

I interviewed Steven Koep, Regional Manager of Rheem Specialty Products, about Solar Water Heating Solutions from Rheem at the Wisconsin Solar Decade Conference 2010 in Milwaukee on September 29th. Questions asked are in **bold and underlined**, answers are further explained with online resources in plain text.

#1 Steve if a student were looking to pursue a career with Rheem Specialty Products, what are some needed skills and education that they would need.

While at the conference I was unable to speak with actual installers of energy efficiency but instead was able to talk with the regional sales managers of companies to get an idea of the career skills needed to install their products.

Steven Koep spoke of the career skills needed to install his Solar Water Heating Solution, by Rheem. His product was a water heating based solar product which intern works with a high efficient water heater and a back up water heater. The skills best met by that of a plumber and knowledge of the low voltage 18 gauge sensor wiring for the controllers. Skills for this career would require that of journeyman plumber (4-5 yrs work experience) and training on the job or product classes for the proper installation and connection of the solar panels and wiring. Mr. Koep also mentioned that some companies contract out the solar panel installation, but this is not necessary for Rheem since they are OG-300 Certified by SRCC for Solar Certification and Eco Friendly/Focus on Energy practices and products.

#2 necessary or beneficial skills

<http://en.wikipedia.org/wiki/Plumber>

<http://davesgarden.com/community/forums/t/795067/>

- Reading [blueprints](#), drawings, and specifications to determine layout of water supply, waste, and venting systems
- Installing, repairing and maintaining domestic, commercial, and industrial plumbing fixtures and systems
- Locating and marking positions for pipe connections, passage holes, and fixtures in walls and floors
- Measuring, cutting, bending, and threading pipes using hand and power tools or machines
- Testing pipes for leaks using air and water pressure gauges
- Awareness of legal regulations and safety issues
- Ensuring safety standards and build regulations are met.
- Good head for spatial design to plan pipe runs
- Steady hands for soldering
- Some knowledge of electricity for connecting water heaters and the like
- Decent head for conceptual math, such as "3 2-in pipes need at least a 3-in size pipe to drain without backing up"

#3 educational background

http://education-portal.com/how_to_become_a_plumber.html

Step 1: high school diploma

Classes helpful to a plumber are math, computers and the sciences, physics, drafting and blueprint reading

Step 2: Professional Training

Many technical schools and community colleges (MATC, GATEWAY, WCTC) have training to become plumbers. Coursework water supply, drainage, piping, venting, fittings and valves.

Step 3: Complete an Apprenticeship

Apprenticeship programs by the local 75 (plumbers) unions last from 4-5 years combine paid on-the-job training with classroom instruction. Learning codes, procedures, fixtures repair, maintenance of water pipes, choosing materials and plumbing fittings, identifying grades and types of pipes.

Step 4: Journeyman's License

Plumbers must pass an exam and with 2-5 years of experience with additional license for plumbers who work on gas lines.

Optional Steps: Additional Certification

<http://www.constructionbook.com/contractor-license/wisconsin/pdf/master-plumber.pdf>

In response to a growing awareness of the need to conserve water, the Plumbing-Heating-Cooling Contractors Association (PHCCA) has teamed with GreenPlumbers USA to train and certify plumbers in water and energy efficiency technologies (www.greenplumbersusa.com). Attaining this certification might help plumbers advance in their profession and take advantage of new job opportunities.

To become a Master Plumber you must pass an open book exam on Chapter 145 of the Wisconsin Statutes and sections of the Wisconsin Administrative Code. You need 1,000 hours per year of work as a licensed journeyman plumber for at least three consecutive years or a degree in civil engineering, mechanical engineering, or other approved engineering degree related to plumbing. For either master plumber restricted exam, you need only two years of work experience as a journeyman.

#4 A lesson/activity in my subject area/ curriculum

In my Principals of Engineering I teach about thermal dynamics and would be able to set up a lesson where Each students gets 18 oz of water between 120-140 degrees F which would depict that of a solar water heater than produces water temps of 50 degrees higher than outside air temperature. (simulated between 72-90 degree F outside temperature). Students will have to make a container which is capable of maintaining the highest temperature of the water without any supplemental heating, just through container design and insulation. Students will research various types of insulation, past practices of maintaining water temperature and container material. Encouragement of a pressurized container in trouble shooting will be tested by at least one group. Further discussion will generate thoughts of instant water heaters, and possible design implementation to optimize their efficiency either in heating or distribution through various materials (copper,cpvc,pex).

#5 Skills emphasized in this activity:

- Installing, repairing and maintaining domestic, commercial, and industrial plumbing fixtures and systems
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