Solar Turbines Apprenticeship Program

Solar Turbines
A Caterpillar Company

Prospective Apprentices,

It is our pleasure to congratulate you on taking this very important first step in establishing your career in a skilled trade that is in high demand throughout our region and state.

We take great pride in providing a positive, professional manufacturing environment for our apprentices. They are given ample opportunity to gain the skills and education they need to contribute to their personal success and the future success of our company.

Our program has stringent selection requirements. Through this process, we are able to select top-level apprentices who continue to meet and exceed the current challenges within our program. The journeymen who work with our apprentices are essential in the process to continuously expand and improve our training for future apprentices.

Upon completion of our apprenticeship program, graduates are confident they have the knowledge and ability to perform at a proficient level in today's manufacturing environment.

As you thoughtfully consider your application to Solar Turbines' Apprenticeship Program, we want to wish each and every one of you the very best in your career endeavors.

Sincerely,

Stephen P. Finlay
Apprenticeship Coordinator

Manny Rivera
JAC Committee Chairman

Table Of Contents

Apprenticeship Program Overview

Integrity

Teamwork

Excellence

Commitment

PEOPLE

Safety FIRST

Sustainability

Apprenticeship Program Overview

The Solar Turbines Apprenticeship Program is an agreement between the apprentice, the company, the Union, and the State of California Apprenticeship Training Coordinating Agency. This agreement requires a specific number of on-the-job training hours, as well as classroom hours. The apprentices work on the production floor under the guidance of skilled journeymen and journeywomen. Together, they will work on job assignments and practice projects to build a foundation of machining knowledge and skills. To reinforce their training, apprentices will also be required to complete a specific course list from San Diego City College.

Apprenticeship Committee

The Apprenticeship Program is administered by the Joint Apprenticeship Committee, composed of four Solar representatives and four Union representatives. In addition to these eight Committee members, there is one consulting member representing the State of California, and one advisory member representing the San Diego Community Colleges. The last two members act without a vote.

Program Details

Apprenticeship Applicant Responsibility

Before applying to the program, please ensure that all eligibility requirements are met. Consider the apprenticeship program as a long-term investment and perform the necessary research to learn more about the trades being offered. To begin the application process, apply online and submit the necessary documentation to the Apprenticeship Program Office. See page 6.

Trades Offered

Solar Turbines Apprenticeship Trades:

- Tool and Die Maker
- Master Machinist
- Experimental Sheet Metal Mechanic
- Precision Machine Tool Mechanic

Prerequisites

All candidates must be at least 18 years old and eligible to enroll as a student with San Diego City College. Additionally, candidates must have one of the following:

- Diploma through G.E.D. issued by a high school
- Certificate of High School Equivalency issued by a State Board of Education
- Certification of High School Proficiency issued by a State Board of Education
- Completion of 15 units of college courses from an accredited college with grades of "C" or better

Overview

Application Process

HOW TO APPLY:

1. Visit www.solarturbines.jobs and click “Apply Now” under the Apprenticeship Program section.
   Please Note: Apprenticeship program opportunities are not always open or available, and are based on the current needs of the business.

2. Submit **official, sealed** copies of your high school transcripts (or equivalent proof) to the Apprenticeship Program Office. **Please use the Transcript Request Form on page 22.** Your application will NOT move forward without the submission of your transcripts.

3. Take the Caterpillar non-management test.

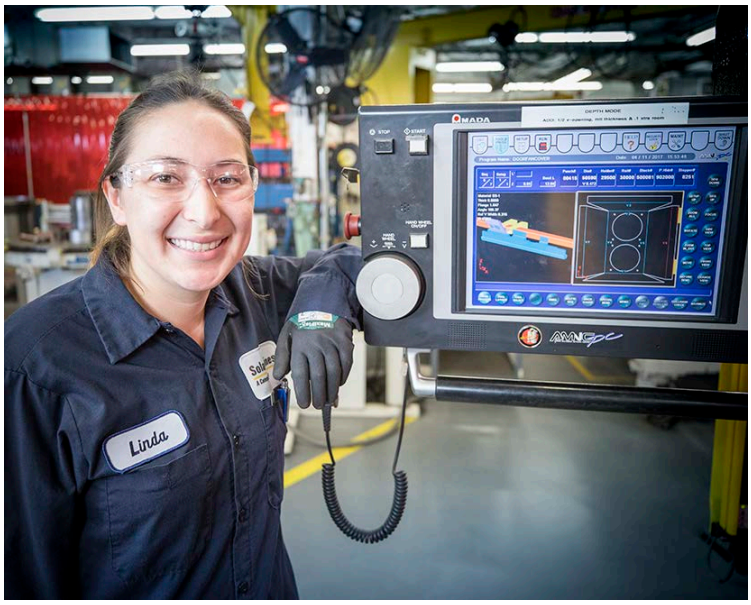
4. Upon passing the test, you will be contacted to schedule a phone screen.

5. Complete a targeted selection interview.

6. Complete a final interview with the Joint Apprenticeship Committee (JAC).

7. If selected by the JAC and an offer is made, you must pass all Solar Turbines pre-hire requirements including eligibility to work in the United States, a background screening and a drug/physical screening test.

8. Fulfill all San Diego City College requirements for enrollment.



Apprenticeship Agreement

An "indenture“ or written agreement must be signed by the apprentice, a representative of Solar Turbines, and a representative of the union to provide for the following:

- A Probationary Period of one year (2,000 hours) for each apprentice, during which the agreement may be terminated at the request of either party.

- A training program of four years (8,000 hours) of on-the-job training with qualified Journeymen (including the Probationary Period).

- Advancement in wages every six months (1,000 hours) is dependent upon adequate performance during work and school. This is subject to determination by the Apprenticeship Committee.

Overview

Training and Certification

Related Training

Apprentices attend classes at least five hours per week until completion of the required courses. These courses provide supplemental knowledge related to the offered trades.
By taking the required general education classes, apprentices may earn an Associate in Science Degree issued by San Diego City College. Some of the units earned may be transferable to a baccalaureate program at San Diego State University (SDSU), or another university.

Graduation Certificates

Upon successful completion of the program, the apprentice is issued a "Certificate of Completion of Apprenticeship." The apprentice receives certificates from the California Apprenticeship Council and the San Diego Community College District.

Joint Apprenticeship Committee

The Apprenticeship Program is administered by the Joint Apprenticeship Committee, composed of four Solar representatives, and four Union representatives. In addition to these eight Committee members, there is one consulting member representing the State of California, and one advisory member representing the San Diego Community Colleges.

Achievement

Courses and Degrees

The **Solar Turbines Apprenticeship Program** consists of a four-year indentured apprenticeship program, which includes a number of manufacturing and technical courses combined with on-the-job training.

Note: Enrollment in classes other than those listed will need to be approved by the Solar Turbines Apprenticeship Coordinator.

SOLAR TURBINES CERTIFICATE OF ACHIEVEMENT

COURSE TITLE	Course No	UNIT
COURSES		
Print Reading and Symbology	MFET 105	3
Introduction to CNC and EDM	MACT 150	4
Engineering Drawing	ENGE 151	2
Properties and Materials	MFET 115	3
Manufacturing Processes	MFET 120	4
Intermediate Algebra/Geometry	MATH 96	5
Trigonometry	MATH 104	3
Chemistry/Chemistry Lab	CHEM 100 /100L	4
English	ENGLISH 101	3
Oral Communications	SPEECH 103	3
Approved Technical Elective of your choice (1)		3 - 4
	Total Units	**37 - 38**

ASSOCIATE IN SCIENCE DEGREE

REQUIREMENTS
COURSES The associate degree requires a minimum of 60 units
Solar Turbines Certificate of Achievement
District Requirements
General Education Requirements
Recommended electives to support major (see list below)

Courses and Degrees

GENERAL EDUCATION REQUIREMENTS

COURSE TITLE	UNIT
COURSES	
Humanities	3
Social and Behavioral Sciences	3

Additional district and general education requirements that are not satisfied by the certificate of achievement include the following:

COURSE TITLE	UNIT
COURSES	
American Institutions	3
Multicultural Studies	3
Health Education 101	3
Physical Education-Select any two physical education courses numbered below 240, except PHYE 150. (DD 214 clears the Health and Physical Education requirements having completed 1 unit total).	1

TECHNICAL ELECTIVES	Course No
COURSES	
Introduction to CAD/CAM	MACT 160M OR S
Introduction to CNC controlled vertical machining	MACT 170
Manufacturing Automation	MFET 150
Statistical Process Control	MFET 210
Basic DC/AC Electronics	ELDT 124
Microsoft Office	CBTE 180
MIRAMAR COLLEGE	
Aircraft Welding & Sheet metal	AVIM 130B
Aircraft Hydraulic Systems	AVIM 103C

NOTE: Other college classes may be taken as your Technical Elective upon approval of the Joint Apprenticeship Committee.

There are many courses available to satisfy the above requirements, including classes that simultaneously satisfy more than one requirement. Consult the college catalog and/or the City College Apprenticeship office at +1 619-388-3154.

Selection Procedure

Standards

1. The Division of Apprenticeship Standards, the California State Employment Development Department, the U.S. Department of Labor and other interested agencies are notified in writing of opportunities in the Apprenticeship Program, in accordance with the California Administrative Code Title 8, Chapter 2, Section 216A, B, and C.

2. Applicants should apply online at www.solarturbines.jobs.

3. Applicants are required to submit proof of education and other documents for their application to be considered complete.

4. After completing the application and passing required Testing (Caterpillar Non-Management Selection Process), applicants will be notified and interviews will be scheduled.

5. Members of the Joint Apprenticeship Committee will interview all qualified candidates. The following criteria will be used for the interview evaluation. A score of 85 or above must be obtained to be selected for the program.

Scoring Criteria	Points
Motivation	0 - 25
Attitude towards work	0 - 25
Attitude towards Related instruction	0 - 25
Confidence and Stability	0 - 25
Oral Response	0 - 25
Total Points	**> 85**

6. All applicants will be notified regarding the results of the Committee's findings. Unsuccessful applicants must wait one year to re-apply.

Hiring Practices

7. Selection of apprentices for the program is made by an impartial method considering merit alone. Solar recruits, hires, promotes, discharges, pay, fringe benefits and other aspects of employment without regard to race, color, religion, sex (including pregnancy), national origin, age, disability, veteran status, genetic information, sexual orientation, or any other consideration made unlawful by federal, state or local laws. It is the practice of Solar Turbines Incorporated to ensure an operating environment in which all persons are accorded an equal opportunity. The Joint Apprenticeship Committee will take affirmative action to provide equal opportunity in the apprenticeship, and will operate the Apprenticeship Program as required under Title 29 of the Code of Federal Regulations Part 30, and any equal opportunity statutes or regulations.

8. Solar Turbines is a Drug-Free Workplace and the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited. Apprentices are required to abide by the company's requirements to maintain its status as a Drug-Free Workplace under both federal and state equivalent laws.

9. Solar Turbines participates in E-Verify. Solar provides the Social Security Administration (SSA) and, if necessary, the Department of Homeland Security (DHS), with information of each new employee's Form I-9 to confirm work authorization. Federal law requires all employers to verify the identity and employment eligibility of all persons hired to work in the United States. If the Government cannot confirm that you are authorized to work using E-Verify, Solar Turbines is required to provide you with written instructions and an opportunity to contact SSA and/or DHS before taking adverse action against you, including terminating your employment.

Apprenticeship Wage and Benefit Summary

The following chart identifies the scheduled hourly rate for all trades offered in the **Solar Apprenticeship Program.**

Period	Hours	Percentage of Graduation Rate	Dollars per Hour
1st	1,000	75%	**$23.22-$25.14**
2nd	1,000	78%	**$24.19-$26.19**
3rd	1,000	81%	**$25.15-$27.24**
4th	1,000	84%	**$26.12-$28.28**
5th	1,000	87%	**$27.09-$29.33**
6th	1,000	91%	**$28.06-$30.38**
7th	1,000	94%	**$29.02-$31.43**
8th	1,000	97%	**$29.99-$32.47**
Graduated Apprentice		**100%**	**$30.96-$33.52**

Note: As an Apprentice you must be willing to obtain appropriate tools per an approved tool list, dependent on trade.

Benefits:
Solar Turbines offers a competitive compensation and benefits package including medical, dental, life insurance, vacation, 401k, incentive bonus, tuition reimbursement and professional development/advancement.

Master Machinist

Complex Part Machining

Master Machinist

The **Master Machinist Apprentice** learns to plan the sequence of operations, perform lay out work, set up and operate machine tools and equipment used in machining experimental, maintenance, and tooling parts. The apprentice also learns to perform tasks such as turning, milling, grinding, electrical discharge machining (wire and die sink), and jig boring. The following table explains the hours in which an apprentice will spend during his or her apprenticeship as a Master Machinist.

WORK PROCESS	HOURS
Engine Lathe/Hardinge	600
Prototrak Vertical Mills	600
Jig Bores	600
Horizontal Boring Mills	400
Vertical Turret Lathes	400
OD/ID/Jig Grinders/Cruvic	440
Blanchard Grinders	200
Tool and Die Manufacturing	600
Sinker EDM	240
Wire EDM	240
Hole Popper EDM	240
C.N.C. Turning Center	440
C.N.C. Milling Center	440
5-Axis Center (Mazak/CM4)	440
Prototrak Lathes	200
Sheet Metal, Welding, Waterjet	160
Manufacturing Planning	80
Production Rotation (ie. Laser Room, Broaching etc.)	80
Inspection Rotation (ie. Cal. Lab, Gage Building etc.)	40
Engine Build (133)	80
Tool and Cutter Grind	40
Tool Design	40
Process Engineering (Braze, Welding, Heat Treat, Lasers, etc.)	40
General Assignment	1000
Basic Machinist Training Course	120
CNC Machinist Training Course	120
Pro-E Training (CAD Training) Feature Cam	120
Total Hours	**8000**

Tool and Die Maker

Planning

Tool and Die Maker

Tool and Die Maker Apprentices learn how to plan the sequence of operations, layout, develop, fabricate, assemble, rework, and prove tool dies, jigs and fixtures. The apprentice learns to build new tools and fixtures used in production and assembly of turbine components, as well as repair and modify tooling and fixtures. The following table explains the hours in which an Apprentice will spend during his or her apprenticeship as a Tool and Die Maker.

WORK PROCESS	HOURS
Basic Machinist Course	120
Engine Lathe	800
Manual Vertical Mill	320
Tooling Lathe (Hardinge)	280
Proto Trak Lathe	460
Proto Trak	880
Fryer Mill	120
Jig Bore - Moore	200
Jig bore - SIP	200
Jig Bore - Pratt	80
Surface Grind	500
Heat Treat	40
Blanchard	240
VTL	320
Horizontal Jig Mill (Devliegs/G&L)	80
Horizontal Jig Mill - Devlieg (Shirkey's)	200
Horizontal Jig Mill - Devlieg 407	120
CAD/CAM classes	80
Wire EDM	200
CNC Machining Centers (Haas, Mazak)	160
Tool Design	40
Tool Inspection (CMM)	40
EDM Hole Popper	40
EDM Die Sinker	40
Experimental Sheet Metal	120
Water Jet	40
Tooling Satellite (Tool Repair)	320
Soft Tooling (Polyurethane Pour and 3D Printing)	120
Tool and Cutter Grind	40
Turbine Engine Assembly (KM or HD)	40
Hot Cam / Hammer house	40
CMNA North	40
CMNA South	40
ACS Nozzles / Injectors	40
Tool and Die Benchwork	600
General Assignment	1000
Total Hours	**8000**

Experimental
Sheet Metal Mechanic

Metal Fabrication

Experimental Sheet Metal Mechanic

The Sheet Metal Experimental Mechanic Apprentice learns how to perform layout, fabrication, and assembly of diversified types of assigned parts, subassemblies, assemblies, engines and brazing fixtures. In this program, apprentices also learn the fabrication of sheet metal components for Developmental Combustors, Injectors, and Test Rigs. Assembly in this area requires tack welding, sheet metal layout, forming, braze loading, and hand finishing to meet print requirements. The following table explains the hours in which an apprentice will spend during his or her apprenticeship as a Sheet Metal Experimental Mechanic.

MACHINE SHOP	Hrs
Vertical Mills	160
Horizontal Boring/Jigbore	160
Lathe	160
VTL	120
Grinders: OD/ID (40), Blanchard (40)	80
EDM/Wire EDM, Hole Popper	120
CNC Machining (Haas, Cincinnati, Mazak)	80
Mfg. Planning (MD&T)	160
Tool & Die Manufacturing	320
Tool & Die Design	40

SHEET METAL SHOP	Hrs
Sheet Metal Fabrication	800
Weld Booth	120
Expander	120
Sheet Metal Rolling	240
Injector Development Cell	360
Chicago Brake	160
Amada Brake	600
Buffalo Rolls	520
Shear	40
Parts Finish (Deburr)	40
Saws	80
Tube Bending	40
Layout	800
Piranha	8
Water Jet Operations & Programming	400

PRODUCTION AREAS	Hrs
Expander/Shrinker	40
Vacuum Furnace	40
Laser Drill/Trim	40
Hammer House: Hydraulic Press (AMD/Tangent), Drop Hammer, Punch Press	160
Combustor Build, Roll Weld Department 036	160
Injector Build	80
Thermal Spray	40
Combustor & Injector Flow	40

ENGINE BUILD	Hrs
Engine Build (Rig, Dyno, Balance)	360
Inspection: Including CMM	40
Test Cell Department 205: Engine Testing	80
Test Cell Department 203: Rig Testing	80

RELATED CLASS TRAINING	Hrs
Pro E Training (in-house) CAD/CAM (PRO-E)	80
Braze Loading (if available)	40
Instrumentation (D280)	80
Thermal Paint	40
Basic Machinist Training Center	120
CNC Machinist Training Course	120
General Assignment	632

Total Hours	8000

Precision Machine Tool Mechanic

Machine Repair

Precision Machine Tool Mechanic

Precision Tool Mechanic Apprentices learn to perform maintenance and alignment of precision machine tools, such as lathes, milling machines, semi and automatic machines, precision grinders, and numerical control machines. Fit and scrape bearings, assemble gear trains and fit to exacting tolerances, align spindles, columns, knees, tailstocks, ways, tables, and saddles individually and in required relation to each other. Determine and recommend major repairs in order to re-establish manufacturer's tolerances, and alignments, etc. The following table explains the hours in which an Apprentice will spend during his or her apprenticeship as a Precision Machine Tool Mechanic.

WORK PROCESS	HOURS
Oiling & Coolant: Includes classroom training	80
Moving and Rearrangement of Facilities: Includes leveling and machine check lists	200
Repair and/or refurbishment of the following:	
Pipe Fitting: All types (threading, brazing, non hydraulics)	160
Broaches: All types	280
Lasers: All types	240
Grinders: All types	480
Lathes: All types	840
Mills: All types	840
Spot Tackers & roll welders: All types	80
EDM: All types	320
Vacuum Furnaces: All types	240
Drop Hammers & Presses & Expander Shrinkers	200
Calibration & Alignment of all equipment to include laser and geometry	680
Hydraulic Systems: Troubleshoot, diagnose, repair	480
Machine Shop Training: Set up and operate all types of machines	400
Sheet Metal: Layout, roll & fabricate	160
Tool & Cutter Grind: Tool bit & Drill grinding	20
Electronics Familiarization	120
Planned Maintenance: All types	540
Tribology - bearings, ways, gears, friction, lubrication	160
Maintenance Rotation: General plant maintenance, includes maintenance/repairs, painting, carpentry, plumbing, air compressors, cooling towers, grounds	400
General Assignment	1000
Water Jets	80
Total Hours	**8000**

Optional Pre-Apprentice Programs and Program Preparation Information

At the request of the California Apprenticeship Council, the Joint Apprenticeship Committee has approved the following vocational or pre-apprentice programs, which would be helpful for applicants seeking to qualify for an apprenticeship.

Take any of the San Diego City College courses listed in this brochure on page 8.

Take the City College Placement Test:
Call +1 619-388-3540 to schedule an appointment

San Diego City College Machine Shop Program	Phone Number
Website http://sdcity.edu/ http://sdcity.edu/AcademicPrograms/ProgramsofInstruction/MachineTechnologies.aspx	+1 619-388-3400

San Diego City College Apprenticeship Programs	Phone Number
Website http://sdcity.edu/AcademicPrograms/ProgramsofInstruction/Apprenticeship.aspx	+1 619-388-3154

San Diego City College Manufacturing Technology Programs	Phone Number
Website http://sdcity.edu/AcademicPrograms/ProgramsofInstruction/ManufacturingEngineeringTechnology.aspx	+1 619-230-2424

Optional Pre-Apprentice Programs and Program Preparation Information

Grossmont Adult School	Phone Number
Website http://adultschool.guhsd.net/	+1 619-588-3512

Solar Turbines Apprenticeship Program
Website www.solarturbines.jobs

HIGH SCHOOL TRANSCRIPT REQUEST FORM

PLEASE GIVE THIS FORM TO YOUR HIGH SCHOOL GUIDANCE OFFICE

FIRST NAME	MIDDLE	LAST NAME

STREET	CITY	STATE	ZIP

NAME OF HIGH SCHOOL	HIGH SCHOOL ADDRESS	STATE	ZIP

BIRTHDATE (MM/DD/YYY)	SOCIAL SECURITY NUMBER	YEAR OF H.S. GRADUATION

STUDENT'S SIGNATURE	DATE

Please send a copy of my high school transcripts to:
Solar Turbines Incorporated c/o Apprenticeship Program Office

P.O. Box 85376 MZ/R6
San Diego, CA 92186-5376

If you have any questions, please contact the **Apprenticeship Program Office** at apprenticeship@solarturbines.com. Thank you.

International Association of Machinists and Aerospace Workers

Solar Turbines' Apprenticeship program is a joint effort between the Apprentice, the company, the State of California, and IAM Union Local Lodge 389. While "open shop" apprentices who wish to become Union members may do so at any time, Union membership is not a condition of employment.

The agreement between the International Association of Machinists and Aerospace Workers (IAM) Local 389, District Lodge number 947, and Solar Turbines, reflects the belief that the interests of both parties are best served by a successful business. Fundamental to this premise is an understanding that customer and employee satisfaction are keys to this success and that these can only be achieved by a focus on safety, uncompromising quality, a commitment to continuous quality improvement, and a highly productive, cost effective work environment based on shared values, mutual respect, and which provides for the opportunity for meaningful, widespread employee involvement, teamwork, and personal satisfaction.

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A Caterpillar Company