

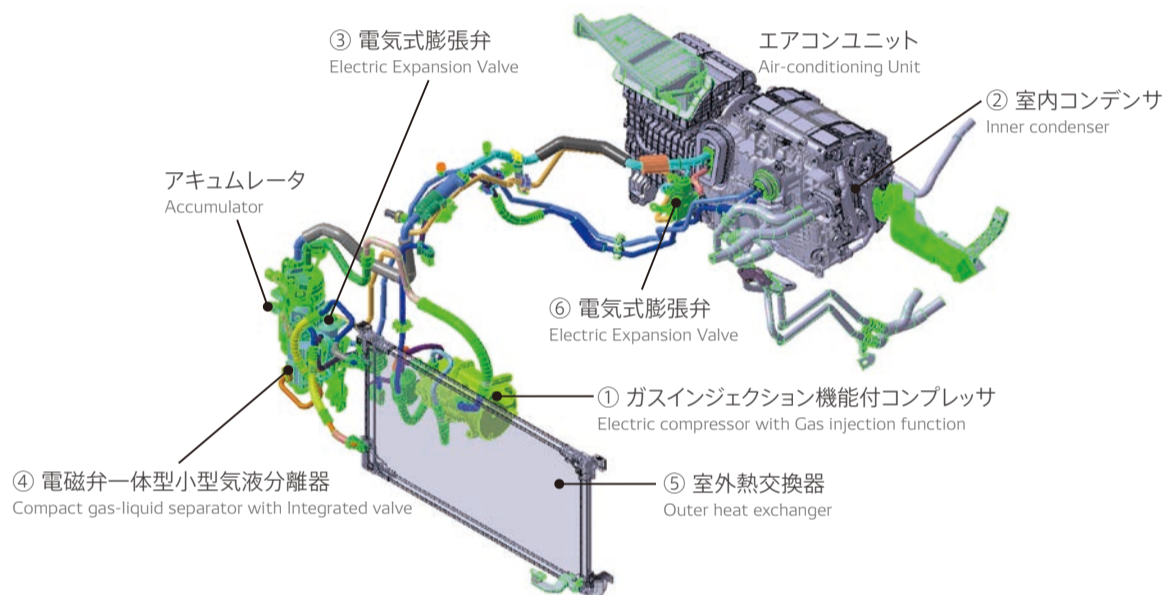
ガスインジェクション機能付きヒートポンプ空調システム

Heat Pump Climate Control System with Gas injection function

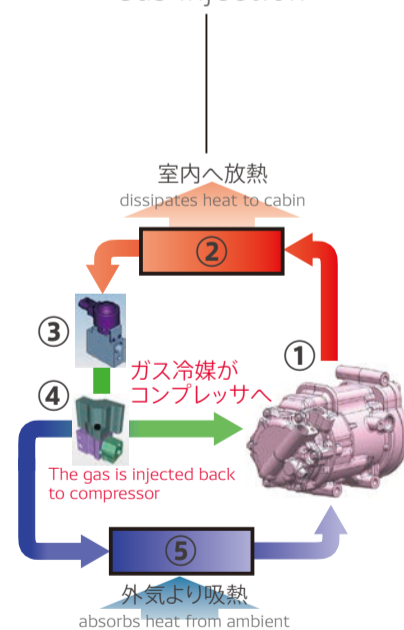
プラグインハイブリッド車(PHEV)や電気自動車(BEV)では暖房エネルギーを電気に依存するため、エネルギー効率がEV航続距離に大きく影響する。そこで効率の良い熱創出技術として注目されるヒートポンプにおいて「ガスインジェクション」と「除湿暖房」の2つの機能で高効率化を実現しました。

In Battery Electric Vehicles (BEV) and Plug-in Hybrid Electric Vehicles (PHEV), heating energy consumption for cabin conditioning significantly decreases EV driving range. The use of a heat pump system is one of the solutions to improve EV driving range. The functions required for cabin conditioning systems are high heating performance at very low ambient temperature and dehumidification-heating performance from low to middle ambient temperature. DENSO's Gas Injection Heat Pump system has realized high efficiency operation for these two functions.

システム構成 System Configuration

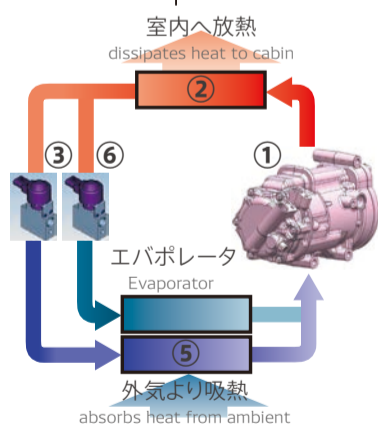


ガスインジェクション Gas Injection

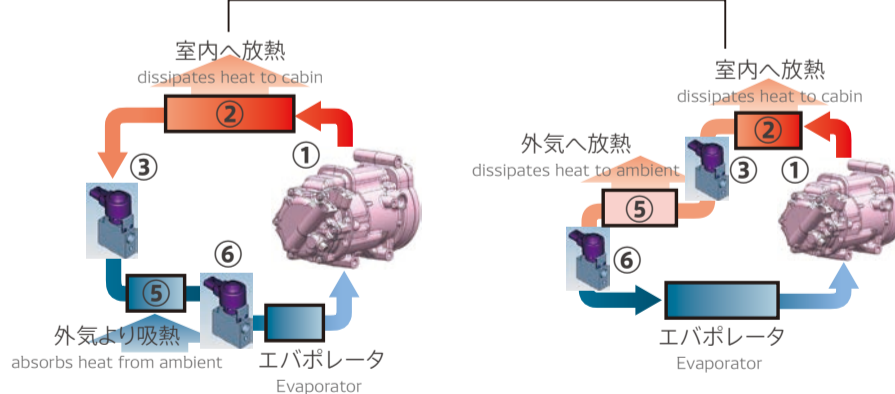


除湿暖房 Dehumidification-Heating

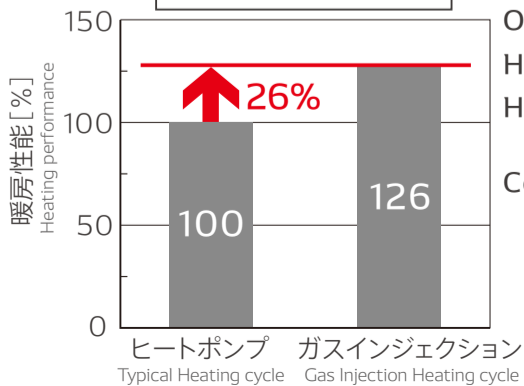
並列除湿 Dehumidification heating in parallel



直列除湿 In-line dehumidification heating

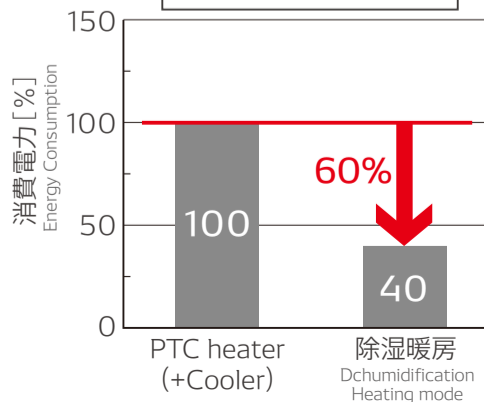


Bench test result



Ambient temp.: -10°C
OHE wind speed: 2.2m/s
HVAC inlet air temp.: 0°C
HVAC air flow volume: 200m³/h
Compressor Speed: 7200rpm

Bench test result



Ambient temp.: 5°C
OHE wind speed: 2.2m/s
HVAC inlet air temp.: 5°C
HVAC air flow volume: 200m³/h
HVAC inlet air relative humidity: 90%