

Oxy-Fuel Set-Up & Safety

Media Type: DVD

Duration: 25 min.

Goal: To be able to safely set-up, change tips, use and clean up an oxy-fuel welding machine.

Description: This presentation features Mary Jo Emerick, Adjunct Welding Professor and AWS CWI/CWE at Austin Community College and the Tech V Welder/Inspector and AWS CWI/CWE at the University of Texas. Follow along as she explains and demonstrates the correct procedure for safely preparing and using oxy-fuel welding machinery. During this presentation, insight into different welding tips, fuel types and flame types are shown.

Objectives:

1. To understand the safety procedures required to operate the oxy-fuel welding machine.
2. To understand the specific fuel types associated with oxy-fuel welding.
3. To understand how to use and change the different tips used in oxy-fuel welding.
4. To understand the cleaning procedures for the oxy-fuel welding machine.



Agriculture, Food & Natural Resources Career Cluster (AG)

Cluster	Standard
	Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food & Natural Resources Career Cluster™.
	Evaluate the nature and scope of the Agriculture, Food & Natural Resources Career Cluster™ and the role of agriculture, food and natural resources (AFNR) in society and the economy.
	Examine and summarize the importance of health, safety and environmental management systems in AFNR businesses.
	Demonstrate stewardship of natural resources in AFNR activities.
	Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources Career Pathways.
	Analyze the interaction among AFNR systems in the production, processing and management of food, fiber and fuel and the sustainable use of natural resources.
Power Structural & Technical Systems Career Pathway (AG-PST)	Apply physical science principles and engineering applications to solve problems and improve performance in AFNR power, structural and technical systems.
	Operate and maintain AFNR mechanical equipment and power systems.
	Service and repair AFNR mechanical equipment and power systems.
	Plan, build and maintain AFNR structures.
	Use control, monitoring, geospatial and other technologies in AFNR power, structural and technical systems.

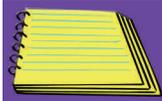
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College & Career Readiness Anchor Standards for Writing

Writing Standards	
Production & Distribution of Writing	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
	Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
	9-10.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
	9-10.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
	9-10.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
	11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
	11-12.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
Research to Build & Present Knowledge	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
	Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
	Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
	Draw evidence from literary or informational texts to support analysis, reflection, and research.
	9-10.7 Conduct short as well as more sustained research projects to answer a question or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
	9-10.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
	9-10.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.
	11-12.7 Conduct short as well as more sustained research projects to answer a question or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.	
11-12.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.	

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Lesson Plan

Class 1: Distribute the *Oxy-Fuel Set-Up & Safety Vocabulary Handout* and the *Worksheet* to use as reference materials during the presentation. Show *Oxy-Fuel Set-Up & Safety: Introduction*, *Oxy-Fuel Set-Up & Safety: Safety* and *Oxy-Fuel Set-Up & Safety: Cylinder Safety* segments. Distribute the *Safety Flier Project* and allow the remainder of class to work on. Hand out the *Welding & Cutting Processes Comparison Project* for students to begin as homework.



Video
12 min.

Class 2: Remind students to refer to the *Vocabulary Handout* and complete the *Worksheet* as they view the segments. Show *Oxy-Fuel Set-Up & Safety: Fuel Types* and *Oxy-Fuel Set-Up & Safety: Types of Flames* segments. Distribute the *Components Tree Chart Project*. Distribute the *Welding Practice Activity* and allow students the remainder of the class to work on.



Video
3 min.

Class 3: Remind students to refer to the *Vocabulary Handout* and complete the *Worksheet* as they view the segments. Show *Oxy-Fuel Set-Up & Safety: Tip Cleaning*, *Oxy-Fuel Set-Up & Safety: Changing to a Welding Tip*, *Oxy-Fuel Set-Up & Safety: Changing to a Heating Tip* and *Oxy-Fuel Set-Up & Safety: Clean Up* segments. Allow students time to work on the *Welding Practice Activity*.



Video
10 min.

Class 4: Have students present and turn in the *Safety Flier Project*. Distribute the *Oxy-Fuel Set-Up & Safety: Final Assessment* and have students complete. Allow students time to finish the *Welding Practice Activity* and the *Components Tree Chart Project*. Turn in for a grade.



Lesson Links

American Welding Society

- <http://www.aws.org/certification/CWII/>

OSHA Welding, Cutting and Brazing

- <http://www.aws.org/w/a/?id=YfPYAoms>



Career & Technical Student Organizations

National FFA

- Agricultural Mechanics

SkillsUSA

- Welding
- Welding Fabrication
- Welding Sculpture Demo



Career Connections

Using the *Career Connections Activity*, allow students to explore the various careers associated with this lesson. See the *Activity* for more details. *If student licenses have been purchased:* Students will select the interviews to watch based on your directions. *If only a teacher license is purchased:* Show students all the career interviews and instruct them to only complete the interview form for the required number of interviews.

- iCEV50001, Howard Alford, Welder, Self-Employed
- iCEV50534, Brandon Whatley, Department Chair, Welding Professor, Austin Community College
- iCEV50535, Mary Jo Emrick, Adjunct Welding Professor, Austin Community College
- iCEV50633, Breann Shirk, Production Welder, John Deere
- iCEV50879, Dana Perkins, Agricultural Mechanics Teacher, North Region Area, Georgia

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Lab Activities

Welding Practice

Directions:

Allow students to use the shop and practice welding, using the positions and techniques discussed in class. All lab activities for these segments will be *Welding Practice*.



Projects

Welding & Cutting Processes Comparison

Directions:

Using the Internet, library or any other available resource, students should research and write a paper which compares and contrasts oxy-fuel welding with other welding and cutting processes. Choices include but are not limited to: flux cored arc welding (FCAW), shielded metal arc welding (SMAW), gas metal arc welding (GMAW), gas tungsten arc welding (GTAW), etc. Students should give a short description of each welding type they discuss. Students should cite any sources used.

Safety Flier

Directions:

Using the lesson segments, notes and the Internet, instruct students to construct a one sheet safety flier to be posted in the shop. This flier should be specific to oxy-fuel welding and cutting. The safety procedures should be numbered and listed in sequential order. The flier should be neat, organized and easy to read. Have students present their fliers to the class and turn in for a grade. Once graded hang students fliers in the shop.

Components Tree Chart

Directions:

Pass out the *Tree Chart Handout* to every student. Using the lesson segment, notes and the Internet, instruct students to fill out the chart. There are two gases, two types of tips and three types of flames used with oxy-fuel welding and cutting. Answers should be brief and concise; include a definition, description as well as uses and applications in this type of welding. If more space is needed, have students staple lined paper to the handout. Have students turn in for a grade.