AIR CONDITIONING & MECHANICAL VENTILATION (ACMV)

CLEANROOM

PROCESS UTILITY

CRITICAL
GROUP OF
COMPANIES

About 'CRITICAL'

Was founded in 2011, the activities are in design, supply, installation, repair, service and maintenance of **Mechanical, Electrical and Process (MEP)** utilities works

Today, the group is an unique Engineering Services firm that offers unsurpassed critical facility support, with extensive experience in consulting, project and construction management and services for critical facilities environments. This allows us to extend our expertise and services throughout the region, providing MEP solutions for critical facilities covering the following areas;

- Manufacturing Plants & Factories
- **CLEANROOMS**
- DATA CENTER, CALL CENTER, TOC, NOC, NMC
- Military
- Telecommunication Industries
- Hospitals & Medical Centers
- Laboratories
- Government Buildings & Educational Institutions
- Commercial Building & Complex

Our experience allows us to understand clients' needs to optimize and deliver services to meet our clients' specific needs, standards and requirements, by providing the highest level of professionalism and total customer satisfaction.

THE PROFESSIONAL

Each and every one which involve in the design build construction projects are internationally certified and qualified to carry out their task, to fulfil to the customer expectation, namely;

LEMBAGA JURUTERA MALAYSIA

Chartered Engineer

ASEAN ENGINEERING REGISTER

ASHRAE

ASHRAE Malaysia Chapter

THE PLANT ROOM

Many large buildings, campuses, and other facilities have plants that make chilled water and distribute it to air handling units and other cooling equipment. The design operation and maintenance of these chilled water plants has a very large impact on building energy use and energy operating cost.

Not only do chilled water plants use very significant amounts of electricity (as well as gas in some cases), they also significantly contribute to the peak load of buildings. During this peak event, chilled water plants are often running at maximum capacity. When temperatures are moderate, chilled water plants are shut down or operated in stand-by mode. This variation in the rate of energy use is a major contributor to the peaks and valleys in energy demand, which is one of the problems that must be addressed by utility grid managers.

Most buildings and facilities that have chilled water plants have special utility rates where the cost of electricity depends on when it is used and the maximum rate of use. The price of electricity is several times higher during the summer on-peak than it is during the off-peak periods.

In addition to new construction, the chilled water plants of many existing buildings are being replaced or overhauled. Older chilled water plants have equipment that uses ozone-damaging refrigerants. International treaties, in particular the Montreal Protocol, call for ozone damaging chemicals (in particular CFCs) to be phased out of production. As the availability of CFCs is reduced, the price will skyrocket, creating pressure for chilled water plants to be overhauled or replaced.

PROCESS UTILITY SYSTEMS

Efficient and reliable utility systems are a critical requirement for the successful operation of your process facility. Utilizing the appropriate technology to meet the necessary regulatory requirements, CMEE develops solutions that are "right sized" to your application.

CMEE are experts in the design, testing and troubleshooting of utility systems for GXP facilities, including:

- Compressed Dry Air (CDA)
- Oil Free Air (OFA)
- Nitrogen Gas (N2)
- Liquid Petroleum Gas (LPG)
- Process Chilled Water (PCW)
- Hot Water Piping
- Steam Piping
- RO/DI
- Waste Water Piping
- Helium Exhaust
- General Exhaust
- Acid Scrubber

THE CLEANROOM

A **cleanroom** is a facility ordinarily utilized as a part of specialized industrial production or scientific research, including the manufacture of pharmaceutical items and microprocessors.

Cleanrooms are designed to maintain extremely low levels of particulates, such as dust, airborne organisms, or vaporized particles.

Cleanrooms typically have an cleanliness level quantified by the number of particles per cubic meter at a predetermined molecule measure.

CLEANROOM CLASSIFICATION

US FED-STD-209E was a United States federal standard. It was officially cancelled by the General Services Administration on November 29, 2001,but is still widely used.

Class	Maximum Particles/ft3					ISO Equivalent
	=> 0.1um	=> 0.2um	=> 0.3um	=> 0.5um	=> 5um	
1	35	7.5	3	1	0.007	ISO3
10	350	75	30	10	0.07	ISO4
100	3,500	750	300	100	0.7	ISO5
1,000	35,000	7,500	3,000	1,000	7	ISO6
10,000	350,000	75,000	30,000	10,000	70	ISO7
100,000	3,500,000	750,000	300,000	100,000	830	ISO8

We Service, Maintain & Support

Data Center

- Computer Room Air Conditioning (CRAC)
- Uninterruptible Power Supply (UPS)
- Batteries
- Power Line Conditioner (PLC)
- Water Detection System (WDS)
- Aspirating Smoke Detection (ASD)
- Transient Voltage Surge Suppressor (TVSS)
- Automatic Transfer Switch (ATS)
- Environmental Monitoring System (EMS)
- Building Management System (BMS)

ACMV Plant Room

- Chiller
- Pump
- Cooling Tower
- AHU/MAU/FCU/ACSU

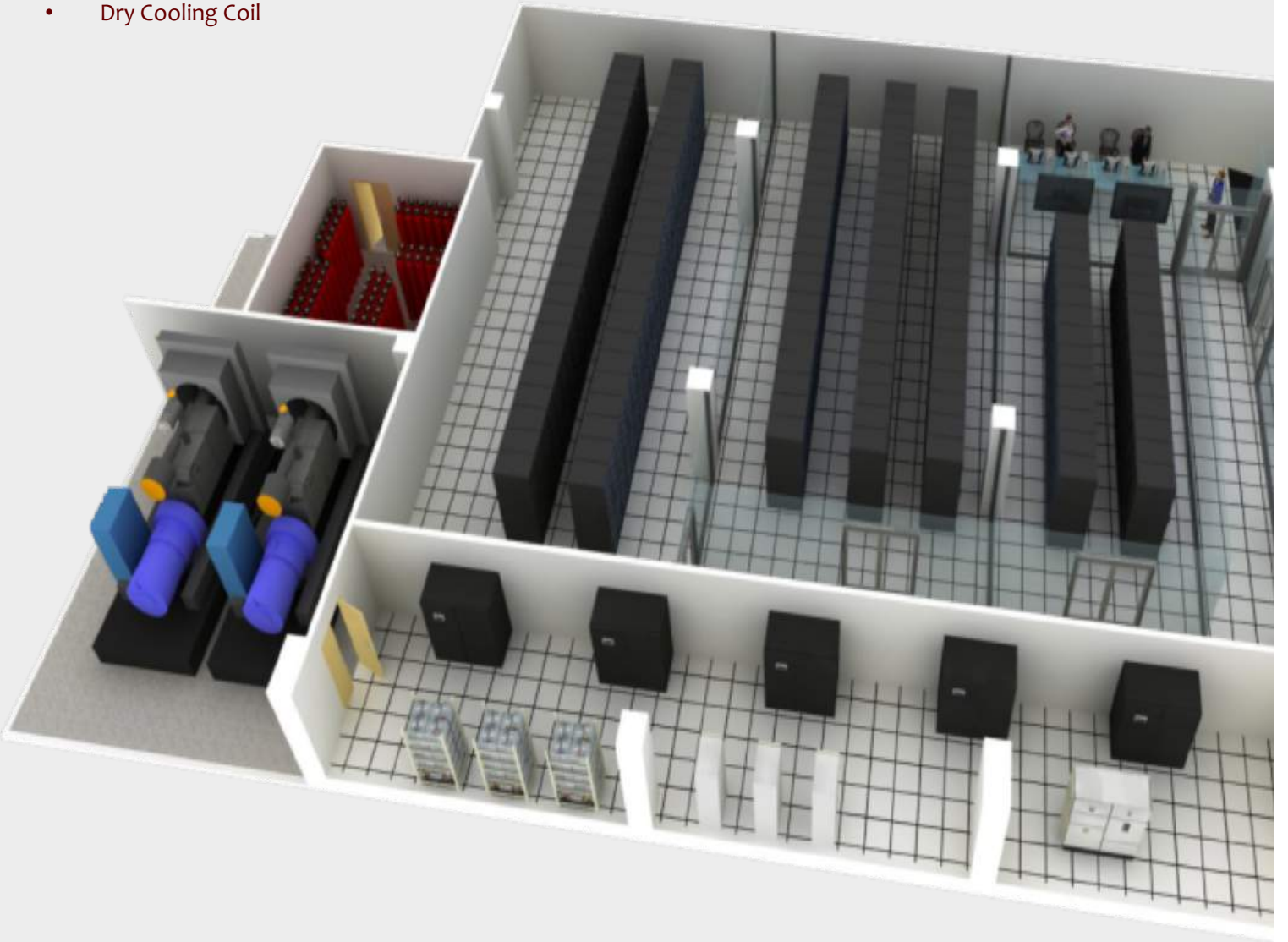
Process Utilities

- Compressed Dry Air
- Helium, N2, Hot Water, Steam

Cleanroom

- Fan Filter Unit (FFU)
- Dry Cooling Coil

24 HOURS A DAY
7 DAYS A WEEK
365 DAYS A YEAR



Regional Offices in Malaysia

CRITICAL
GROUP OF
COMPANIES

Sales & Services Offices

PG
6&8 Cangkat Bukit Belah,
11920 Bayan Lepas, Penang, Malaysia
T / +604 649 6033
F / +604 649 3033

KL
RK30A, Jalan Villa 3, Anggerik Villa,
Off Jalan Semenyih,
43500 Kajang, Selangor D.E., Malaysia
T / +603 8723 2033
F / +603 8724 2033

Test & Assembly Factory

PG
Plot 41, Jalan Perusahaan Valdor,
Kawasan Perusahaan Valdor,
14110 Simpang Ampat, Penang, Malaysia

Website / www.critical-eng.com
Email / admin@critical-eng.com