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The following pages contain data gathered by the South Bay Economic Development Partnership for the 21st Century Workforce Profile project, part of the WIRED grant in California. Below you will find a brief description of this project.

Project 1.2: 21st Century Workforce Profile

Description:

Objective: The 21st Century Workforce Profile project was conceived as a way to define future workforce skills and to facilitate effective planning by workforce training providers. It will create advanced technology job profiles, as well as a Skills Matrix for technological fields. The project will develop strategies to identify training and education gaps and share best practices regionally and across the California Innovation Corridor. In so doing, it will collaborate with two other Workforce Innovation in Regional Economic Development (WIRED) projects: 1.1 - [Economic Development Innovation Toolkit](#), and 3.14 - [Learning Collaboratory](#).

Desired Outcomes:

- Develop 21st Century job profiles in the Bio/Pharma, Bio/Info/Nano, and Biomedical Health fields.
- Define the workforce skills issues within these industries, based on their projected futures.



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Occupation Title:	Biological Technicians																																						
SOC Code:	19-4021																																						
Rec ID	Tasks/Abilities											Knowledge Requirements										Tools Used						12 - How Difficult to Recruit		14 - Minimum Education	16 - Biological Technicians Employ								
	1 - Monitor lab work	2 - Isolate, identify, prepare	3 - Use computers	4 - Conduct research or assist	5 - Set up, adjust, calibrate	6 - Provide technical support	7 - Clean, maintain, prepare supplies	8 - Participate in the research	9 - Conduct standardized biological	10 - Keep detailed logs	11 - Know English	Electronic Equipment	Computer Hardware	Mechanical Skills	Practical Application of Engineering	Practical Application of Production	Computer Software	Math	Scientific Methods	Practical Application of Science	Other	Response	Inverted Microscopes	Manual/Electronic Hematology	Microplate Readers	Robotic or Automated Liquid	Analytical or Scientific Software	Database User Interface and Query	Graphic or Photo Imaging Software	Other	Response								
Average or Composite Score	4.2	4.0	3.8	3.9	3.8	3.5	3.8	3.7	3.8	4.6	4.3	22	21	8	6	13	27	27	34	34	4																		
1-5417																																							
12-5417	5	4	3	5	5	5	5	5	5	5	5	1	1			1	1	1	1	1						1	1	1											
13-5417																																						0	
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18-5417																																							
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20-5417																																							
22-5417																																							
23-5417	1	1	1	1	1	1	1	1	1	1	1																												
24-5417	4	3	3	4	4	3	3	4	5	5	4		1			1	1	1	1	1			1	1	1	1	1								4	10			
25-5417	5	5	5	5	3	5	5	5	4	5	4	1	1			1	1	1	1	1			1	1	1	1	1								3	4			
27-5417	4	3	2	4	3	5	3	4	4	4	4					1	1	1	1	1			1	1	1	1	1								4	4			
28-5417																																							
29-3254	5	4	4	4	4	4	3	4	5	5	4	1				1	1	1	1	1			1	1	1	1	1	1							3	3			
30-3254	2	2	3	3	4	4	3	4	3	4	3			1									1	1	1	1	1	1	1							3	3		
43-3254	5	5	5	3	3	2	4	3	5	5	5	1	1			1			1	1			1	1	1	1	1								3	4			
45-5417																																							
47-5417																																							
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50-5417																																							
52-5417																																							
53-5417																																							
54-5417																																							
56-5417	5	5	4	5	5	4	4	2	3	5	4	1	1	1		1	1	1	1				1		1									3	4	3			
58-5417																																							
61-5417																																							
66-5417																																							
67-5417	2	4	5	5	4	1	4	5	2	5	5	1	1					1	1	1						1	1								4	4	4		
68-5417																																							
69-5417																																							
70-5417																																							
71-5417	1	1	1	1	1	1	1	1	1	1	5					1										1										5	5		
72-5417																																							
73-5417																																							
74-5417																																							
75-5417																																							
76-3254	5	3	4	1	1	2	3	3	3	5	5		1		1				1	1	1				1	1									3	3	6		
77-3254	Biological Technicians	5	2	3	5	4	5	4	5	5	5							1	1	1																4	3	46	

81-5417	5	5	5	5	5	3	5	5	5	5	5	5	1	1			1	1	1	1	1	Research, related SDPs/GCP/ICM guidelines	1				1				1	dry ice, IATA-certified s	4	3	5	
82-5417	5	5	5	5	5	5	5	5	1	1	5	4	1	1			1	1	1	1	1			1	1	1	1					1		4	4	2
83-5417																																				
84-5417																																				
85-5417	4	4	2	3	4	2	4	4	3	5	5	5	1	1	1		1	1	1	1	1		1	1		1	1				3	4		5		
86-5417																																				
87-5417																																				
90-5417	4	4	4	4	4	3	4	3	4	4	4	4	1	1			1	1	1	1	1			1	1	1	1	1			3	4		8		
91-5417																																				
92-5417																																				
93-5417																																				
94-5417																																				
95-5417																																				
96-5417																																				
97-5417	4	2	3	3	4	2	4	4	4	5	4					1	1	1	1	1	1								1	Spectrophotometer	4	4		2		
98-5417																																				
106-3254	4	4	4	1	4	3	5	1	2	3	5	1	1																			4	3		1	
110-5417	5	5	4	4	3	4	3	4	4	5	3	1	1			1	1	1	1	1	1		1	1		1	1				3	4		3		
111-5417																																				
112-5417																																				
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116-5417	4	1	3	4	3	3	3	1	3	4	4					1	1														4	4		1		
117-5417																																				
124-5417	5	5	5	5	5	5	5	5	5	5	5	5	1			1	1	1	1	1	1										4	4		8		
125-5417	4	4	4	4	3	4	2	5	5	5	5	5																				4	5		1	
126-5417																																				
127-5417																																				
133-3254	4	4	5	5	4	4	3	5	4	5	5	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1				5	4		2		
145-5417																																				
146-5417																																				
147-5417																																				
149-5417																																				
158-3254	5	5	4	4	5	2	4	2	5	5	5					1	1								1	1	1	1					4	4		26
159-5417																																				
160-5417																																				
161-5417																																				
162-5417																																				
163-5417	5	5	4	3	5	4	5	5	5	5	4	1	1	1			1	1	1	1	1										3	4				
170-5417																																				
171-5417																																				
172-5417																																				
173-5417	5	4	5	5	3	4	3	5	5	5	4	1				1			1	1	1			1	1	1	1				2	4		12		
175-3254	5	5	5	5	5	5	5	5	5	5	5	5	1	1		1	1	1	1	1	1											3	3		4	
176-3254	5	5	5	5	5	5	5	5	5	5	5	5	1	1	1	1	1	1	1	1	1												4	4		30
177-5417																																				
178-5417																																				
179-5417																																				
180-5417																																				
182-5417																																				
183-5417																																				
184-5417																																				
185-5417																																				
189-999	5	5	5	5	3	5	4	4	4	5	5				1	1	1	1	1	1		1	Good laboratory practice	1		1		1	1	1			3	4		1
191-999																																				
192-999	5	5	5	5	5	5	5	5	5	5	3		1					1	1	1	1												4	4		10
194-999	5	5	4	4	4	4	4	3	3	5	5	1	1			1	1	1	1	1	1															
197-999	1	5	5	5	4	5	4	1	1	4	5						1	1	1	1	1												5	3		
201-999	5	5	5	5	3	3	5	5	5	5	4	1	1	1	1	1	1	1	1	1	1					1	1	1	1			3	5			
210-999	4	4	4	4	4	2	4	4	4	4	4	4	1	1	1	1	1	1	1	1	1		1		1	1	1	1	1			4	4		0	
216-999	Biological Technicians	5	4	2	4	2	2	3	5	3	4	4	1	1			1	1	1	1	1				1								3	4		26
218-999		4	4	3	4	5	5	5	5	4	5	4					1	1	1	1	1															
221-999		5	4	4	3	5	3	3	4	5	5	2		1							1	1										3	4			

1-2
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Biological Technicians

24

Occupation Title:	Chemical Technicians				
SOC Code:	19-4031				
Rec ID	13 - What obstacles when recruiting?	15 - Skills tests or assessments?	18 - Forsee any trends?	19 - Other information about this occupation?	20 - Other occupations skill shortage?
1-5417					
13-5417					
14-5417					
15-5417					
16-5417					
17-5417	Finding people with sufficient knowledge of basic chemistry.	Acid-Base calculations			Chemists
18-5417					
19-5417					
20-5417					
21-5417	Communication skills (verbal/written)				
22-5417					
23-5417					
25-5417	Lackof individuals with skill set especially specific to Drug Discovery.				Yes - computational chemists.
26-5417					
28-5417					
29-3254	Ability and willingness to regularly perform other tasks in addition to laboratory work. Ability to maintain 100% attention to detail.	Typically, prospective employees are evaluated by working through a temporary agency to demonstrate they are capable before being hired permanently.	More sophisticated equipment and instrumentation will require better logical and electromechanical skills.		
30-3254					
43-3254			Depends on projects coming in	Experience in pharm processes	
45-5417					
47-5417					
48-5417					
49-5417					
50-5417					
52-5417					
53-5417					
54-5417					
56-5417					
58-5417					
61-5417					
66-5417					
67-5417					
68-5417					
69-5417					
70-5417					
71-5417	They must obtain their own funding				
72-5417					
73-5417					
74-5417					
75-5417					
76-3254		None	No		
77-3254	Trained people, most are research oriented w/higher degrees. Few BA, BS	Math, interviews	Increased regulations and requirements		
81-5417					
82-5417					
83-5417	Recent graduates especially fom CA colleges, fail to apply knowledge to practical test applications.				R&D in regards to optical industry & polymer chemists with practical skills

84-5417					
85-5417		math and science quiz			
86-5417					
87-5417					
90-5417					
91-5417					
92-5417					
93-5417					
94-5417					
95-5417					
96-5417					
97-5417	experience in the industry	review of educational background and experience			
98-5417					
106-3254	lack of education, lack of experience, lack of laboratory experience	probation period		lab experience is very important	
110-5417					
111-5417					
112-5417					
113-5417					
114-5417					
115-5417					
116-5417					
117-5417					
124-5417	Matching experience with expected level of skill set and experience	formal interview	increased levels of understanding the science of tasks		entry-level associates are not necessarily prepared enough by schooling to work in industry without individual training
125-5417	Competition/demand from other companies for the same candidate				Clinical research associates (CRA)
126-5417					
127-5417	English not first language, therefore directions not always understood, method writing inadequate. Are not prepared for the pace and accuracy required. Significant training required for even basic tasks.	Usually hire as temp first to assess ability. Interviewed by ultimate supervisor, VP + person who will do the training.	Definitely demand for quality control and analysis of contaminants (neutrals, pesticides, etc.)	We are for contract lab, results are due quickly but accurately. Technicians need organizational skills as well as familiarity with basic lab equipment and dexterity. MSDS.	Chemists, Food Chemists with advanced degrees and/or HPLC/GC experience that speak English with good writing/computer skills.
133-3254					
145-5417					
146-5417					
147-5417					
149-5417					
158-3254	to find candidates with correct and sufficient education	we check their education and related experience	increasing demand		
159-5417					
160-5417					
161-5417					
162-5417					
163-5417					
170-5417					
171-5417					
172-5417		usually pose a problem in the lab to see if they know how to approach it			
173-5417					
175-3254					
176-3254	lack of qualified individuals	knowledge of subjects	lack of proper education	need more trained scientists	formulation pharmaceuticals
178-5417					
179-5417					
180-5417					
181-5417	it was a smooth process when I hired my technician	fundamental chemistry. Lab practise. Familiarity with instrument.	salary or labour cost for this level occupation is increasing		

182-5417					
183-5417					
184-5417					
185-5417					
189-999	Insufficient industrial experience	none	test automation is reducing the need for chemical knowledge		
191-999					
192-999	Education/exp.	ed/exp			
193-999	Peptide synthesis & purification is very specific training. Time getting someone without experience up to speed costs time.	Verbal interview & sometime candidate is requested to give a short presentation	Continued growth		
194-999					
195-999					
201-999	Industry experience				
203-999	Finding candidates with enough experience				
204-999					
205-999	Limited supply of candidates w/ chemistry degree and analytical chemistry experience	none			
210-999					
216-999					
218-999					
219-999	Finding people with the correct skills set	None	Uptrend	Genomic DNA & RNA separator	sales
221-999	Commitment	Hypothetical lab situation. Long interview about background	maybe		
224-999	Communication skills, degree experience in peptide field	basil chemistry & regonition test EMF test	N/A	Employees in the position have to read & follow SOP's, follow rules, wear PPE & must be able to wear respirator, pass drug screen	2
225-999					
229-999					
233-999					

Occupation Title:	Electrical Engineering Technicians				
SOC Code:	17-3023.03				
Rec ID	13 - What obstacles when recruiting?	15 - Skills tests or assessments?	18 - Forsee any trends?	19 - Other information about this occupation?	20 - Other occupations skill shortage?
1-5417					
2-3344	Training is either not practical, expensive unless willing to train on site, need people who understand we are a small manufacturing plant with high-tech needs and a small budget.	Electronic Certificates, or on job training over 1 year.	More important to hire employees who understand electronics, so the operators can troubleshoot their machines first and run diagnostic tests.	Candidates need to be able to think on their feet.	Maintenance techs to fix automated machines.
3-3344	Time taken for interviewing, hiring or no-show of new person.	Prior experience			
4-3345					
5-3345	Low UI rate. Qualified candidates in geographical area.	Technical discussion w/ Elec Engineer		This position is an electrical tech in our test/repair dept. and does not report to engineering, but supports the dept.	
6-3345					
7-3345	Shortage of trained personnel	Construction/troubleshooting	English as a second language		IT professionals
8-3344					
9-3344		Troublshoot a production PCB			
10-3344					
11-3344					
13-5417					
14-5417					
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22-5417					
23-5417					
25-5417					
28-5417					
31-3344	We usually train our people.	None if they have experience.	Offshore manufacturing is killing the circuit board industry.		No. There are a lot of people out of work.
32-3344					
33-3344					
34-3344					
35-3344		Test component recognition and value. Polarity of parts and type.	Increase knowledge of digital circuits and components (ie BGA).	Less demand on time.	Yes - CAD level skills.
36-3344				Not required in our line of business	No
37-3344					
38-3345					
39-3345					
40-3345					
41-3345			Fewer engineers available.		
42-3344					
44-3344					
45-5417					
46-3344					
47-5417					
48-5417					
49-5417					
50-5417					

51-3344					
52-5417					
53-5417					
54-5417					
55-3344	Big egos from techs	Verbal test			Yes. Machinist, Prototype
57-3344					
58-5417					
59-3345					
60-3344					
61-5417					
62-3345	Not very many qualified candidates				optics engineers
63-3345	Not enough people to pool from in SV or SL area	English			Tech. who can build per drawings
65-3344	PCB manufacturing is moving to China	basic manufacturing			
66-5417					
67-5417					
68-5417					
69-5417					
70-5417					
71-5417					
72-5417					
73-5417	None	Verbal assessment	No		No
74-5417					
75-5417					
78-3344			Rent Cost		Office Management
79-3345	Where to recruit, shere to find possible ees		No		Machinists
80-3345					
81-5417					
82-5417					
83-5417					
84-5417					
85-5417					
86-5417					
87-5417					
88-3345					
89-3345	Hard to find a good	Soldering, use of measurement equipment, background discussion			highly qualified engineers
90-5417					
91-5417					
92-5417					
93-5417					
94-5417					
95-5417					
96-5417					
97-5417					
98-5417					
99-3344					
100-3344					
101-3344					
102-3344					
103-3344					
104-3345	finding affordable adequately skilled candidates	circuit recogntiion tests, assembly tests			
105-3345	cost of living/qualified workers	reading of schematic			
107-3344					

108-3344	lack of knowledge/experience; excessive pay requirements	job interview only			
109-3344					
110-5417					
111-5417					
112-5417					
113-5417					
114-5417					
115-5417					
116-5417					
117-5417					
118-3345					Application engineers
119-3345					
120-3345	Problems setting up machinery for run	Programming CNC machines			
121-3344	Money	Electrical Engineer	Sine Wave		
122-3344	Qualified techs, mechanical & electrical combines technicians w/robatic eperience	Schematic techs, not many can read them well	no		no, technicians are by far the most difficult positions to fill.
123-3344	No one has knowledge of driver programming. Very rare to find someone in our local area w/expertise. Also very expensive.	Programming skills, knowledge of particular areas of computer systems, i.e., I/O, USB, controllers	No	None.	No
124-5417					
125-5417					
126-5417					
127-5417					
128-3344					
129-3344	few have microwave electronics expertise, very few are willing to move to Santa Barbara due to high cost of living				
130-3344	Salaries are too high for a small company and there are not many applicants available	electronics assembly of vector board, soldering & wire wrapping with hand held gun. Test for machinist also given for set up of equipment and blue prints interpretation.	if jobs and projects keep going to China then this field could dry up.	A training program by the state might be a viable solution for new hires.	We need a sales engineer as well as skilled machinist
131-3345					
132-3345	availability of talent in south orange county				
134-3345	location of company				Yes, engineering dept.
135-3345					
136-3345					
137-3345					
138-3345					
139-3345					
140-3344	lack of adequate skill set	only verbal assessments base on skills			
141-3344					
142-3344					
143-3344					
144-3344					
145-5417					
146-5417					
147-5417					
148-3344					
149-5417					
150-3344					
151-3345					
152-3345					
153-3344	dedication, consistency, absenteeism	30 day probation period	possibly increased modern technology		

154-3344	renewable energy - new and growing industry	personal interview	grow awareness of the need for clean renewable energy and need for solar electric contractors	see CALSEIA	mechanical engineering technician with experience in wind turbines
155-3345					Nuclear
156-3345	pay rate	experience in general electrical engineering			
157-3345	level of competency, very low basic skills, math, writing, etc. is missing	operating electronic instrumentation. Basic electronics	outsourcing of manufacturing to the far east. We can not maintain enough opportunities for these jobs	problem is the lack of fundamental skills that should be learned in high school. Math, physics, writing!	
159-5417					
160-5417					
161-5417					
162-5417	not enough candidates with RF experience				
163-5417					
164-3344					
165-3345	applicants with education, experience, and interest	interviews			
166-3344					
167-3344					
168-3344					
169-3344					
170-5417					
171-5417		must be experienced, self directed			
172-5417					
173-5417					
174-3345					
177-5417					
178-5417					
179-5417					
180-5417					
181-5417					
182-5417					
183-5417					
184-5417					
185-5417					
186-3344					
188-999	Most applicants pretend to know more than what they actually know				
191-999	Although the local university has a 1st class engineering department, we find it very hard to get top applicants in this area	We develop individual requirement tests for all types of engineers that we have. There are written and problem solving tests	no	None.	We have problems finding all types of engineers in the SB County
193-999					
194-999					
195-999					
198-999	Limited supply on qualified people	Make CAD drawing	They expect higher salary, even on the entry level	Better bilingual to speak Chinese as they need to communicate with factories/customers offshore	
199-999	Applicants with insufficient technical knowledge. Poor communication skills, poor grasp of verbal and written language. Narrow background of experience	None (tests) - indepth questions regarding knowledge and experience	RF Techology - Wireless Applications		
200-999					
201-999					
202-999	Proper training and experience	Elec. Engineering competency test	Even more computer knowledge		no
204-999					
205-999					
209-999	Salary requirements		no		no

210-999					
212-999					
213-999					
214-999		Math			
215-999		Mathematicla, mechanical & written english test			
216-999					
218-999					
220-999	Most are females in their 50's and only want a part-time job because they are semi-retired. The occupation has been outsourced overseas and is a lost trade.	Read diagrams - wire code to color	The aging of the current workforce as they get closer to retirement and outsourcing overseas		
221-999	Economy in the area has forced many qualified candidates to leave to area in search of a more stable economic area.		Not @ this time		assemblers/electrical techs (test the products, but not engineering)
223-999	Locating people with relevant experience	Performance based troubleshooting of simple circuits			Electrical Engineers
225-999					
229-999	Many foreign nationals with communication difficulties, or a requirement for visas.				
230-999					
233-999					
234-999					

Occupation Title:	Electro-Mechanical (Robotic) Technicians				
SOC Code:	17-3024				
Rec ID	13 - What obstacles when recruiting?	15 - Skills tests or assessments?	18 - Forsee any trends?	19 - Other information about this occupation?	20 - Other occupations skill shortage?
2-3344				Must train within	
3-3344		Experience			
4-3345					
5-3345					
8-3344	Applicants not qualified	Intervue			
9-3344					
10-3344		Must have good mfg skills			
11-3344					
31-3344	We train them.		Offshore mfg is killing this industry.		
33-3344					
34-3344					
35-3344	Lack of creative talent.	Same as 13			Electronic technician
36-3344				Not required in our line of business	
37-3344					
38-3345					
39-3345					
40-3345					
42-3344					
44-3344					
46-3344					
55-3344		Verbal			
57-3344					
59-3345					
60-3344					
65-3344					
78-3344					
79-3345					
80-3345					
88-3345					
89-3345	hard to find a good one	use of logic analyzer, use of instruments, practical experience			highly qualified semiconductor engineers
99-3344					
100-3344					
101-3344					
102-3344					
103-3344					
104-3345	applicants regularly indicate that they have more experience than they really have. Applicants want more money than they are worth.	Mechanical tests which use our in-house equipment. This tests their aptitude and attitude while testing their mechanical abilities.	This continues to be a growing field. We need people to learn more about this field to be competitive globally.	Standardize platforms to make training easier	
105-3345					
107-3344					
108-3344					
109-3344		ask questions based on experience			
118-3345					
119-3345					
120-3345					
121-3344	Education spectrum, hands-on experience, \$\$	Mechanical and electrical engineering			
122-3344	Not finding qualified technicians	Practical application on items that would be done or used on a daily basis	only in the positive		yes
123-3344					
128-3344					

129-3344					
130-3344					
131-3345					
132-3345					
134-3345					
135-3345					
136-3345					
137-3345					
138-3345					
139-3345					
140-3344					
141-3344					
142-3344					
143-3344					
144-3344					
148-3344					
150-3344	it's tough to find electro-mechanical assembler/techs who will work on precision products (automated tuning device)	We look for skill/exp building motor driven precision devices as well as microwave/RF electronics expertise.	cost of living in So Cal		
151-3345					
152-3345					
153-3344	dedication, absenteeism	30 day probation			
154-3344					
155-3345					
156-3345	pay rate				
157-3345					
164-3344					
165-3345					
166-3344					
167-3344					
168-3344					
169-3344					
174-3345					
186-3344					
188-999					
193-999					
198-999					
199-999					
200-999					
202-999					
213-999					
214-999					
215-999					
220-999	Not enough experienced candidates				
221-999	No candidates that are trained	Hands on	(Arrow pointing down) math skills		
223-999					
230-999					

Occupation Title:	Electronics Engineering Technicians				
SOC Code:	17-3023				
Rec ID	18 - What obstacles when recruiting?	20 - Skills tests or assessments?	21 - Forsee any trends?	22 - Other information about this occupation?	23 - Other occupations skill shortage?
1-5417					
2-3344					
3-3344		Experience			
4-3345					
5-3345					
7-3345	Shortage of skilled personnel	Theory/troubleshooting	Complexity is growing		
8-3344		Intervue			
9-3344					
10-3344					
11-3344					
13-5417					
14-5417					
15-5417					
16-5417					
17-5417					
18-5417					
19-5417					
20-5417					
22-5417					
23-5417					
25-5417					
28-5417					
31-3344					
33-3344					
34-3344					
35-3344					CAD
36-3344				Not required in our line of business	
37-3344					
38-3345					
39-3345					
40-3345					
41-3345					
42-3344					
44-3344					
45-5417					
46-3344					
47-5417					
48-5417					
49-5417					
50-5417					
52-5417					
53-5417					
54-5417					
55-3344		Verbal			
57-3344					
58-5417					
59-3345					
60-3344					
61-5417					
62-3345					
63-3345					

64-3345	Finding a tech that can also handle sales				
65-3344					
66-5417					
67-5417					
68-5417					
69-5417					
70-5417					
71-5417					
72-5417					
73-5417					
74-5417					
75-5417					
78-3344	Where to find them				
80-3345					
81-5417					
82-5417					
83-5417					
84-5417	Applicable abilities, salary requirements	verbal interview	needed greater computer skills		
85-5417					
86-5417					
87-5417					
88-3345					
89-3345	hard to find a good one				highly qualified circuit engineers
90-5417					
91-5417					
92-5417					
93-5417					
94-5417					
95-5417					
96-5417					
97-5417					
98-5417					
99-3344					
100-3344	It is very hard to find yourn people with basic skills to be able and willing to assemble small electronic parts	test demonstrating manual ability to solder and assembly	cost of new materials, delivery and quality raising	we work for microwave industry and our market is very limited. There is only a few companys ordering our products.	only electronic assembler
101-3344					
102-3344					
103-3344					
104-3345	hard to find skilled technicians	circuit recognition test, manual assembly test			
105-3345	lack of people/cost of living in the area				
107-3344					
108-3344					
109-3344					
110-5417					
111-5417					
112-5417					
113-5417					
114-5417					
115-5417					
116-5417					
117-5417		Team Player, Good Problem Solving Ability	New technologies		
118-3345					Applications engineers
119-3345	knowledge of how things really work	explain schematics	no		RF engineering
120-3345					
121-3344	Money, experience	Electro/mechanical engineer			
122-3344	Skill & knowledge				
123-3344	Money				

124-5417					
125-5417					
126-5417					
127-5417					
128-3344		written technical test			
129-3344	lack of these specialized skills and hard to recruit people to Santa Barbara due to high cost of living				
130-3344	not many available				
131-3345	finding qualified candidates with technical skills and an engineering tech background				production technicians
132-3345	availability of south orange county				
134-3345	location of company / salary				
135-3345	Not enough qualified applicants	Written test, board loading test			
136-3345					
137-3345					
138-3345					
139-3345	lack of qualified applicants	basic electrical knowledge	increase in sales	specific to product - R&D type atmosphere	
140-3344					
141-3344	lack of formal education and experience. Relatively few candidates in immediate area.	Experience with electronic test equipment and hand tools	Outsourcing reduces interest in this trade	Technicians are harder to find than engineers	Electronic assemblers with dexterity for very small parts
142-3344					
143-3344					
144-3344					
145-5417					
146-5417					
147-5417					
148-3344	incorrect understanding of requirements for the position. Not enough practical experience				
149-5417					
150-3344					
151-3345					
152-3345					
153-3344	dedication	30 day probation	increased technology		
154-3344					
155-3345					
156-3345					
157-3345	lack of basic skills, math, writing, electronics	basic electronics, math operating instrumentation, soldering, reading schematics	outsourcing of manufacturing to the far east. There is no opportunities for these people to grow a career.		
159-5417					
160-5417					
161-5417					
162-5417					
163-5417					
164-3344					
165-3345					
166-3344	qualified candidates not available	technical questions			
167-3344		prior work history			specific software engineers
168-3344					
169-3344					
170-5417					
171-5417		resume and reference checks			
172-5417					
173-5417					
174-3345					
177-5417					
178-5417					

179-5417					
180-5417					
181-5417					
182-5417					
183-5417					
184-5417					
185-5417					
186-3344	number of applicants with experience testing magnetic components	assess knowledge			
188-999					
189-999					
190-999					
191-999		written and problem solving			all types of engineer
193-999					
194-999					
195-999					
196-999	english speaking/qualified/wages				
198-999	limited supply of qualified candidates	understanding to blue-prints			
199-999	lack of technical on the job skills and experience poor communication skills, written and verbal	(tests none - interview includes questions regarding extent of knowledge and experience)	increased knowledge of new product development and proto-types		
200-999					
201-999					
202-999	Experienced individuals	Engineering tech test			
204-999					
205-999					
208-999					
210-999					
213-999		No tests - look for smart technicians			
215-999					
216-999					
218-999					
221-999					
222-999	Candidates are either Ees or IT types with nothing in between	hands on test			
223-999	locating qualified, experienced persons with adequate experience.	Traditionally reviewed experience and sometimes give practical tests			
225-999					
226-999	language	symbols and component identification			
229-999					
231-999					Senior Electro-Mechanical Assemblers
232-999					
233-999					
234-999					

Occupation Title:	Industrial Engineering Technicians				
SOC Code:	17-3026				
Rec ID	18 - What obstacles when recruiting?	20 - Skills tests or assessments?	21 - Forsee any trends?	22 - Other information about this occupation?	23 - Other occupations skill shortage?
1-5417					
2-3344					
3-3344	Finding the right person	Experience			
4-3345					
5-3345					
6-3345	Applicants with well-rounded knowledge and innovative thinking are rare.	Verbal assessment.	This industry is evolving and growing.		Our entire shop crew (sometimes).
8-3344					
9-3344					
10-3344					
11-3344					
13-5417					
14-5417					
15-5417					
16-5417					
17-5417					
18-5417					
19-5417					
20-5417					
22-5417					
23-5417					
25-5417					
28-5417					
29-3254	Ability and willingness to combine tasks in this occupation with tasks of a working production supervisor.	Promotion from within the company; typically, the prospective employee must have performed well in a subordinate position with the company.			
30-3254					
31-3344					
33-3344					
34-3344					
35-3344					
36-3344				Not required in our line of business	
37-3344					
38-3345					
39-3345					
40-3345					
42-3344					
43-3254					
44-3344					
45-5417					
46-3344					
47-5417					
48-5417					
49-5417					
50-5417					
52-5417					
53-5417					
54-5417					
57-3344					
58-5417					
59-3345					
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61-5417					
65-3344					
66-5417					

67-5417					
68-5417					
69-5417					
70-5417					
71-5417					
72-5417					
73-5417					
74-5417					
75-5417					
76-3254		None			
77-3254					
78-3344					
80-3345					
81-5417					
82-5417					
83-5417					
84-5417					
85-5417					
86-5417					
87-5417					
88-3345					
89-3345	not easy to find a skillful tech	soldering, use of instruments, background practical experience			highly skillful and creative engineers
90-5417					
91-5417					
92-5417					
93-5417					
94-5417					
95-5417					
96-5417					
97-5417					
98-5417					
99-3344					
100-3344					
101-3344					
102-3344					
103-3344					
104-3345	not enough mechanical aptitude	mechanical test on in-house equipment	many industrial companies leaving CA	need more focus on these skills in high school	
105-3345					
106-3254					
107-3344					
108-3344					
109-3344					
110-5417					
111-5417					
112-5417					
113-5417					
114-5417					
115-5417					
116-5417					
117-5417					
118-3345					
119-3345					
120-3345	No knowledge				
121-3344					
122-3344					
123-3344					
124-5417					
125-5417					
126-5417					
127-5417					
128-3344					
129-3344					

130-3344					
131-3345					
132-3345					
133-3254	lack of entry-level candidates				
134-3345					
135-3345					
136-3345					
137-3345					
138-3345					
139-3345					
140-3344					
141-3344					
142-3344					
143-3344					
144-3344					
145-5417					
146-5417					
147-5417					
148-3344					
149-5417					
150-3344					
151-3345					
152-3345					
153-3344	consistency	30 day probation	increased ? Technology		
154-3344					
155-3345					
156-3345					
157-3345					
158-3254					
159-5417					
160-5417					
161-5417					
162-5417					
163-5417					
164-3344					
165-3345					
166-3344					
167-3344					
168-3344					
169-3344					
170-5417					
171-5417					
172-5417					
173-5417					
174-3345					
175-3254					
176-3254	lack of knowledge	tests of knowledge	shortage	need more trained engineers	pharmaceutical
177-5417					
178-5417					
179-5417					
180-5417					
181-5417					
182-5417					
183-5417					
184-5417					
185-5417					
186-3344					
188-999					
191-999					
193-999					
194-999					
195-999					
196-999	English skills/qualified/wages				

198-999					
199-999	Poor communication skills/written and verbal. Broad Experience and background.	Tests - None. Interview includes indepth questions regarding knowledge and experience	Greater demands for technical experience across multiple product disciplines	Very specialized experience in building prototypes and new product development	No
200-999					
201-999					
202-999					
204-999					
205-999					
206-999	Finding motivated, qualified people	Blue print reading, basic mechanical assembly skills	Jobs and product assembly moving overseas		
207-999					
210-999					
211-999	Lots of them left printed circuit industry	none	China taking over		Drillers
213-999					
214-999					
215-999					
216-999					
218-999					
221-999	Economy	A written electronis test & sit them @ the equip			
222-999			Yes, when full production begins		
223-999	Really impossible to locate trained quality personel for this position	Experience and practical type testing.			Mechanical engineers - with quality design experience
225-999					
227-999	Finding someone with combined & required skill to match organization requirements	Emp test & evaluation performance accordingly	no	n/a	n/a
229-999					
230-999					
233-999					
234-999	Multiple Skills required but not found. Job seems boring to some.	Hands on	Logic and analysis skills are not valued in economy.		

Occupation Title:	Mechanical Engineering Technicians				
SOC Code:	17-3027				
Rec ID	18 - What obstacles when recruiting?	20 - Skills tests or assessments?	21 - Forsee any trends?	22 - Other information about this occupation?	23 - Other occupations skill shortage?
1-5417					
2-3344	Want high salary, needs to be more diverse.				
3-3344		Experience			
4-3345					
5-3345					
6-3345	Our business is small. We need someone who doesn't cost too much.	Verbal	Our industry is growing		
8-3344					
9-3344					
10-3344					
11-3344					
13-5417					
14-5417					
15-5417					
16-5417					
17-5417					
18-5417					
19-5417					
20-5417					
22-5417					
23-5417					
25-5417					
28-5417					
31-3344	Training		Offshore mfg increasing		
33-3344					
34-3344					
35-3344					
36-3344				Not required in our line of business	
37-3344					
38-3345					
39-3345					
40-3345					
42-3344					
44-3344					
45-5417					
46-3344	Language and motivation	Basic math & measurement conversion	outsourcing work to Asia		
47-5417					
48-5417					
49-5417					
50-5417					
52-5417					
53-5417					
57-3344					
58-5417					
59-3345					
60-3344					
61-5417					
63-3345					
65-3344					
66-5417					

67-5417					
68-5417					
69-5417					
70-5417					
71-5417					
72-5417					
73-5417					
74-5417					
75-5417					
78-3344	Drive to be the best				
79-3345					
80-3345					
81-5417					
82-5417					
83-5417					
84-5417					
85-5417					
86-5417					
87-5417					
88-3345					
89-3345		hard to get a skillful micromachinist			very careful mechanical engineer
90-5417					
91-5417					
92-5417					
93-5417	lack of technical and language skills	knowledge of autoCAD	more computer aided design and 3-d drawing productions	bldg. system knowledge helpful	mechanical engineers with HVAC and plumbing design experience
94-5417					
95-5417					
96-5417		technical skills test	reduction in 2D drawings. Direct use of 3D CAD models.		
97-5417		review of experience and education			
98-5417					
99-3344					
100-3344					
101-3344					
102-3344					
103-3344					
104-3345	lack of good candidates	mechanical assembly test			
105-3345					
107-3344					
108-3344					
109-3344					
110-5417					
111-5417					
112-5417					
113-5417					
114-5417					
115-5417					
116-5417					
117-5417					
118-3345					
119-3345					
120-3345					
121-3344		Mechanical engineering			
122-3344					
123-3344					

124-5417					
125-5417					
126-5417					
127-5417					
128-3344					
129-3344					
130-3344					
131-3345					
132-3345					
134-3345	location of company / salary				
135-3345					
136-3345					
137-3345					
138-3345					
139-3345				makes all first run designs	
140-3344					
141-3344					
142-3344					
143-3344					
144-3344					
145-5417					
146-5417					
147-5417					
148-3344					
149-5417					
150-3344					
151-3345					
152-3345					
153-3344	consistency	30 day probation			
154-3344	need people with expertise in applying wind energy	personal interview	growth in the use of wind energy	see CAL SEIA	solar electric contractor
155-3345					
156-3345					
157-3345					
159-5417					
160-5417					
161-5417					
162-5417					
163-5417					
164-3344					
165-3345					
166-3344					
167-3344					
168-3344					
169-3344					
170-5417					
171-5417					
172-5417	in this region finding ones with mechanical skills (ie fabrication skills) computer and electronic techs are most common	ability to assemble parts, writing, sometimes machining/fabrication			
173-5417					
174-3345					
177-5417					
178-5417					
179-5417					
180-5417					

181-5417					
186-3344 188-999	quantity of applicants with knowledge of electronics and mechanics used in our business				
190-999	exact skill set to match company requirements	CAD, schematic symbol tests	no		
191-999	lack of local top applicants	written & problem solving			engineers
193-999					
194-999					
195-999					
196-999	skills, english, wages				
198-999	experience				
199-999					
200-999					
201-999					
202-999					
204-999					
205-999					
206-999	where to find people (i.e. paper, monster, etc.)	blue print reading - mostly. Listen carefully to answers of pertinent questions.	jobs going overseas		
207-999					
212-999					
213-999					
214-999					
215-999					
216-999					
217-999	high wage	use, operate and repairing all kinds of machinery in construction industry			
218-999					
221-999					
222-999			yes, as the company shows		
223-999	locating qualified personel in the area	experience and practical skill assessment			
225-999					
229-999	foreign nationals with difficult communication and requirement of visa				
231-999					
233-999					
234-999					
236-999	no math or logic skills	hands on			