**Lesson Information**

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| Lesson: (4 of 5) Refrigerants, Oils, and Metering Devices Length: 90 minutes  Unit: (2 of 3) System Components  Course: HVAC |

**Content Assumptions**

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**Essential Questions**

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| 1. How are refrigerants and oils used in heating and cooling systems? 2. How do refrigerants, oils, and metering devices work together? |

**Objectives Assessments**

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| After completing this lesson, students will be able to:   1. Demonstrate their knowledge of refrigerants, oils, and metering devices, and the principles associated with them. | 1. Quiz trade — Instructor observation/rubric |

**Activities/Instruction**

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| **Seek and Find** (30 minutes)  Instructor poses the Essential Questions (and any additional, class-specific questions at Instructor’s discretion) to the class. Using classroom, library, and/or Internet resources (like those listed in the Materials section), students have 30 minutes to find the most complete answers they can to the questions posed.  **Show and Tell** (30 minutes)  Instructor poses the questions again, this time calling on students to answer with their research. As the classroom discussion continues, Instructor corrects any student misunderstandings and elaborates on details of principles, safety, installation, etc.  **Call and Response** (30 minutes)  Instructor pairs students up and asks each student to write a quiz for the other; quizzes should cover every topic of importance relevant to what they learned today. After they write their quizzes, students trade quizzes and answer each other’s questions. If there is time, Instructor may allow students to trade back and grade each other’s quizzes, or have another classroom discussion about what was important to take away from today’s lesson. |

**Materials**

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| For students:   * http://hvacfun.com/frefrigerants-index.html (Overview of refrigerants) * http://hvacfun.com/frefrigerant-oils-index.html (Overview of oils) * http://www.hvacfun.com/fmetering-index.html (Overview of metering devices) * http://www.airconditioning-systems.com/refrigerant.html (Refrigerant cylinder color-coding guide)   For Instructor:   * [QUIZ TRADE RUBRIC] |