Educators Working with Industry to Create Alternative STEM Success Pathways

2015 California STEM Symposium

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Overview

• MESA Works!
  – Statewide, Region, SDSU
• Mission & Objectives
• Solar Turbines
• Solar’s Young Women Academy
• Student Stories
• Future Direction
MesaWorks!
MesaWorks!

- MESA’s History

- California Statewide Program, spans all educational levels
  - 76% of MESA High School graduates go on to college
  - 41% of California High School graduates go on to college

- 5 MESA Centers in San Diego and Imperial Counties
  - 3 of which at SDSU (pre-college and undergraduate level)
  - Established San Diego MESA Alliance; statewide model
San Diego MESA Alliance
Serving over 2,000 students annually — San Diego’s pipeline for tomorrow’s STEM workforce!

K-12: MESA Schools Program
- Imperial Valley Unified
- San Diego Unified

Community College: MESA Programs
- San Diego City College
- Southwestern College

University: MESA Program
- San Diego State University

~ 1,600 students
~ 320 students
~ 250 students

Industry or Graduate School
The MESA mission is to enable educationally disadvantaged students to prepare for and graduate from a four-year college or university with a math-based degree while:

- Developing academic and leadership skills
- Increasing educational performance
- Gaining confidence in their ability to compete professionally
Solar Turbines

- World’s Largest Manufacturer of Industrial Gas Turbines (1 to 22 MW Range, 1590 to 30,000 horsepower)
- More than 15,000 units and 2.1 billion operating hours in over 100 Countries
- 7,800 + Employees Worldwide
- Sell, Manufacture, and Service products from 48 worldwide locations
- 50 largest exporters in US, export more than 70%
- Headquartered in San Diego, California
- Subsidiary of Caterpillar Inc. since 1981
Caterpillar Inc.

- Fortune 50 Industrial Company
- World’s Leading Manufacturer
  - Construction & Mining Equipment
  - Diesel & Natural Gas Engines
  - Industrial Gas Turbines
- Global Strength & Presence
- Leading Products & Product Support
- Strong Financial Position
  - Innovative Financing Options
- Worldwide Trade Capability
Markets

- Oil and Gas Industry
  - Natural Gas Compression
  - Mining, Production, & Transmission Natural Gas and Crude Oil
- Power Generation
  - Combined Heat & Power
  - Distributed Generation
  - Hospitals, Universities, Manufacturing Facilities
- Customer Services
  - Total Life Cycle Support
  - Parts and Service Direct
Converts **HEAT ENERGY** to **MECHANICAL ENERGY**

**AIR INLET**

**POWER TURBINE**

**ENGINE EXHAUST**

**COMPRESSOR**

**COMBUSTOR**

*How an Industrial Gas Turbine Works Video*
Workforce Dilemma

• Lack of diversity in the STEM workforce
  – Gender
  – Ethnicity

• Diversity Initiative
  – Where to begin?
Solar’s Young Women Academy

- The Bridge of Inspiration
- The Proposal

- Academy Summary
  - 2014 Pilot Cohort
  - 2014-2015 Cohort
  - 2015-2016 Cohort

![Image of a group of people]
Solar’s Young Women Academy

• Sponsored by Solar Turbines
• Administered through SDSU MESA program
• 2015-2016 Cohort:
  – 25 young women
  – Sweetwater High School
• Eligibility Criteria:
  – High School Junior or Senior
  – GPA between 2.0-3.0
Solar’s Young Women Academy

• Enhance, Engage, & Expose
• SYWA Support Network
  – Parents
  – Mentors
  – Teachers
  – Industry
• Internship Opportunity
Student Stories

Alexis
2014 Pilot Cohort
Internship Awardee

Zhanttal
2014-2015 Cohort – Graduated
Internship Awardee
Student Stories

Kaylannie
2014-2015 Cohort – Graduated
Internship Awardee

Bryanna
2014-2015 Cohort - Junior
2015-2016 Cohort - Senior
Future Direction

• Further develop the SYWA Pipeline
• Advocate about the Investment for Diversity
• Increase Visibility on the academy’s foundations to the community