

Common Core State Standards: CTE Writing Prompt and Literacy Close Reading Task
Electrical Contactors and Relays

Career Cluster	Architecture & Construction
Grade-Band	11-12
Text	Text Complexity Analysis
Title: "How contactor controls an electric motor."	Quantitative:
Author: Edvard	Qualitative: This article provides students with an understanding how a magnetic electrical contactor works and how to integrate a contactor into a control system.
Citation/Publication Information: Posted June 1, 2011 by Edvard in Energy and Power, Low Voltage	
Link: http://electrical-engineering-portal.com/how-contactor-controls-an-electric-motor	Reader and Task: Students need to have a basic understanding of vocabulary, or the text could be used to develop this knowledge with close reading. Images and illustrations assist with learning.

ELA/Literacy Common Core State Standards addressed by task*	
Strand	Grades 11-12
CCSS Reading for Literacy in Science and Technical Subjects: Key Ideas and Details	<p>2. Determine the central ideas or conclusions of a text; summarize complex process, or information presented in a text by paraphrasing them in a simpler, but still accurate terms.</p> <p>3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, analyze the specific results based on explanations in the text.</p>
CCSS Reading for Literacy in Science and Technical Subjects: Craft and Structure	4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11-12 texts and topics</i> .
CCSS Writing Standards for Literacy in Technical Subjects: Text Types and Purposes	<p>2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.</p> <p>B. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.</p>

<p>CCSS Writing Standards for Literacy in Technical Subjects: Production and Distribution of Writing</p>	<p>4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>
<p>CCSS Writing Standards for Literacy in Technical Subjects: Research to Build and Present Knowledge</p>	<p>9. Draw evidence from informational texts to support analysis, reflection, and research.</p>
<p>Tennessee CTE Standards addressed by task</p>	
<p>Electrical 2</p>	<p>STANDARD 13.0 Students will describe the operating principles of contactors and relays.</p> <p>13.1 Describe the operating principles of contactors and relays. *</p> <p>13.2 Select contactors and relays for use in specific electrical systems.</p> <p>13.3 Explain how mechanical contactors operate. *</p> <p>13.5 Install contactors and relays according to the NEC requirements.</p>

* Standards noted with an asterisk (*) will only be covered if this activity is conducted as a longer-form lesson that combines information in the text with specific technical skill development in a laboratory setting. Other standards may be covered and/or assessed through using this activity as an assessment or writing prompt.

What key insights should students take from this text?	
<ol style="list-style-type: none"> 1. How to wire a basic electrical contactor to control a high-powered motor. 2. Understand the reason an electrical contactor must be used instead of using a basic switch. 3. How an overload-heater protects a motor from reaching a critical high temperature, which can damage a motor. 4. How using an amp meter can determine if a motor is using power when a contactor is in the closed position. 	
Text-Dependent Questions	
<ol style="list-style-type: none"> 1. What does Edvard conjecture is the most important element to understand when using contactors? What evidence does he give for why this element is so important? 2. How are overload-heaters different from a circuit breaker, according to the article? 3. Using evidence from the text, summarize how the process of using overload-heaters works. 4. Using evidence from the text, summarize how an electrical contactor controls a high-powered motor. 	
Writing Mode	Writing Prompt
Informative	Write an essay in which you explain how to wire a 480 volt 3 phase motor, using a 120 volt-magnetic contactor. Within the essay, explain the importance of determining when the use of an overload heater is needed and explain what operation it performs. Support your informational essay with an analysis of the material presented, using valid reasoning and sufficient evidence for support.

