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Scaling Up a Peltier-Powered Cloud Chamber[1] TYLER SITTERLY, MATTHEW BELLIS, Siena College — Nuclear and particle physics attracts the interest of many students from both high school and college level. Since gaining hands-on experience is rare, students are limited to learning from videos, books, and other resources. One such device that allows students this hands on experience is the cloud chamber. A cloud chamber is a device that creates a temperature gradient to produce a supersaturated environment in order to see trails left by radioactive sources, or cosmic rays. Cloud chambers typically are made using dry ice, but a group at Siena has worked for 5+ years in order to improve the design of the cloud chamber using thermo-electric coolers known as Peltiers. The use of Peltiers eliminates the use of dry ice completely, and allows for an easy set up by just plugging the chamber in. By using a water-cooling system, and more Peltiers, we were able to create a viewing area that is larger than the previous models.

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