

# Industrial Maintenance Occupations

# Labor Market Information Report

# Santa Rosa College

# Prepared by the San Francisco Bay Center of Excellence

# for Labor Market Research

**December 2020**

# Recommendation

Based on all available data, there appears to be an “undersupply” of Industrial Maintenance workers compared to the demand for this cluster of occupations in the Bay region and in the North Bay sub-region (Marin, Napa, Solano, Sonoma counties). There is a projected annual gap of about 882 students in the Bay region and 200 students in the North Bay Sub-Region.

# Introduction

This report provides student outcomes data on employment and earnings for TOP 0934.00 - Electronics and Electric Technology programs in the state and region. It is recommended that these data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at colleges in the state and region, as well as to outcomes across all CTE programs at Santa Rosa Junior College (SRJC) and in the region.

This report profiles Industrial Maintenance Occupations in the 12 county Bay region and in the North Bay sub-region for a program modification at SRJC.

* **Electro-Mechanical and Mechatronics Technologists and Technicians (17-3024):** Operate, test, maintain, or calibrate unmanned, automated, servo-mechanical, or electromechanical equipment. May operate unmanned submarines, aircraft, or other equipment at worksites, such as oil rigs, deep ocean exploration, or hazardous waste removal. May assist engineers in testing and designing robotics equipment.
  Entry-Level Educational Requirement: Associate’s degree
  Training Requirement: None
  Percentage of Community College Award Holders or Some Postsecondary Coursework: 51 %
* **Industrial Engineering Technologists and Technicians (17-3026):** Apply engineering theory and principles to problems of industrial layout or manufacturing production, usually under the direction of engineering staff. May perform time and motion studies on worker operations in a variety of industries for purposes such as establishing standard production rates or improving efficiency.
  Entry-Level Educational Requirement: Associate’s degree
  Training Requirement: None
  Percentage of Community College Award Holders or Some Postsecondary Coursework: 51 %
* **Mechanical Engineering Technologists and Technicians (17-3027):** Apply theory and principles of mechanical engineering to modify, develop, test, or calibrate machinery and equipment under direction of engineering staff or physical scientists.
  Entry-Level Educational Requirement: Associate’s degree
  Training Requirement: None
  Percentage of Community College Award Holders or Some Postsecondary Coursework: 51 %
* **Electrical and Electronics Repairers, Commercial and Industrial Equipment (49-2094):** Repair, test, adjust, or install electronic equipment, such as industrial controls, transmitters, and antennas. Excludes “Avionics Technicians” (49-2091), “Electronic Equipment Installers and Repairers, Motor Vehicles” (49-2096), and “Electrical and Electronics Installers and Repairers, Transportation Equipment” (49-2093).
  Entry-Level Educational Requirement: Postsecondary nondegree award
  Training Requirement: Long-term on-the-job training
  Percentage of Community College Award Holders or Some Postsecondary Coursework: 52 %
* **Industrial Machinery Mechanics (49-9041):** Repair, install, adjust, or maintain industrial production and processing machinery or refinery and pipeline distribution systems. Excludes “Millwrights” (49-9044), “Mobile Heavy Equipment Mechanics, Except Engines” (49-3042), and “Maintenance Workers, Machinery” (49-9043).
  Entry-Level Educational Requirement: High school diploma or equivalent
  Training Requirement: Long-term on-the-job training
  Percentage of Community College Award Holders or Some Postsecondary Coursework: 42 %

# Occupational Demand

**Table 1. Employment Outlook for Industrial Maintenance Occupations in Bay Region**

| **Occupation** | **2019 Jobs** | **2024 Jobs** | **5-yr Change** | **5-yr % Change** | **5-yr Total Openings** | **Annual Openings** | **25% Hourly Earning** | **Median Hourly Wage** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Electro-Mechanical and Mechatronics Technologists and Technicians | 781 | 784 | 3 | 0.0 % | 408 | 82 | $ 20.38 | $ 26.68 |
| Industrial Engineering Technologists and Technicians | 2061 | 2120 | 59 | 3.0 % | 1078 | 216 | $ 23.35 | $ 28.97 |
| Mechanical Engineering Technologists and Technicians | 786 | 860 | 74 | 9.0 % | 472 | 94 | $ 22.73 | $ 30.51 |
| Electrical and Electronics Repairers, Commercial and Industrial Equipment | 1431 | 1457 | 26 | 2.0 % | 668 | 134 | $ 21.67 | $ 28.98 |
| Industrial Machinery Mechanics | 5372 | 5741 | 369 | 7.0 % | 2916 | 583 | $ 25.83 | $ 33.74 |
| **Total** | **10,431** | **10,962** | **531** | **5%** | **5,542** | **1,109** | **$24.13** | **$31.37** |
| Source: EMSI 2020.4 |

**Bay Region includes:** Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

**Table 2. Employment Outlook for Industrial Maintenance Occupations in North Bay Sub-Region**

| **Occupation** | **2019 Jobs** | **2024 Jobs** | **5-yr Change** | **5-yr % Change** | **5-yr Total Openings** | **Annual Openings** | **25% Hourly Earning** | **Median Hourly Wage** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Electro-Mechanical and Mechatronics Technologists and Technicians | 52 | 53 | 1 | 2.0 % | 27 | 5 | $ 25.92 | $ 35.83 |
| Industrial Engineering Technologists and Technicians | 150 | 157 | 7 | 5.0 % | 83 | 17 | $ 25.84 | $ 32.67 |
| Mechanical Engineering Technologists and Technicians | 89 | 92 | 3 | 3.0 % | 47 | 9 | $ 19.68 | $ 27.98 |
| Electrical and Electronics Repairers, Commercial and Industrial Equipment | 175 | 184 | 9 | 5.0 % | 87 | 17 | $ 27.03 | $ 35.64 |
| Industrial Machinery Mechanics | 1432 | 1595 | 163 | 11.0 % | 852 | 170 | $ 24.87 | $ 31.91 |
| **Total** | **1,898** | **2,081** | **183** | **10%** | **1096** | **218** | **$24.93** | **$32.24** |
| Source: EMSI 2020.4**North Bay Sub-Region includes:** Marin, Napa, Solano, Sonoma County |

### Job Postings in Bay Region and North Bay Sub-Region

**Table 3. Number of Job Postings by Occupation for latest 12 months (Dec 2019-Nov 2020)**

| **Occupation** | **Bay Region** | **North Bay** |
| --- | --- | --- |
| Industrial Engineering Technicians | 2127 | 378 |
| Industrial Machinery Mechanics | 869 | 201 |
| Electro-Mechanical Technicians | 616 | 63 |
| Mechanical Engineering Technicians | 488 | 30 |
| Electrical and Electronics Repairers, Commercial and Industrial Equipment | 17 | 1 |
| Source: Burning Glass |

**Table 4a. Top Job Titles for Industrial Maintenance Occupations for latest 12 months (Dec 2019-Nov 2020) Bay Region**

| **Title** | **Bay** | **Title** | **Bay** |
| --- | --- | --- | --- |
| Maintenance Technician | 453 | Mechanical Inspector | 38 |
| Maintenance Mechanic | 198 | Maintenance Technician I | 38 |
| Mechanical Technician | 91 | Automotive Maintenance Technician | 27 |
| Mechanic | 89 | Maintenance Associate | 26 |
| Maintenance Worker | 74 | Senior Maintenance Technician | 25 |
| Calibration Technician | 50 | Mechanical Assembly Technician | 25 |
| Instrumentation Technician | 44 | Utility | 24 |
| Equipment Maintenance Technician | 41 | Maintenance Technician II | 23 |
| Outside Plant Technician | 38 | Maintenance & Store Sanitation Team Member | 23 |
| Source: Burning Glass |

**Table 4b. Top Job Titles for Industrial Maintenance Occupations for latest 12 months (Dec 2019-Nov 2020) North Bay Sub-Region**

| **Title** | **North Bay** | **Title** | **North Bay** |
| --- | --- | --- | --- |
| Maintenance Technician | 89 | Bottling Line Mechanic | 9 |
| Maintenance Mechanic | 74 | Maintenance Technicianiii | 8 |
| Maintenance Worker | 20 | Surface Maintenance Repairer | 7 |
| Mechanic | 18 | Mechanic II | 7 |
| Instrumentation Technician | 14 | Maintenance Team Member | 6 |
| Outside Plant Technician | 13 | Industrial Maintenance Technician | 6 |
| Maintenance Associate | 10 | Maintenance Technician II | 5 |
| Field Mechanic | 10 | Maintenance Technician I | 5 |
| Quality Maintenance Technician | 9 | Calibration Technician | 5 |
| Source: Burning Glass |

# Industry Concentration

**Table 5. Industries hiring Industrial Maintenance Workers in Bay Region**

| **Industry – 6 Digit NAICS (No. American Industry Classification) Codes** | **Jobs in Industry (2019)** | **Jobs in Industry (2024)** | **% Change (2019-24)** | **% Occupation Group in Industry (2019)** |
| --- | --- | --- | --- | --- |
| Semiconductor and Related Device Manufacturing | 772 | 727 | -6% | 7% |
| Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance | 612 | 673 | 10% | 6% |
| Electronic Computer Manufacturing | 400 | 430 | 8% | 4% |
| Pharmaceutical Preparation Manufacturing | 394 | 374 | -5% | 4% |
| Wineries | 305 | 336 | 10% | 3% |
| Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) | 283 | 324 | 15% | 3% |
| Engineering Services | 247 | 264 | 7% | 2% |
| Automobile Manufacturing | 238 | 285 | 20% | 2% |
| Semiconductor Machinery Manufacturing | 229 | 248 | 8% | 2% |
| Local Government, Excluding Education and Hospitals | 203 | 213 | 5% | 2% |
| Source: EMSI 2020.4 |

**Table 6. Top Employers Posting Industrial Maintenance Occupations in Bay Region and North Bay Sub-Region (Dec 2019-Nov 2020)**

| **Employers** | **Bay** | **Employer** | **North Bay** |
| --- | --- | --- | --- |
| Tesla | 77 | Whole Foods Market, Inc. | 12 |
| Whole Foods Market, Inc. | 63 | County Sonoma | 12 |
| Lawrence Livermore National Laboratory | 42 | Tennant Company | 11 |
| Phillips 66 | 33 | Kens Beverage Incorporated | 9 |
| Greystar | 29 | Coca-Cola Enterprises Inc. | 9 |
| Amazon | 28 | Tellus Solutions | 6 |
| Goodyear | 24 | BDS Marketing | 6 |
| Bridgestone / Firestone | 24 | Scotts Company | 5 |
| Western Digital | 23 | Quick Quack Car Wash | 5 |
| Flagship Facility Services, Inc | 21 | Primal Pet Foods Incorporated | 5 |
| BDS Marketing | 21 | Nelson | 5 |
| Allied Universal | 19 | Eo Products | 5 |
| Genentech | 18 | Dick's Sporting Goods Incorporated | 5 |
| Department of Veterans Affairs | 18 | Cornerstone Building Brands | 5 |
| Source: Burning Glass |

# Educational Supply

There is a ten (10) Community colleges in the Bay Region issuing 227 awards on average annually (last 3 years ending 2018-19) on TOP 0934.00 - Electronics and Electric Technology. In the North Bay Sub-Region, there is a one (1) community college that issued eighteen(18) awards on average annually (last 3 years) on this TOP code.

**Table 7. Community College Awards on TOP 0934.00 - Electronics and Electric Technology in Bay Region**

| **College** | **Subregion** | **Associate** | **Certificate Low** | **Total** |
| --- | --- | --- | --- | --- |
| Chabot  | East Bay | 4 | 15 | 19 |
| Contra Costa | East Bay | 0 | 3 | 3 |
| Diablo Valley | East Bay | 11 | 25 | 36 |
| Laney | East Bay | 10 | 28 | 38 |
| Los Medanos | East Bay | 14 | 23 | 37 |
| Ohlone | East Bay | 0 | 0 | 0 |
| San Francisco | Mid-Peninsula | 1 | 16 | 17 |
| San Mateo | Mid-Peninsula | 0 | 59 | 59 |
| Santa Rosa | North Bay | 3 | 15 | 18 |
| Skyline | Mid-Peninsula | 0 | 0 | 0 |
| **Bay Region Total** | **-** | **43** | **184** | **227** |
| **North Bay Sub-Region** |  | **3** | **15** | **18** |
| Source: Data Mart |

*Note: The annual average for awards is 2016-17 to 2018-19.*

# Gap Analysis

Based on the data included in this report, there is a labor market gap in the Bay region with 1,109 annual openings for the Industrial Maintenance occupational cluster and 227 annual (3-year average) awards for an annual undersupply of 882 students. In the North Bay Sub-Region, there is also a gap with 218 annual openings and 18 annual (3-year average) awards for an annual undersupply of 200 students.

# Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0934.00 - Electronics and Electric Technology**

| **2017-18** | **Bay** All CTE Programs | **SRJC**All CTE Programs | **State** 0934.00 | **Bay** 0934.00 | **North Bay** 0934.00 | **SRJC** 0934.00 |
| --- | --- | --- | --- | --- | --- | --- |
| % Employed Four Quarters After Exit | 67% | 71% | 69% | 79% | 75% | 76% |
| Median Quarterly Earning Two Quarters After Exit | $11,466 | $10,210 | $9,310 | $12,609 | $9,822 | $8,308 |
| Median % Change in Earning | 31% | 33% | 32% | 45% | 33% | 34% |
| % of Students Earning a Living Wage | 53% | 58% | 63% | 55% | 48% | 47% |
| Source: Launchboard Pipeline (version available on August 2020) |

# Skills, Certifications and Education

**Table 9. Top Skills for Industrial Maintenance Occupations in Bay Region (Dec 2019-Nov 2020)**

| **Skill** | **Posting** | **Skill** | **Posting** |
| --- | --- | --- | --- |
| Repair | 2762 | Packaging | 271 |
| Predictive / Preventative Maintenance | 999 | Occupational Health and Safety | 265 |
| Hand Tools | 685 | Electrical Systems | 264 |
| Machinery | 641 | Customer Service | 257 |
| Welding | 547 | Hydraulics | 234 |
| Schematic Diagrams | 505 | Industrial Operations Industry Knowledge | 233 |
| Cleaning | 457 | Machining | 230 |
| Power Tools | 448 | Quality Assurance and Control | 224 |
| Scheduling | 417 | Plumbing | 205 |
| Calibration | 408 | Wiring | 204 |
| Forklift Operation | 324 | Personal Protective Equipment (PPE) | 203 |
| Test Equipment | 318 | Soldering | 198 |
| Lifting Ability | 312 | Facility Maintenance | 196 |
| Equipment Maintenance | 306 | Robotics | 190 |
| Source: Burning Glass |

**Table 10. Certifications for Industrial Maintenance Occupations in Bay Region (Dec 2019-Nov 2020)**

| **Skill** | **Posting** | **Skill** | **Posting** |
| --- | --- | --- | --- |
| Driver's License | 1029 | Basic Life Saving (BLS) | 17 |
| Automotive Service Excellence (ASE) Certification | 97 | Basic Cardiac Life Support Certification | 17 |
| Security Clearance | 63 | Electrician Certification | 15 |
| CDL Class A | 56 | Cdl Class B | 15 |
| Cdl Class C | 52 | Master Mechanic | 13 |
| OSHA Forklift Certification | 35 | Airframe and Powerplant (A and P) Certification | 13 |
| Welding Certification | 29 | First Aid Cpr Aed | 12 |
| IPC Certification | 26 | Department of Transportation (DOT) Medical Certification | 12 |
| American Society For Quality (ASQ) Certification | 20 | Certified Quality Inspector (CQI) | 11 |
| Air Brake Certified | 18 | Certified Pest Control | 10 |
| Source: Burning Glass |

*Note: 67% of records have been excluded because they do not include a certification. As a result, the chart below may not be representative of the full sample.*

**Table 11. Education Requirements for Industrial Maintenance Occupations in Bay Region**

| **Education (minimum advertised)** | **Latest 12 Mos. Postings** | **Percent 12 Mos. Postings** |
| --- | --- | --- |
| High school or vocational training | 1,676 | 77% |
| Associate's degree | 262 | 12% |
| Bachelor's degree | 168 | 8% |
| Master's degree | 62 | 3% |
| Source: Burning Glass |

*Note: 47% of records have been excluded because they do not include a degree level. As a result, the chart below may not be representative of the full sample.*

# Methodology

Occupations for this report were identified by use of skills listed in O\*Net descriptions and job descriptions in Burning Glass. Labor demand data is sourced from Economic Modeling Specialists International (EMSI) occupation data and Burning Glass job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CTE Launchboard and CCCCO Data Mart.

# Sources

O\*Net Online
Labor Insight/Jobs (Burning Glass)
Economic Modeling Specialists International (EMSI)
CTE LaunchBoard www.calpassplus.org/Launchboard/
Statewide CTE Outcomes Survey
Employment Development Department Unemployment Insurance Dataset
Living Insight Center for Community Economic Development
Chancellor’s Office MIS system

# Contacts

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