

San Jose-Santa Clara Regional Wastewater Facility

San José, CA

I. Presenter: Sean Barker, Industrial Electrician Supervisor

II. Mission-Critical Job Category: Electrician/electrical worker

III. Treatment Plant Characteristics:

- Wastewater Treatment Facility
- 196 employees
- 1,400,000 customers served

- The Regional Wastewater Facility (RWF) is co-owned by the City of Santa Clara and the City of San José

- The facility is managed and operated by the City of San Jose, Environmental Services Department.

- We clean the wastewater for the residents and businesses in:
 - San Jose
 - Santa Clara
 - Milpitas
 - Cupertino
 - Campbell
 - Saratoga
 - Monte Sereno
 - Los Gatos

- At our facility the wastewater undergoes 10 hours of treatment in 7 stages (screens, grit chambers, primary treatment, aeration tanks, clarifiers, filtration, and disinfection) that removes 99% of the impurities before the cleaned water is discharged into the South San Francisco Bay or purified even more to be used as recycled water.

IV. Nature of the job

Industrial electricians at this facility take care of the electrical distribution system from the 115kV PG&E service down to the 120V outlets. The industrial electricians also install, replace and maintain close to 1200 electric motors located at the facility.

V. Why is this work important for operational reliability?

Every part of the process at the facility requires electricity to function. It is vital that the industrial electricians keep the electrical system in excellent working condition or one or more of the processes could fail and damage the environment.

VI. Education and experiences that will help students prepare for career technical education

a. Math

- trigonometric functions are used for bending offsets and saddles in conduit
- Ratios are used for reducing current with current transformers
- Fractions are used for measuring conduit and layout of projects
- Geometry is used for conduit layout and elevation planes
- Polar equations and vector addition and subtraction are used to calculate fault characteristics and protective relay functions

b. Science

- Conductivity of metals to determine the best conductors of electricity
- The resistivity of metals to determine voltage drop in a circuit and to pick the best materials for certain applications
- The theory of magnetism is used to understand how an induction motor operates and how a generator produces electricity

c. English

- Good verbal skills are needed to give instructions to fellow electricians in order for them to carry out tasks correctly and safely
- Reading comprehension is needed for reading codebooks and job specification books and then applying that information to projects

- Writing skills are needed for asking engineers for clarification on projects and also for communicating with vendors when ordering electrical parts

d. Computer skills

- Most modern electrical equipment requires laptops and software to set them up and change their settings.
- MS Office programs are used for communication and to keep track of information such as inventory or device settings.

VII. What do you like about your job?

Salary/benefits

Job security

Interesting work/opportunity to learn

Work outside

Service to the community

Interesting work/opportunity to learn

Enjoy working in a team

Work/life balance

Building and fixing things