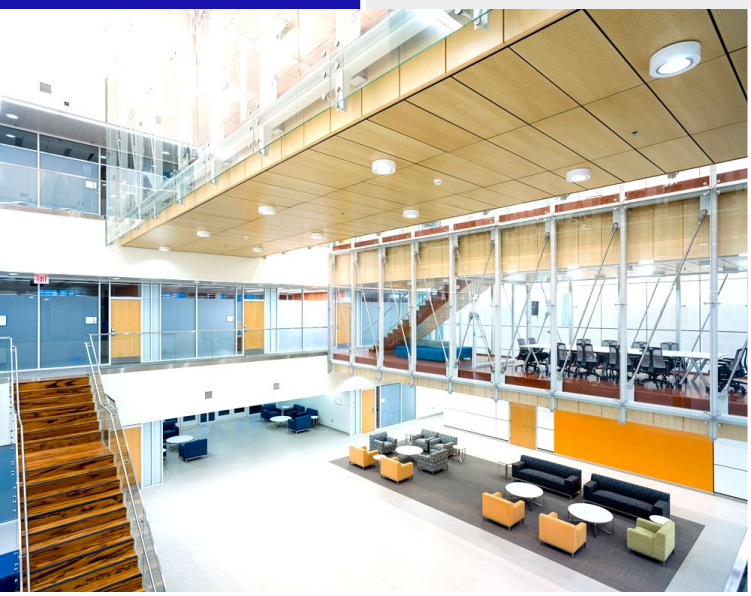
ATOM ENGINEERING

Electrical Engineering Firm Specializing in Commercial and Industrial Buildings



Atom Engineering, PLLC
www.atomengineers.com
9201 University City Blvd., Portal 217
Charlotte, NC 28233
(704) 449-8823

ATOM ENGINEERING

Atom Engineering was founded in 2012 in Charlotte, North Carolina with a passion for great design and making the world a better place.

Our experience is predominantly in commercial, industrial, and critical facilities.

More than just Engineers...

OUR MISSION

Atom Engineering is committed to employing the science of engineering not just to designs that make daily life more efficient and beautiful, but also to develop new ideas.

OUR FOUNDER

RYAN KENNEDY

Atom Engineer's big differential is its personnel. The company's founder and principal engineer, Ryan Justin Kennedy, PE has been in the electrical design, project leadership, and engineering industries for over 24 years. As a project manager for a large electrical contracting and engineering firm, Ryan negotiated and built some of the most high profile projects in the southeast for several large corporate clients. Having managed and built over $90-million in construction projects and built over 4-million square-feet of building space, his connections within the industry reach across the world to many building owners and property developers with whom he has successfully built powerful relationships. He is an NCEES record holder, a Professional Engineer in several US states and is an active member in IEEE, CLT Joules, and board member of UNCC Electrical and Computer Engineering. Ryan, is also founder and CEO of Atom Power, Inc.

Systems should be engineered to truly add value...
...not just total cost of ownership value,
but functional, emotional and aesthetic value as well.

ATOM ENGINEERING

Client Sample

Atom has completed projects with many companies from the private and public sector. Below is a sample list of repeat customers:

ABM Building Value

American Airlines

Audi

Balfour Beatty

Childress Klein

Cushman & Wakefield

Duke Energy

Fox Sports

GlaxoSmithKline

Jones Lang LaSalle

Preferred Electric Co. Inc

Turner

UNC Charlotte

Wake Tech Community College

Wells Fargo

Our Expertise

A team passionate for excellence

Electrical Engineering Design Services

Short Circuit, Coordination, & Arc Flash Studies

3D Design, Coordination, and BIM

Electrical Engineering Design Services

OVERVIEW

Atom Engineering is a full service electrical engineering and consulting firm. We pride ourselves in tailoring each and every design to meet a clients specific needs of quality, reliability, and cost. We have experience in all areas from commercial office to industrial design and critical facilities.

POWER DESIGN

The electrical infrastructure is where it all starts. We design power systems from the utility all the way down to the last receptacle or light fixture. We've designed systems as small as 100-amp and as large as 4,000-amp across low and medium voltages. Our experience has been in large commercial and industrial systems, high-rise building design, data centers, critical facilities, paralleled emergency and standby generator systems, busway-fed infrastructure and substations. Our goal is to design great infrastructure solutions that are simple in nature and meet all of the customers current and future needs. When designing infrastructure we feel it is important to understand a client's need for future expandability. As a consultant we take it as our job to consider all things electrical for our clients.

LIGHTING DESIGN

Lighting design is a passion of ours. We don't just draw circuits for light fixtures: We extensively model all of our lighting designs to eliminate shadows, provide the best color, provide the highest efficiencies and to add the most in aesthetic and emotional value within a space. We work with the best national and local lighting designers to provide photometric studies, LED retrofit, and the most value in LED technology to our customers.

With any great lighting design, an equally great lighting control system should be integrated. All of our lighting control designs are tailored to be as simple as possible and allow for the best value and user experience. With the ever expanding landscape of lighting controls on the market from hardwired to wireless systems we take it upon ourselves to be educated in all of the newest options available and provide a system that meets each client's specific needs. From code compliant occupancy sensing to advanced addressable fixtures for completely reconfigurable spaces, we can provide it all.

FORENSICS

Forensics is about connecting the dots. The most important thing to realize in performing a forensics study is that the dots are almost never apparent and are most certainly never connected in initial appearance. We have a passion for performing forensic investigation studies and pinpointing the root causes. Our experience has been within commercial facilities with projects involving equipment failure analysis, arc flash incident analysis, construction dispute investigations, and expert witness services.

POWER MONITORING SYSTEMS

A well-designed electrical power metering system (EPMS) is an empowering tool for any facility. The visibility of consumption rates, power quality, and power flow allows facility managers to make intelligent operations decisions, to see where problems may be occurring, and provides opportunities for pro-active energy reduction measures. We design and coordinate the implementation of EPMS's within facilities, however, we take it above and beyond just collecting data.

We provide customized reporting and intelligent decision-making, tailored to the facilities needs. We develop our systems to allow intelligent decisions to be made quickly, efficiently, and with certainty. Atom also specializes in Harmonics and mitigation of their effects. This is an important factor in the design and study of any system for longevity of equipment.

SMART BUILDING SYSTEMS

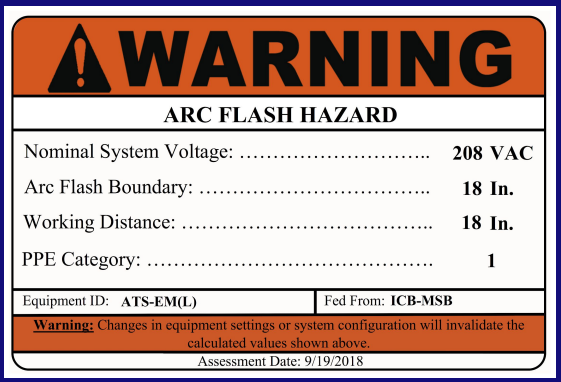
From integrating with existing building automation systems, to the cutting edge of smart building technology, we are prepared to design systems that work for our clients. Building automation and information systems are a rapidly evolving market. We have passion in designing systems that meet our clients needs and add value in the long term; saving them money over the service life of a building. Where a new system is provided, we work closely with manufacturers to ensure that a client's management is educated in the operation of that new system. One very new area of BMS is smart buildings. These systems are integrating more and more information gathering systems to provide better picture of occupancy, space utilization, and help trim operating costs.

SHORT CIRCUIT, COORDINATION & ARC FLASH STUDIES

Atom Engineering provides a complete suite of arc flash, breaker coordination, and power quality metering services to meet every need.

Atom Engineers Collecting Data

With Atom, you can rest assured the person performing your arc flash study and coordination is a licensed Electrical Engineer.



Representative Arc Flash Label

WHAT IS AN ARC FLASH?

An arc flash occurs when electrical current passes through the air. This causes the air to heat rapidly and turn into plasma which expands extremely fast. This manifests as a violent explosion of heat, air, and molten metal.

Arc flash events can be initiated through accidental contact, equipment failure, or equipment degradation over time. Many arc flash events begin as a single phase to ground electrical short and rapidly escalate into a three-phase short triggering a far more severe arc flash scenario.

The arc flash produces extremely intense heat, causing a violent explosion and an intense blast of air pressure. These conditions pose a serious risk to the workers and facility exposed to this phenomenon.

Even if you are in a facility that does not perform any live work on electrical equipment, personnel must verify your equipment is shut down prior to beginning work. Knowing the level of danger at that equipment allows personel to be properly protected and take the appropriate safety measures to prevent injury or death.

WHAT CAN BE DONE?

The best way to protect yourself and your employees and to achieve the intent of OSHA® compliance is to perform a comprehensive and detailed ***Arc Flash Study*** of your facility.

We work hands-on with you when it comes to performing any electrical study. We visually verify everything we are studying, take photos, record any discrepancies, and develop a comprehensive report of the facility. Atom utilizes the latest versions of both SKM & ETAP softwares. Our engineers perform every aspect of the project including data collection, modeling, report development, application of compliant labels and offer recommendations when required. Our goal is to help you become the experts of your electrical distribution system.

THE ANALYSIS REPORT

Atom conducts this study by performing data collection of the electrical distribution system. This data is then entered into an analytical power system software (SKM, ETap, etc.) and tests are run on the system. Once the modeling and testing is completed, a report is developed by an engineer detailing the conditions, risks, and any potential deficiencies within the system.

SHORT CIRCUIT ANALYSIS

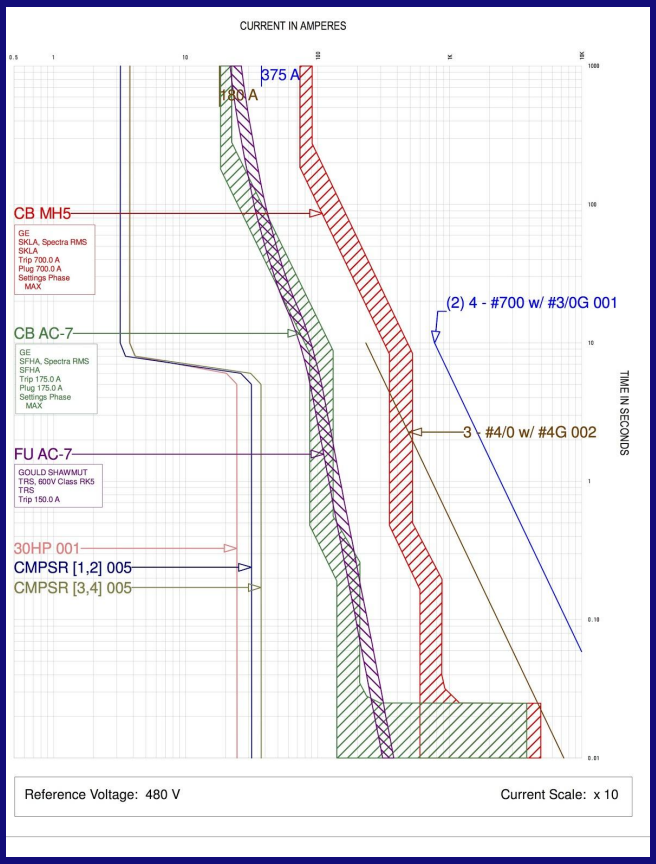
A study of the maximum energy available in a short circuit between all three phases of an electrical system at any point in the system. This is important since equipment should be rated to withstand this energy flow at any point in the system.

ARC FLASH ANALYSIS

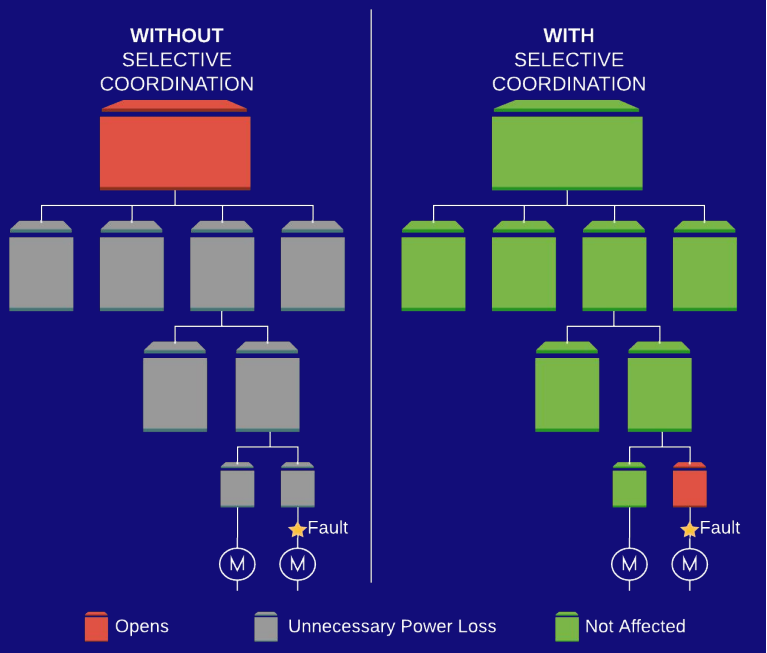
A study of the potential and severity of an arc flash event at any point within the system. This is the portion of the study most related to personnel safety and will lay out, in detail, the level of arc flash energy at all relative pieces of equipment. This study also includes the arc flash hazard labels which should be applied to each corresponding piece of equipment to inform qualified personnel of the hazard of arc flash and the appropriate Personal Protective Equipment (PPE) to be worn.

COORDINATION ANALYSIS

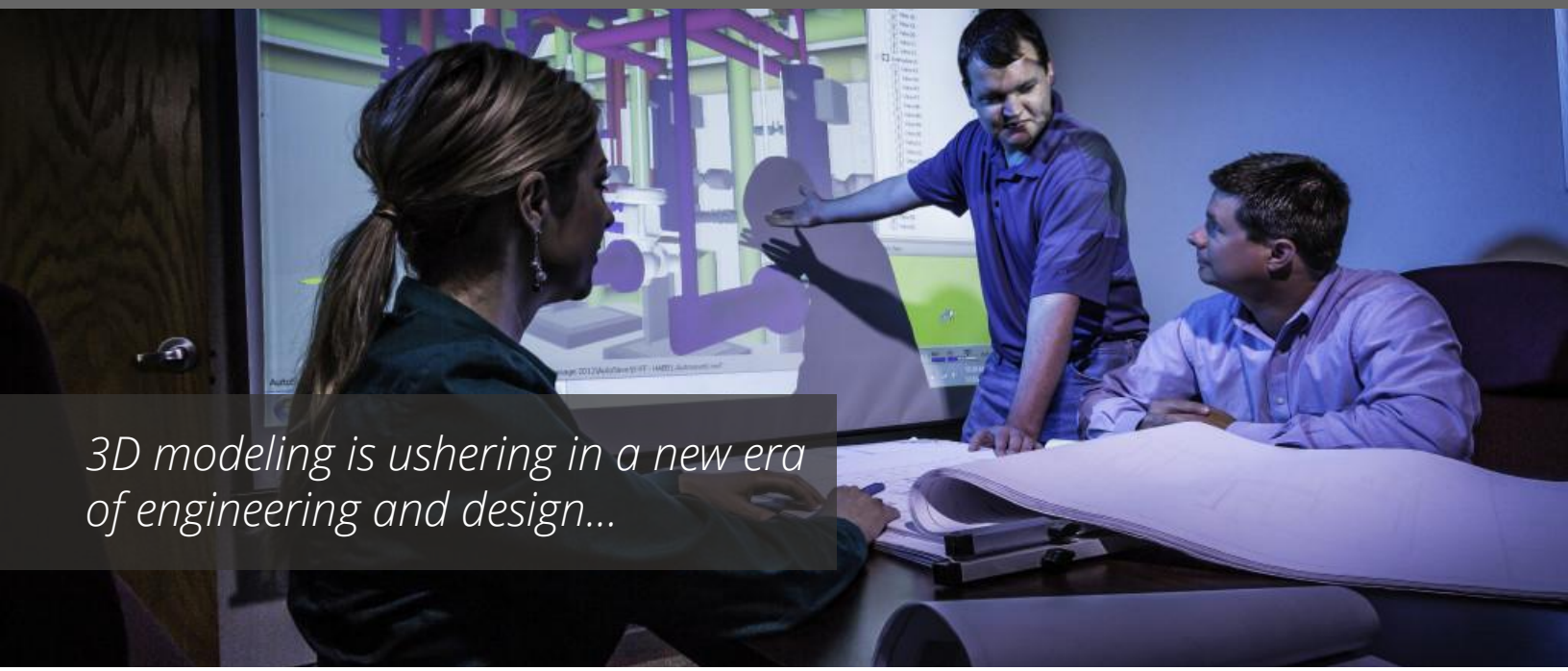
A study of the way overcurrent protective devices in the system work together in the event of a fault of any kind. This report will show any areas where a localized fault could cause upstream systems to trip and open. Atom may advise changes to the system's adjustable trip devices or device replacement to rectify any coordination issues. When a system trips out of coordination, it is often very difficult and time consuming to find the true cause of the fault leaving facilities down for many hours or days. This study can save time and money by preventing a simple maintenance issue from turning into a major data loss event or downtime while the fault is investigated and corrected.



Representative Time Current Curve (TCC)



3D Design, Coordination, and BIM



3D ELECTRICAL ENGINEERING DESIGN

Atom Engineering prides itself in moving its electrical designs into the 3D world of Autodesk Revit. By designing our systems in the Revit environment, it facilities easy coordination and integration into Architectural Revit designs. To us, this is a simple step forward to better coordination and designs. By using this software it allows us to better realize the designers final vision with less guesswork and a smoother design process.

COORDINATION DRAWINGS

3D modeling has revolutionized the manner in which construction projects are realized. Our firm can provide high quality 3D coordination between trades on any size project and make the vision become a reality. Utilizing Revit, 3D CAD, and Navisworks softwares, we can see potential problems before they occur. In order to do this we create an all-encompassing 3D model of the building structure and construction documents of all trades involved which allows the design team and customer to see their building before it is constructed.

COORDINATION MANAGEMENT

In addition to being experts in the creation of accurate models, Atom also specializes in the coordination management process. Atom can guide the collaboration effort through meetings, presentations, and conference calls to facilitate communication between each trade to address and correct any clashes within the design. This process usually involves coordination meetings with presentation of the model and conflicting elements followed up with RFI's containing change requests discussed to mitigate the conflicts.

BIM COORDINATION

Atom also specializes in Building Information Modeling or BIM for short. These highly accurate models allow for contractors to construct walls, equipment, and structures with laser precision taking all of the guesswork out of scaling the construction documents. This method of coordination is becoming increasingly more popular with large new construction projects to allow a higher degree of accuracy in construction.

American Airlines Flight Simulation Addition and Installations, Arc Flash Studies and Building Load Flow Analysis

Charlotte, NC, USA

BACKGROUND

Atom was contracted by the client to provide construction permit drawings for the modification of the existing electrical distribution system of American Airlines' flight training facility in Charlotte, NC in order to add additional flight simulators.

LOCATION

Confidential

SCOPE

Atom provided detailed and comprehensive electrical construction documents for the addition of new flight simulators. The project required knowledge of hydraulic pump systems, complex flight simulator controllers, and other electronic devices and sensors. Also, the client contracted Atom to perform a short circuit, coordination, and arc flash study of a specific facility on its campus. This project also included a load flow analysis completed concurrently with the arc flash study to analyze the feasibility of adding additional electrical loads to the facility's distribution system. These studies were conducted to ensure system coordination and maximum uptime for these critical training facilities.

CLIENT/ OWNER
American Airlines

Via
ABM Electrical Power Solutions
3600 Woodpark Blvd., Suite G
Charlotte, NC 28206
Tel: 704-788-2380
Email: Ernest.Goins@abm.com

KEY PERSONNEL
Ryan Kennedy, PE
Joseph Bumgardner, EIT
Ahmed Abdelfattah, Ph.D

CONSTRUCTION
ABM Electrical Power Solutions
3600 Woodpark Blvd., Suite G
Charlotte, NC 28206

PROJECT COST:
~$1.500,000.00

PROJECT START - END
2015 – Ongoing

Wake Tech Community College UPS Replacement

Raleigh, NC

BACKGROUND:
Wake Tech IT personnel desired to upgrade their UPS systems in three separate buildings from rack mount UPS's to a standalone UPS system with a minimum one (1) hour battery backup.

LOCATION:
Northern Wake Campus: 6600 Louisburg Rd, Raleigh, NC 27616
Public Safety Education Campus: 321 Chapanoke Rd, Raleigh, NC 27603
Perry Health Sciences Campus: 2901 Holston Ln, Raleigh, NC 27610

SCOPE:
The scope of this project was to install three (3) new UPS's (one in each building) and to migrate the existing IT loads from existing rack mount UPS's to the new electrical infrastructure fed by the new UPS system. In addition, new cooling capability, hydrogen sensors, and exhaust fans were designed and installed. Atom Engineering oversaw the entire bid process, contractor selection, and construction management efforts as engineer of record for the entire project.

Atom served as engineer and project manager, working closely and directly with the Owner's representatives. Atom performed several walkthroughs of each facility with relevant WTCC personnel. Atom delivered construction drawings and specifications. Atom represented WTCC through the bid process, answered RFI's, and issued addenda as needed. Atom oversaw a pre-bid meeting and the bid opening meeting. Atom assisted in the selection of the awarded contractor and performed construction management services on behalf of the Owner.

CLIENT/ OWNER
Wake Tech Community College

KEY PERSONNEL
Ryan Kennedy, PE
Joseph Bumgardner, EIT
Michael Maloney, PE

CONSTRUCTION
Under Construction

PROJECT COST
Under Construction

PROJECT START - END
Sept 2018 – Ongoing

RTI International Arc Flash

Raleigh , NC , USA

BACKGROUND

Atom Engineering was contracted to provide arc flash, short circuit, and coordination studies of seventeen (17) buildings on the campus of RTI International in Raleigh, NC. RTI International is a non-profit research institute providing services to government and commercial clients. Much of RTI's research is highly sensitive in nature.

LOCATION

Research Triangle Park
3040 East Cornwallis Road, P.O. Box 12194
Research Triangle Park, NC, United States 27709-2194

SCOPE

The scope of this project was to provide signed and sealed short circuit, coordination, and arc flash simulations and reports to the client for various facilities on a sprawling research campus in Raleigh. The client's operations were extremely sensitive due to the nature of their research and lab experiments. Great care and planning were needed to perform all onsite field data collection while avoiding any interruption or disturbance to the client's operations.

CLIENT/ OWNER
Research Triangle Institute (RTI)
Raleigh, NC

Via
ABM Electrical Power Solutions
5809 104 Departure Drive
Raleigh, NC 27616
Luke Farkas
Tel: (919) 877-1008
(919) 985-6536
Email: luke.farkas@abm.com

KEY PERSONNEL
Ryan Kennedy, PE
Joseph Bumgardner, EIT
Michael McCoy, PE
Ahmed Abdelfattah, Ph.D

CONSTRUCTION
ABM Electrical Power Solutions
5809 104 Departure Drive
Raleigh, NC 27616
Email: luke.farkas@abm.com

PROJECT COST:
~$150,000.00

PROJECT START - END
May 2017 – OnGoing

Project Barings

Charlotte , NC , USA

BACKGROUND

Atom was contracted by the client to provide BIM modeling of electrical system upfit for a new twenty-six (26) story tower in downtown Charlotte, NC for Barings Asset Management Limited. The project required extremely detailed management of installation techniques for conduit, lighting, and telecom/data cable trays in a condensed high rise setting.

LOCATION

300 S Tryon St
Charlotte, NC 28202

SCOPE

Atom created a 3D BIM Model of all electrical systems as specified including fire alarm speakers, AV equipment, and secure access door details. The intent was to coordinate with other trades and to provide precise, efficient locations for electrical equipment. This project was completed using the latest versions of AutoCad and Revit. Atom Engineers led the coordination meetings and was the main point of contact for all other trades during the coordination efforts.

CLIENT/ OWNER

Barings
300 S Tryon St Suite 2500,
Charlotte, NC 28202

Via

Preferred Electric Company, Inc.
4113 Yancey Road
Charlotte, NC 28217
Tel: 704-943-3404
Email: mkoski@peci-elect.com

KEY PERSONNEL

Ryan Kennedy, PE
Joseph Bumgardner, EIT

CONSTRUCTION

Preferred Electric Company, Inc.
4113 Yancey Road
Charlotte, NC 28217
Tel: 704-943-3404
Email: mkoski@peci-elect.com

PROJECT COST:

~4.5M

PROJECT START - END

Set 2016 – May 2017

FOX Sports Electrical Engineering and Arc Flash

Charlotte, NC, USA

BACKGROUND

Atom Engineering was contracted by Fox Sports to perform an Arc Flash, Coordination, and Short Circuit study on its existing office building in Charlotte, NC. Also, the client contracted Atom to provide and detailed Method of Procedures (MOP) to control the sequencing of scheduled facility maintenance and arc flash data collection.

LOCATION

Fox Sports
1220 W. WT Harris Blvd.
Charlotte, NC.

SCOPE

The scope of this project was to provide signed and sealed short circuit, coordination, and arc flash simulations and reports to the client. Additionally, we developed various Method of Procedures (MOP) for the Fox Data Center located in Charlotte, NC. The MOP outlined scheduled load shedding, breaker PM testing/replacement, IR scanning, and data collection for an ongoing Arc Flash Study. In addition to onsite project management of the MOP implementation, Atom team members also evaluated the feasibility of creating redundancies within the system to prevent future costly outages.

CLIENT/ OWNER

Fox Sports
1220 W. WT Harris Blvd.
Charlotte, NC.
Elizabeth Fulk - Facility Manager
Tel: (704) 501-5769
(704) 941-4231
elizabeth.fulk@fox.com

KEY PERSONNEL

Ryan Kennedy, PE
Joseph Bumgardner, EIT
Ahmed Abdelfattah, Ph.D

PROJECT COST:

~$50,000.00

PROJECT START - END

2017 – 2018

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