation of Light Fixture Schedule
- Light Fixture Selection Software's – CG-LUX & DIALUXss



ELECTRICAL ACCESSORIES

- Switches – one way, 2way, 3way, etc...
- Measuring Instruments
- Sockets or Receptacle
- Ring Circuit
- Wiring connections in Residential & Commercial Projects
- Panel Wiring Connections



LOAD CALCULATION

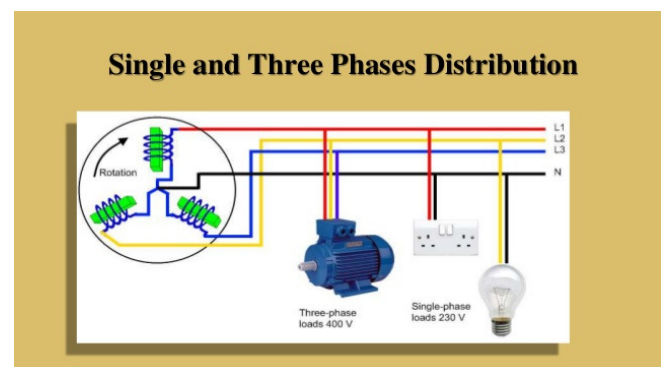
- Light Fixture Load Calculation
- Fan Load Calculation
- HVAC Load Calculation
- Plumbing & Fire Fighting Load Calculation
- Lift Load Calculation as per Project Requirement
- Preparation of Load Schedule
- Maximum Demand Load & Total Load Calculation
- Diversity Factor & its Standards



Electrical Load Calculation

ELECTRICAL DISTRIBUTION SYSTEM

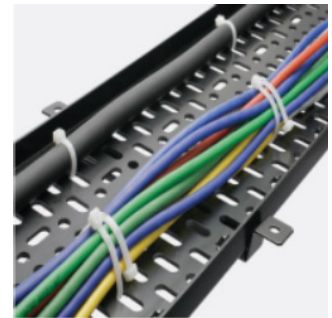
- Load Distribution of Lighting & Power
- Load Distribution Schedule – HVAC
- Fire Fighting
- Common Loads
- MDB
- SMDB & FDB



- Load Distribution Schedule of Emergency Devices – DG & UPS

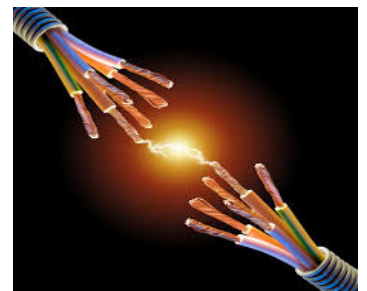
INSTALLATION & SELECTION OF CABLES

- Cable – Armored & UN Armored Cable
- Cable Insulation
- Cable Types & Construction Features
- Cable Selection
- Cable Routing
- Current Rating of Cable
- Cable Size Calculation For Motors
- Voltage Drop Calculation of Cable
- Application of Cable gland & types
- Cable Schedule Preparation
- Cable Resistance & Impedance Values
- Cable Lug & Its Application
- Calculation of Short Circuit withstand Capacity of Cable
- Installation Of Cables
- Conduits – Types & Application
- Conduits Selection
- Installation Method of Conduits
- Cable trays – types, Installation Procedure, Different Sizes of Cable Trays
- Fitting & Accessories of Cable trays
- Cable tray Sizing Calculation
- Cable tray Routing



BUS BAR SYSTEM & FAULT CURRENT PROTECTION

- Introduction
- Types of Importance of Breaker
- Types of Circuit Breakers – MCB, MCCB, ACB, VCB, SF6, ELVB or RCB
- Selection Circuit Breaker on Feeder Current Rating
- Short Circuit Calculation
- Installation Standards of Circuit Breakers
- Disconnect Switches & Isolators
- Isolator Size Calculation
- Switch Gear Application & types
- LT & HT Panels
- ATS & COS Panels
- MCB, SMDB, FDB
- MCC (Motor Control Center) Panel
- Bus Bar & Its Function
- Bus Bar Sizing Calculation
- Bus Bar Risers
- Bus Bar Wiring connection & Its Installation



SELECTION OF TRANSFORMER & ELECTRICAL EQUIPMENT

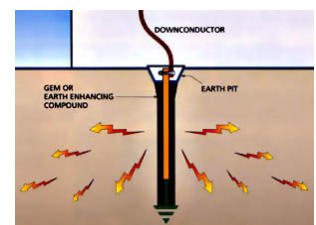
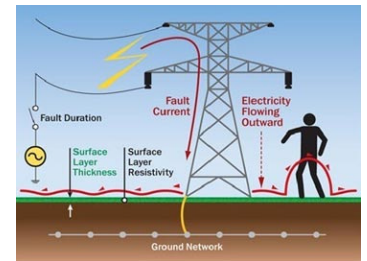
- Transformer & Its Application
- Types of Transformers
- Transformer sizing Calculation Based on Project Load
- Installation Standards of Transformer
- Transformer placement in the Project
- Generator & Its Application

- Types of Generators
- Generator sizing Calculation
- Wiring Connection of Generator
- UPS & Its Application
- Types of UPS
- UPS Designing for Emergency Loads
- Wiring Connections of UPS
- Battery Sizing Calculation
- Capacitor Bank Function



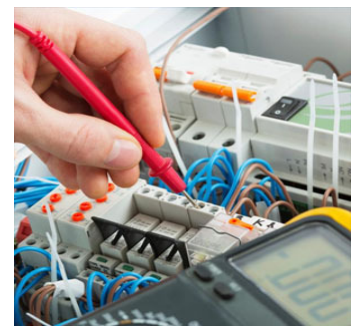
EARTHING SYSTEM

- Introduction to Earthing
- Types of Earthing
- Earth Continuity Conductor
- Main Earth Terminal
- Earthing Strip
- Earth Resistance Calculation
- Types of Earthing Rod & Its Sizes
- Earth Pit Placement in the project
- Lighting Arrestors



LOW CURRENT DESIGN AND INSTALLATION

- CCTV
- Fire Alarm System
- Access control System
- Power Supply Design For Low Current System



ELECTRICAL SOFTWARES

- DIALUX
- MS-Excel
- Load Distribution Schedule
- Master Converter
- COMPUTER AIDED SOFT TOOLS For Lighting Calculation, Voltage Drop Calculation, High Voltage Briefing Etc....

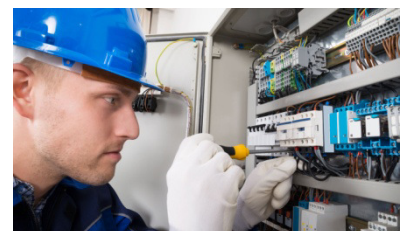
ELECTRICAL DRAFTING SYSTEM (CAD)

- Introduction to AUTO CAD
- Basic Drawing Commands
- Modify Commands
- Layers & Block
- Symbols & Legends
- Drafting Standards of Electrical Drawings
- Preparation of lighting Layouts (Design Shop & As Built Drawings)
- Preparation of Power Layouts (Design Shop & As Built Drawings)
- Preparation of Electrical General Installation Details & Sections
- Preparation of LV or Electrical Room Details
- Preparation of Single Line Schematic and Isometric Drawings



PROJECT MANAGEMENT

- Electrical Work Flow Procedure
- Site Installation Departments
- Site Installation Procedure
- 3M's – Material, Machinery, Manpower
- Installation Task

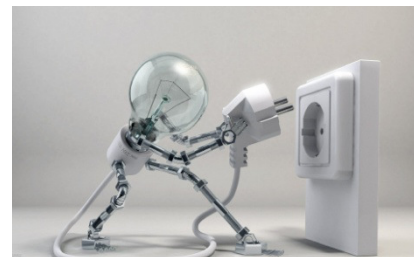
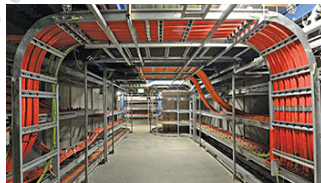
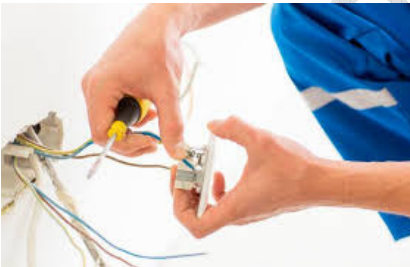
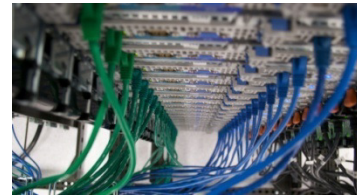
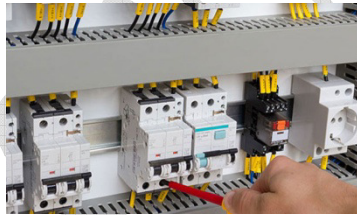


- Installation of Electrical Equipment's – Transformer, Generator, UPS, etc...

QUANTITY ESTIMATION

- Bill of Quantity – BOQ
- Material Submittals – MS
- Equipment Schedules
- Technical Schedules
- Estimation & Costing

TWO LIVE PROJECTS

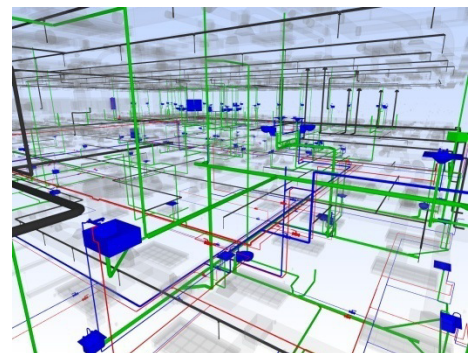
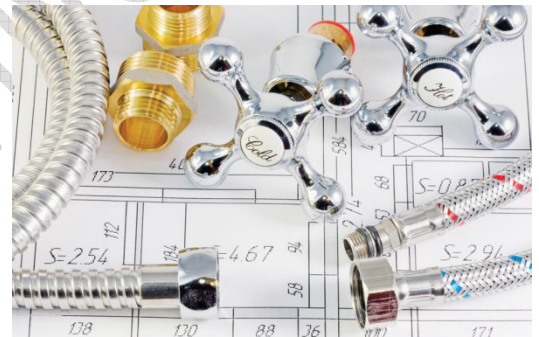


PLUMBING DESIGNING & DRAFTING

- Methods of Plumbing System
- Water supply
- Drainage system
- Storm water System
- Irrigation
- Plumbing –codes & standards
- Plumbing concept

Water Supply System

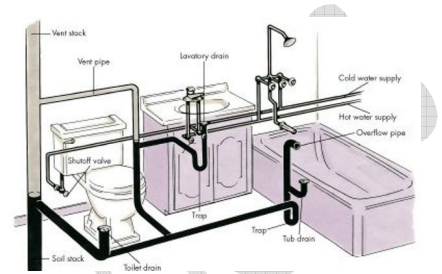
- Types of Water Supply System(HOT & COLD)
- Types of fixtures
- Types of fittings
- Types of valves
- Fixture water Requirement- GPM
- Hot
- Cold Water Pipe Size
- Water Distribution-Pipe Routing
- Pipe Joining Methods
- Water Supply –commercial & industrial
- Water supply Fixtures
- Supply Piping System
- Pipe materials
- Water Supply Controlling Equipment



- Cold Water Pipes Rooting
- Hot Water Pipe Rooting

Designing of Drainage System

- Types of Drainage (one & two Pipe) System
- Grey (Foul & Waste) Water
- Types of Fixtures
- Low Level & High Level Drainage System
- Drainage Pipe Sizing



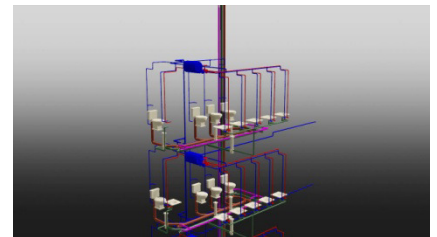
Introduction to Drainage System

- Fundamental of Drainage System
- Traps Used for drainage system
- Stacks in Drainage System – Waste, soil & vent stack
- Building Cleanout
- Drainage Pipe System
- Pipe Material for drainage



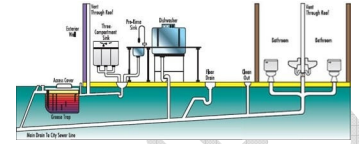
Drainage System Designing

- Drainage System Pipe routine
- Waste water drainage Piping routine
- Vent Pipe designing
- Draining System Pipe Joining methods
- Selections of Drainage Pipe fitting
- Main Hole sizing



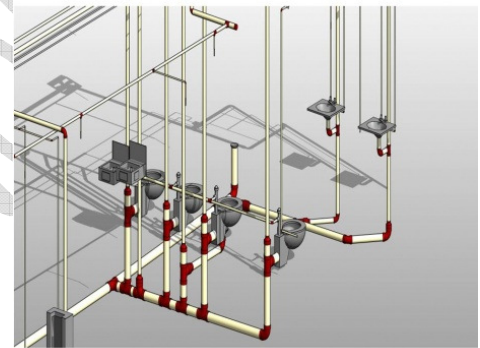
Waste Water Collection Tanks

- Soak Away Pits
- Septic tanks



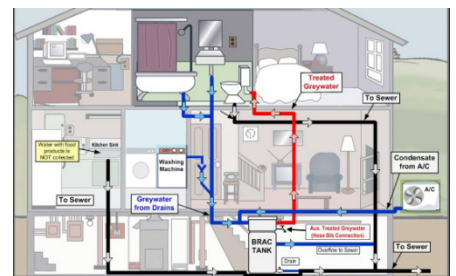
PLUMBING SPECIALITIES

- Pool Water Supply
- Waste Water Drainage
- Recirculation System
- Storm Drainage System
- Rain Water Harvesting
- Irrigations System
- Water Features
- Potable Water System
- Modern Fixtures in Plumbing System



PLUMBING DRAFTING SYSTEM

- Symbols & legends
- Drafting Standards of Plumbing
- Preparations of water supply Layouts
- Preparations of drainage layouts
- WS-Singles Line Drawing
- WS-Double Drawing
- Sections & Schematic of Water Supply System
- Pump Room Details Drawings
- Drainage Singles Line Drawing
- Drainage double Line Drawing
- Section & Schematic of Drainage System
- Invert Level of drainage Pipe



- Pipe Slop
- Scale Setting & Plotting
- Co-Ordination Drawing
- As-Built Drawing
- Model Management
- Equipment Schedules



PLUMBING SYSTEM EQUIPMENTS

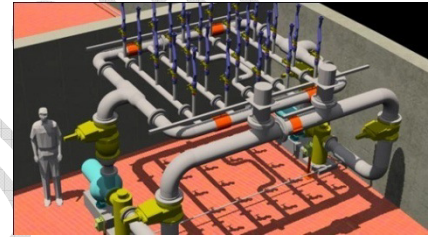
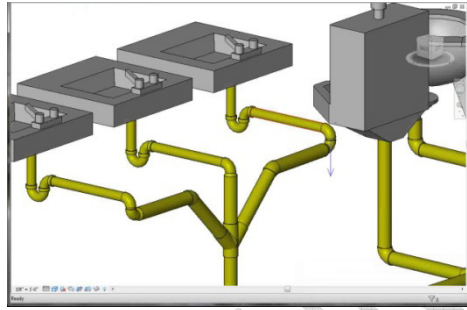
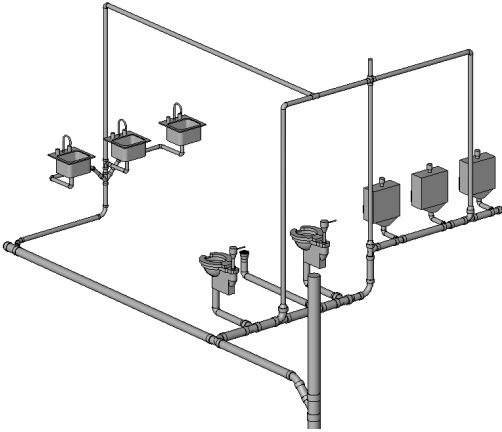
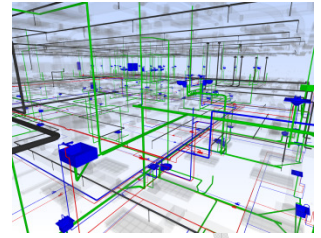
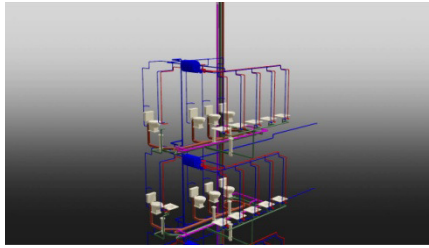
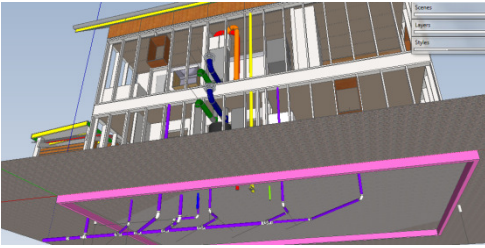
- Booster pumps
- Submersible Pumps
- Boiler and Gresser
- Solar Heaters
- Water Storage Tanks
- Grease interceptor
- Wash Basin
- Water Closet
- Bidet
- Bath Tub
- Shower
- Urinals
- Kitchen Sink
- Floor Drain



QUALITY SYSTEM

- Bill of Quantity
- Material Submittals
- Equipment Schedules

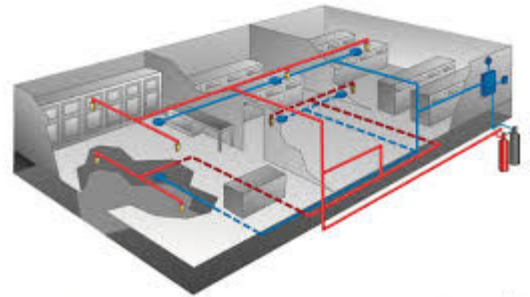
TWO LIVE PROJECTS



FUTURE GEN TECHNOLOGIES

FIRE FIGHTING DESIGNING & DRAFTING

- Fire Fighting Introduction
- Fire Fighting – Codes & Standards
- Principles of Fire Fighting Systems
- Definition & Symbols
- Application of Fire Fighting Systems
- Chemistry of Fire
- The Fire Triangle
- Extinguishment Considering the Fire Tetrahedron



Classification of Fires

- Class "A" Fire – NFPA & ISO
- Extinguishment of Class "A" Fires
- Class "B" Fires
- Extinguishment of Class "B" Fires
- Class "C" Fires
- Extinguishment of Class "C" Fires
- Class "D" Fires
- Extinguishment of Class "D" Fires
- Class "K" Fires
- Extinguishment of Class "K" Fires
- Classification of Hazards



FIRE EXTINGUISHERS

- Fixed Gas Fire-extinguishing Systems
- CO2 Fire Extinguishing Systems
- FM_200 Fire-extinguishing Systems
- Fixed Water Fire-extinguishing Systems
- Water Spray Systems
- Water Sprinkler System
- Water Mist Systems
- Fire Hydrant Systems
- Foam Fire Extinguishing Systems
- Portable / Semi-portable Fire Extinguishers



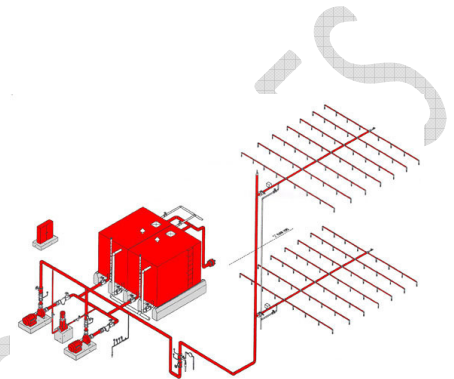
FIRE PIPE AND SPRINKLER SYSTEMS

- Fire Sprinkler Systems
- Wet Pipe Systems
- Dry Pipe Systems
- Pre-action System
- Deluge Systems
- Classification of Sprinkler
- Fire Sprinklers & types
- Application of Sprinklers types
- Ordinary Hazards Occupancies
- Extra Hazards Occupancies



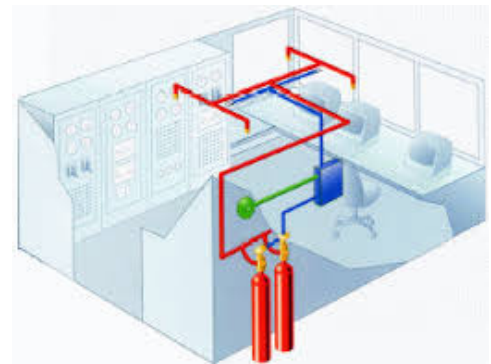
Designing of Sprinkler Systems

- Wet pipe Sprinkler System
- Component of Sprinkler System
- Sprinkler System Designing
- Selection of Sprinkler as per Project
- Sprinkler Layout
- Fire Pipe Routing
- Pipe Sizing as per NFPA
- Fire Hydrant System Design
- Selection of Pump for Fire Hydrant System
- Selection of Pump- Electrical, Diesel & Jockey Pump
- Selection of Valves & Fitting
- Pipe Joining Methods



FIXED GAS FIRE EXTINGUISHER SYSTEM

- Introduction to Gas Fire Extinguishing Systems
- Fire Suppression System
- Principles of Fire Suppression Systems
- Clean agent Function
- Types of Gas Fire Extinguishing Systems
- CO2 Fixed Gas Fire Extinguishing Systems
- FM-200 Fixed Gas Fire Extinguishing Systems
- NOVEC 1230 Fixed Gas Fire Extinguishing Systems
- Application Areas of Gas Extinguishing System
- FM-200 Chemical Properties



Designing of Fixed Gas Fire Extinguishing System

- Selection of Gas Medium as per Project
- Fixed Gas System Designing
- CO2 Gas Fire Extinguishing System
- FM-200 Gas Fire Extinguishing System
- NOVEC-1230 Gas Fire Extinguishing System
- Inert Gas Fire Extinguishing System
- Gas Pipe Routing
- Tank Sizing
- Intake Manifold & Pipe Sizing
- Selection of Nozzle - 180⁰ & 360⁰ Nozzle
- FM-200 Cylinder Value Assembly



DRAFTING FIREFIGHTING SYSTEM IN AUTOCAD

- Sprinkler System Layout
- Piping Layout & Design
- Single line Drawing
- Double line Drawing
- Section & Schematic of Water Sprinkler System
- Storage tank Detail Drawing
- Pump Room Details Drawing
- Fixed gas Firefighting System Design
- Section & Schematic of Gas System
- Scale Setting & Plotting



- Co-ordination Drawing
- As-Built Drawing
- Model Management
- Layout Management
- Equipment Schedules
- International Drawing

SITE INSTALLATION

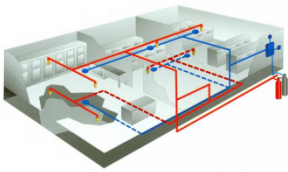
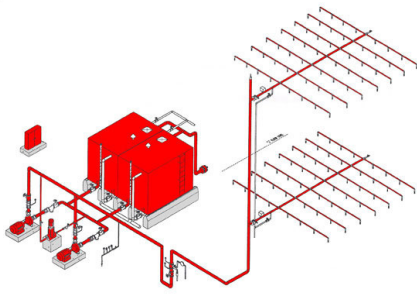
- Fire Fighting Work Flow Procedure
- Site Installation Department
- Site Installation Procedure
- Material, Machinery, Manpower
- Installation Task
- Installation of Sprinkler & Piping
- Installation of Fixed Gas Fire Fighting System
- Installation of Fire Fighting Equipment
- Fire Fighting Valves & Fitting Installation



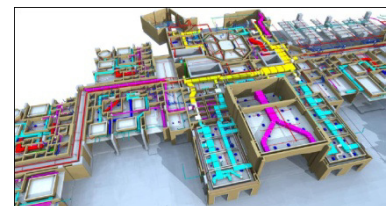
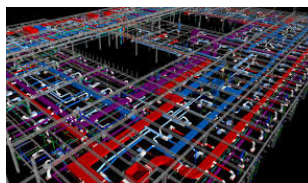
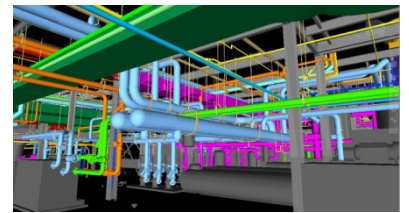
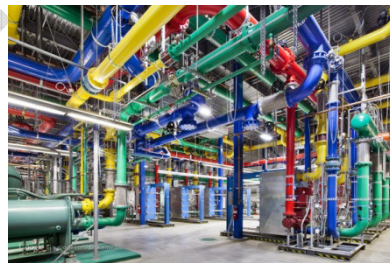
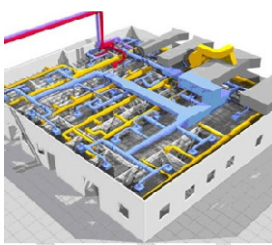
QUANTITY ESTIMATION

- Bill of Quantity – BOQ
- Material Submittals – MS
- Equipment Schedules
- Technical Schedules
- Estimation & Costing
- Tracking List

TWO LIVE PROJECTS



MEP IMAGES



- **Future gen training & course syllabus can make the student to challenge on the success of international interviews.**

ABOUT US

- **Future Gen Technologies Training center is an engineering training institute providing trainings on job oriented professional courses for . Our training programs cover Civil Engineering, Mechanical Engineering, Electrical Engineering & IT Engineering.**
- **The Aim of the Future Gen is to develop quality engineers by providing the real time practical knowledge.**
- **Future Gen Training center has a team of highly experienced & qualified teaching staff. Many of them are experienced with real time projects. Our courses training mainly focus on instructors past experience and practical examples. This will help the trainees to have a better understanding of the concept.**
- **Future gen technologies also comprise a placement cell and enjoy placement tie ups with many companies. Student gets the placement benefits after the completion of the course. Many of our students have been successfully placed with some reputed companies in India & other countries.**

WHY FUTURE GEN ?

- **Future Gen provides the real time training on 100% job oriented courses on international projects & make every student to work on individual project in the training period.**
- **Knowledge of Students who trained under Future Gen will be as good as experienced professionals.**
- **Future gen provides digital training by In-depth demonstration on every aspect of course topics.**

- **Future Gen provides the complete support after completion of your course**
- **We provide excellent quality of infrastructure to our students**
- **Future gen provides the special training classes on personality development and interview skills after completion of course with 100% placement assistance.**
- **Highly qualified faculty with industry experience**
- **Training will be provided based on 20% theory and 80% practical concept**
- **Get fee Refund if not satisfied**

WWW.FUTUREGENTECHNOLOGIES.COM

Thank & Regards,

FUTURE GEN TECHNOLOGIES,

AMEERPET,KPHB HYDERABAD