



# W. M. KECK OBSERVATORY

On the summit of Mauna Kea, Island of Hawai'i

## SENIOR MECHANICAL ENGINEER

The W. M. Keck Observatory operates the world's two largest optical/infrared telescopes located on the summit of Mauna Kea on the Big Island of Hawaii. The Observatory seeks a Senior Mechanical Engineer.

This position provides engineering, systems engineering and project management support to develop new telescope, enclosure and physical plant capabilities and upgrade our existing observatory infrastructure. Required competencies include sound engineering and design skills, and demonstrated ability in planning and managing medium- to large- scale, high precision mechanical and electro-mechanical systems projects. Prior telescope and physical plant engineering and systems engineering experience are highly desired. Ideal candidate should be a motivated self-starter who can manage multiple projects and priorities within a fast paced environment.

Minimum requirements and skills for this position include: Bachelor of Science degree in mechanical engineering; Eight years of engineering work experience performing design and documentation using [3D](#) design software, analysis, fabrication, test, and troubleshooting of medium- to large- scale, high precision mechanical and electro-mechanical systems projects; Three years experience in project management and reporting, and subcontract management; Experience in problem solving utilizing classical and finite element analysis techniques and data reduction utilities (spreadsheet, plotting, and database software); Engineering process and configuration management experience; Excellent written and oral communication skills; and Ability to work independently and as a member of a team.

This is a regular position with a competitive, comprehensive benefits package including relocation assistance and private school (K-12) tuition support for dependent children. Salary is dependent upon qualifications and experience. The position is opened until filled. Employment is conditional on successful completion of drug tests and background check. Email resumes, references, and salary history to: Senior Mechanical Engineer, WMKO, 65-1120 Mamalahoa Highway, Kamuela, HI 96743; Fax (808) 881-3696 or [employment@keck.hawaii.edu](mailto:employment@keck.hawaii.edu). Additional information about WMKO and this position may be found on our web site at [www.keckobservatory.org](http://www.keckobservatory.org). EEO/M/F/D/V

## POSITION DESCRIPTION

<b>POSITION TITLE:</b>	Senior Mechanical Engineer	<b>DEPARTMENT:</b>	Technical Services
<b>INCUMBENT:</b>		<b>FLSA STATUS:</b>	Exempt
<b>REPORTS TO:</b>	TSD Sr. Engineer	<b>MEMBER:</b>	
<b>SUPERVISES:</b>	N/A		

### **SUMMARY:**

Under the general supervision of the Technical Services Department (TSD) Senior Engineer, this position provides engineering, systems engineering and project management support to develop new telescope, enclosure and physical plant capabilities and upgrade existing observatory infrastructure. Required competencies include sound engineering and design skills, and demonstrated ability in planning and managing medium- to large- scale, high precision mechanical and electro-mechanical systems projects. Prior telescope and physical plant engineering and systems engineering experience is highly desired. Candidate should be a motivated self-starter who can manage multiple projects and priorities within a fast paced environment.

### **ESSENTIAL FUNCTIONS**

1. Provides engineering, design, systems engineering and project management support to develop

new telescope, enclosure and physical plant capabilities, and upgrade our existing observatory infrastructure.

2. Following accepted observatory standards in systems engineering, project management and engineering processes, designs and analyzes, and oversees procurement, subcontracting and installation of medium- to large-scale high precision mechanical and electro-mechanical systems and physical plant projects.
3. Provides technical and project management oversight of contractor-performed design, fabrication, installation, troubleshooting, repair and testing of observatory systems to assure results meet WMKO specifications. Effective collaboration with the observatory Contracts Officer in determining scope of work definitions for subcontractor work and in subcontractor selection.
4. Work effectively with coworkers and others by sharing ideas in a constructive, positive manner; listening to and objectively considering ideas and suggestions from others; keeping commitments; keeping others informed of work progress and issues; addressing problems and issues constructively to find mutually acceptable and practical solutions; and respecting the diversity of the WMKO workforce in actions, words, and deeds.
5. Maintain commitment to a high standard of safety, comply with all safety laws and WMKO safety policies/rules, and report actual and potential safety violations to appropriate supervisory or management personnel to further WMKO's core value of safety.

#### **OTHER DUTIES:**

1. Perform other duties consistent with the scope of this position.

#### **Minimum Qualifications:**

##### **Education and Experience**

1. Bachelor of Science degree in mechanical engineering.
2. Eight years of engineering work experience performing design and documentation using [3D](#) design software, analysis, fabrication, test, and troubleshooting of medium- to large- scale, high precision mechanical and electro-mechanical systems projects.
3. Three years experience in project management and reporting, and subcontract management.
4. Experience in problem solving utilizing classical and finite element analysis techniques and data reduction utilities (spreadsheet, plotting, and database software).
5. Engineering process and configuration management experience.
6. Excellent written and oral communication skills.
7. Ability to work independently and as a member of a team.

#### **Minimum Qualifications:**

##### **Skills**

1. Collaborate effectively across disciplines. This includes working with software, electronic and operations engineers, technicians and scientists at the observatory.
2. Take ownership and responsibility for assigned subsystems.
3. Ability to evaluate information and exercise good judgment in making decisions.
4. Problem solving—the individual identifies and resolves problems in a timely manner and gathers and analyzes information skillfully.
5. Interpersonal Skills—the individual maintains confidentiality, remains open to others' ideas and exhibits willingness to try new things.
6. Oral communication—the individual speaks clearly and persuasively in positive or negative situations, demonstrates group presentation skills and conducts meetings.
7. Written Communication—the individual edits work for spelling and grammar, presents numerical data effectively and is able to read and interpret written information. Ability to generate high-quality written documentation for technical proposals and management reports.
8. Planning/organizing—the individual prioritizes and plans work activities, uses time efficiently and develops realistic action plans.
9. Quality control—the individual demonstrates accuracy and thoroughness and monitors own work to ensure quality.
10. Adaptability—the individual adapts to changes in the work environment, manages competing demands and is able to deal with frequent change, delays or unexpected events.
11. Dependability—the individual is consistently at work and on time, follows instructions, responds to management direction and solicits feedback to improve performance.

12. Safety and security—the individual actively promotes and personally observes safety and security procedures, and uses equipment and materials properly.

**Other Requirements**

1. Willingness to commit to WMKO core and cultural values. Core Values: Safety, Integrity, Respect, Discovery and Service. Cultural Values: Education/Learning, Communication, Teamwork, Rewarding Work Environment, Excellence and Community Involvement.
2. Working knowledge of shop fabrication practices (e.g., machining, welding, forming, etc.).
3. Willingness to stay current with changing technology.
4. Willingness and ability to work some nights and weekends.
5. Valid driver's license.
6. Work effectively at 14,000 feet elevation.
7. Successful completion of high altitude physical.

**Desirable Qualifications:**

1. Experience in telescope or radar systems design and operations
2. Physical plant systems experience in refrigeration, hydraulics, pneumatics, rotating machinery, generators and power distribution
3. Systems engineering experience (establishing requirements, configuration management, interface control, etc.)
4. Vibration and shock loading analysis and field testing experience
5. Masters of Science Degree in Engineering
6. Opto-mechanical design, analysis and implementation experience
7. Motion control and servo systems design experience
8. Experience in utilizing various displacement, velocity, acceleration and optical sensors
9. Working knowledge of the following computer tools
  - a. SolidWorks and Inventor parametric modelers
  - b. Ansys finite element analysis software
  - c. Microsoft Project management and planning software
  - d. MathCAD engineering analysis software
  - e. Microsoft Office Tools (Outlook, Word, Excel and Powerpoint)
10. Experience with computational fluid dynamics

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Incumbent

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Date

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Supervisor

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Date