

## Shadi Makarechi, PE, CEM, CxA, ATD



Mr. Makarechi has over 20 years of experience spearheading a multitude of high-visibility projects for data center and critical facility clients. He has distinguished himself as a pioneer in the field of mechanical engineering for mission critical

and commercial design and is an internationally renowned

industry expert. Mr. Makarechi is one of the original users of CFD in mechanical design of computer rooms and worked with Dr. Suhas in developing the Tile Flow software. Mr.

Makarechi was the executive project manager of several data center roll-outs such as PSINet and Teleglobe and was responsible for all testing and commissioning. He created specific prefab designs to speed up the construction of data centers. These designs distinguished EDG2 as the leader in design of mechanical engineering for data center projects requiring fast track implementation.

- *Over 20 years of experience in the mission critical industry*
- *Registered Engineer in 31 states*
- *Has directed the design of over 20 Million SF of raised floor*

## EDUCATION

BS Mechanical Engineering, University of Missouri 1979

MS Mechanical Engineering, Catholic University of America 1985

## PROFESSIONAL REGISTRATIONS

Professional Engineer in AL, AZ, AK, CA, DE, DC, FL, GA, IL, IN, IA, MD, MA, MI, MN, MS, MO, NE, NH, NM, NY, NC, OH, OR, PA, SD, TN, TX, VA, WA

AEE Certified Energy Management (CEM), Legend in Energy, FMI, EEMI, CI, ESMs

ASHRAE Standing Member

WBC Board of Governor

ANSI Accredited (ISO/IEC 17024) ACG Certified Commissioning Authority, AABC Commissioning Group

Uptime Institute Accredited Tier Designer (ATD)

DCEP Certified, DOE

Six Sigma Quality Management Black Belt

ISO 9001-2015 Internal Surveillance Auditor

## EXPERIENCE

### AT&T Ashburn Data Center Phase 1 and 2

Designed a web hosting center that consists of a two-building campus including 165,000 sf of technical space and more than 90,000 sf of raised floor. The main power infrastructure includes a complete bifurcated 34.5KV and 13.2 KV distribution system with almost 20MW of standby power plant at 13.2 KV. Project design provides for 24xForever™ Fault, Maintenance

and Change Tolerant™ mechanical and electrical infrastructure that will support AT&T's Internet operations.

**Cyrus One: Houston, TX (1), Austin TX (2), Lewisville, TX (5), Carrollton TX (6), Allen TX (1), Cincinnati, OH (2), Sterling, VA (1), Aurora, IL (1) San Antonio TX (2).**

Provided professional engineering services for multiple Cyrus One Data Centers across the US. The projects were mostly out of the ground building's or converted warehouse space that were comprised of 6 mw of UPS capacity each. Each site is comprised at a minimum of 4 UPS Modules, 4 air cooled chillers, 12 CRAH Units, and 12 STS PDUs.

**Project Roosevelt, Confidential**

Provided MEP engineering services for the 53,000 SF of raised floor in 4 Computer Room Pods (10,000 SF each), 1 Pod at 6 kW/Rack, 3 Pods at 6 kW per rack expandable to 12 kW per Rack. This project is a Tier IV Data Standard, concurrently maintainable and LEED Gold.

**Lockheed Martin ARL Aberdeen, Md.**

EDG2 was the Prime designer for many High-Performance Computing (HPC) center projects with LM including Architectural, Civil, Structural, MEP engineering and commissioning services for various projects in Buildings 394, 321, 328, and 120 and the concept design for a 50,000 SF HPC including a heat recovery study to feed an adjacent facility directly for ARL in Aberdeen Md.

**Copt DC6, Manassas, VA**

EDG2 provided design and commissioning services for this 200,000 gross square foot, 100,000 raised square foot data center in Manassas, Virginia. The building is a two-story structure, strategically designed to allow tenants to add additional power and cooling capacity over the life of their lease without disruption to the raised floor environment. The facility is a Tier III Fault Tolerant™ and Change Tolerant™ data center with an innovative electrical and mechanical infrastructure design with 300 W/sf.

**Market Square North Condominiums, Washington, DC**

Provided base building design of this multi-use facility consisting of an office tower and a residential tower sitting on a four level garage. This 14-story project contains 493,000 SF of office space, 200 apartments, and 492 parking spaces, covering 121,000 SF.

**Parkview/Shelter Properties, Many locations**

Elderly apartment housing with community room, meeting room, doctor's office, and laundry facility.

### **SRA International NOC, Annandale, VA**

Served as the MEP Designer for this innovative design for SRA. This 5,000 gross square foot Network Operations Center is the hub for SRA operations. Sophisticated audio-visual components with large screen arrays including graphic displays integrated with data and voice processing. Incorporating extensive switching capabilities also enables satellite communications for video, data and voice transmission to support audio-visual displays and data operations.

### **SRA International SOC, Fairfax, VA**

Served as the MEP Designer for this innovative design for SRA. This 2,500 gross square foot Secure Operations Center is the hub for SRA operations. Audio visual components including graphic displays integrated with data and voice processing

### **US Pentagon Reconstruction**

Prime MEP consultant for the Pentagon re-build project after September 11th, 2001. The project involved over 1.6 million sf of re-build space which included 400,000 sf of new building. Working with the Pentagon, AMEC, Allyn Kilshimer of KCE and other team members the building was completed and ready of occupancy by September 11, 2002.

### **Internal Revenue Service (IRS) Headquarters, New Carrollton, MD**

MEP design for the three building campus headquarters for the Internal Revenue Service encompasses 1.2 Million sf and was constructed in an aggressive design-build format. EDG2 was responsible for mechanical and electrical systems design of interior office and support space throughout the three-building complex and a 1,680 car, six level parking structure.

### **US Department of the Treasury, Washington, DC**

MEP Design for the modernization and re-engineering of full mechanical and electrical systems in the nation's oldest federal office building. Converting this historic structure into a state-of-the-art office building required a comprehensive upgrade of the electrical system, including the introduction of new diesel generators, integration of two new uninterruptible power supply systems and related support equipment. Improvement of the HVAC system included the replacement of existing chillers, the installation of cooling towers and new air-handling units. An innovative fire suppression and alarm system was also designed and implemented. To minimize disruption to existing workplaces, all designs were configured for phased construction.

### **2200 M Street - Ritz Carlton Hotel, Washington, DC**

The Ritz Carlton Hotel is a five-star, 300-room hotel located in Washington, DC's west end and is the anchor for the \$225 million 2200 M Street, NW mixed-use development. The hotel features a ballroom and meeting rooms, full-service restaurants and commercial kitchen, swimming pool, sauna and guest amenities befitting a five-star luxury hotel. The entire

development beyond the hotel includes 200 luxury condominiums, 80,000 sf high-end health club, 40,000 sf of retail stores and food outlets and a 750-space underground parking structure.

### **FEMA Headquarters, Washington, DC**

EDG2 provided the mechanical, electrical, plumbing and fire protection design services for this project following GSA criteria. This project consists of 50,000 square feet of class A office space at 1201 Maryland Ave. SW Washington, DC. Special areas requiring above standard MEP design services included a computer room, lunchroom, and conference center. The Computer room design included grounding, UPS, and 24-hour HVAC systems.

### **Montgomery County Public Safety Headquarters, Gaithersburg, MD**

EDG provided the mechanical, electrical, plumbing and fire protection services for this Police and Fire Department Headquarters. This project consists of 405,000 square feet of office building renovation that includes upgrades to the existing mechanical, plumbing and electrical infrastructure and basic tenant fit-out design at 100 Edison Dr. Gaithersburg, MD. Special areas requiring above standard MEP design services included computer rooms, cafeteria, training rooms, conference rooms and medical/forensic lab.

### **Prince George's County Courthouse – Duvall Wing Renovations Upper Marlboro, MD**

EDG provided the mechanical, electrical, plumbing and fire protection services for this project. This project consists of full demolition and reconstruction design in the 3 story portion of the building and selective demolition and partial design and design adaptation in the 5-story portion of the building. The project scope required 4 design packages including demolition design documents, large equipment pre-purchase documents, base building design and interiors design. Special areas requiring above standard MEP design services included IT cable plant design.

### **Washington Metropolitan Area Transit Authority (WMATA), FQ9098 Bus 1 Project: Rehabilitation of Landover Bus Division, Northern Bus Division, Metro Supply Facility, And Landover Open Material Storage Facility.**

Served as Lead Mechanical/Electrical/Plumbing/Fire Protection Engineering for a renovation project involving multiple tasks. This \$70 million design-build project involves the rehabilitation of Landover Bus Division, Western Bus Division, Northern Bus Division, Metro Supply Facility and Landover Open Material Storage Facility in accordance with the final WMATA approved design. The design-build team was responsible for all design, permits and inspections, including compliance with federal and jurisdictional requirements and codes pertaining to design and construction of the facilities.

### **Port Imperial Apartments, West NY, NJ**

Mechanical, electrical, plumbing, fire protection and sanitary engineering design systems for a 13-story 306-unit apartment complex consisting of one high rise and two mid-rise buildings, five levels of structured parking below the high-rise and two levels below each mid-rise, a clubhouse and gatehouse.

### **NAVFAC Washington Navy Yard W200 Building Renovation, Washington, DC**

Served as Project Mechanical Engineer for the complete replacement of the building's HVAC systems. The design-build project involved demolition and replacement of all HVAC components that were in strict compliance with NAVFAC design guidelines and requirements.

### **WMATA, Prince George's Plaza Metro Station and Parking Structure, Prince George's County, MD**

Served as the Project Manager for this \$75 million project consisting of the engineering of a comprehensive grounding and protection system that included a lightning protection system, a Signal Reference Grid (SRG), a Cathodic protection system (sacrificial anode method) and the design of system bonding to minimize stray current. The electrical, mechanical, plumbing and fire protection systems were designed for the complete rapid transit station featuring incorporation of all electrical switchgear in one room rather than the Authority standard two rooms.