

Heat Pump Installer Concept Requirements

The following topic areas and key concept knowledge areas outline the technical content that is used to evaluate training programs that submit for recognition. These technical areas go beyond typical requirements for heat pump installers, aligning with DOE's Building Science Education materials.

| Topic Area | Key Concept Knowledge Area (Bold items are required) | Possible Points |
|---|---|-----------------|
| Space Conditioning Heat Pump Types and Applications | Knowledge of ducted/ductless/package terminal air source heat pumps (ASHPs) | Required |
| | Knowledge of ground source and water source heat pumps | 2 |
| Compressor Stages and Sequences of Operation | Knowledge of variable speed compressor | 5 |
| | Knowledge of minimum and maximum system capacity in variable speed systems | 5 |
| | Understand the difference between constant speed supply fans and variable speed supply fans | 5 |
| | Systems with variable speed supply fans | 5 |
| Installation | Charge refrigerant and prevent leaks (include proper flaring tools, best practices with brazing to prevent oxidation, etc.) | Required |
| | Knowledge of proper refrigerant system evacuation procedure (include digital micron gauge) | Required |
| | Understand Quality Installation Standards and Specifications (ACCA QI5) | 10 |
| System Commissioning | Understand prevalence of faults & the importance of commissioning for system performance | Required |
| | Understand Quality Installation Verification Protocols (ACCA QI9) | Required |
| | Use of digital and connected measurement equipment (refrigerant pressure, refrigerant temps, DB/WB temps, airflow estimation or measurement methods, power/electrical) | Required |
| | Use of smart diagnostic and commissioning smartphone/tablet applications | Required |
| | Airflow estimation or measurement methods | Required |
| | Verify refrigerant charge | Required |
| | Test duct leakage and conduct system Performance Testing (Delivered cooling/heating, EER) | Required |
| | Support documentation, reporting, and QI Certificates | Required |
| Smart Thermostats | Install, evaluate, and properly set smart thermostats for heat pumps | 5 |
| Dual Fuel heat pump systems | Knowledge of dual fuel heat pump system operation | Required |
| | Install and service smart thermostats in a dual fuel pump system | 5 |
| | Derive and program a dual fuel system balance point temperature | Required |
| Additional Considerations when Retrofitting Fossil Fuel Systems | Evaluate electrical panel capacity to account for a heat pump's electrical load, both for adding heating to a system or conversion | 5 |
| | Understand strategies for avoiding electrical panel upgrades | 5 |
| | Communicate operation and temperature differences between heat pumps and fossil fuel systems | Required |
| Sales / Customer Interactions / Decision Guidance | Explain differences between standard efficiency and high efficiency heat pumps | 2 |
| | Communicate the business case for quality installation | 2 |
| | Understand market trends for heat pumps and benefits of switching to heat pumps in existing homes | 2 |
| | Understand the climate impacts of installing a heat pump | 6 |
| | Understand operating cost differences between different electric and fossil fuel heating systems | 6 |
| Preventative Maintenance | Use smart diagnostic tools to test system performance | 10 |
| | Use smart diagnostic tools to troubleshoot system issues | 10 |
| | Install and use add-on fault detection / monitoring equipment | 5 |
| | Clean and maintain equipment on a regular schedule | 5 |