

# RSW

Refrigerant used: CO2.

Hovedresultater (version japan)uten linker.xls  
Incr. GC water flow Incr. GC water flow

R744

## Steady state

[60 10 10 2007](#)

[60 15 15 2007](#)

TEST CONDITIONS		Unit	Set value	Set value
Discharge pressure		bar	60	60
Compressor rotation speed (manual reading)		RPM	1450	1450
Brine flow (no bypass)		l/min	-	-
Vessel brine inlet temperature at cooling down startup		°C	10	15
Vessel brine inlet temperature at steady state		°C	-1	-1
Cooling water temperature		°C	10	10
PERFORMANCE		Unit	Value	Value
Cooling capacity (Gas cooler)		kW	34,4	26,1
Power consumption (compressor+pump)		kW	14,4	14,6
Power consumption compressor		kW	11,3	11,4
COP		-	2,3	1,7
COP uten pumpe			3,1	2,3
EVAPORATOR		Unit	Value	Value
Evaporation temperature (compressor suction)		°C	-9,0	-7,1
Inlet temperature, CO <sub>2</sub>		°C	-6,8	-4,6
Outlet temperature, CO <sub>2</sub>		°C	-5,8	-4,5
Outlet superheat		K	1,3	0,6
Pressure drop, CO <sub>2</sub>		kPa	26,2	41,9
			10,0	10,0
Cooling capacity, CO <sub>2</sub> (gascooler mass flow)		kW	34,4	-
Cooling capacity CO <sub>2</sub> , (compressor mass flow)			35,3	26,3
Cooling capacity, brine		kW	33,6	24,5
Cooling capacity, electric		kW	24,4	26,1
Inlet temperature, brine		°C	-0,8	-0,4
Outlet temperature, brine		°C	-1,6	-1,0
Flow brine		l/min	569	567
Temperature, brine reservoir inlet		°C	-2,8	-1,1
Temperature, brine reservoir outlet		°C	-1,7	-1,0
LMTD		°C	7,8	6,4
Overall heat transfer coefficient ( CO <sub>2</sub> area- Qo brine)		W/m <sup>2</sup> K	1288	1177
Overall heat transfer coefficient ( H <sub>2</sub> O area - Qo brine)		W/m <sup>2</sup> K	1440	1315
Cooling down time from 10 to -1°C		min		
Refrigerant level		%	49	64
COMPRESSOR		Unit	Value	Value
Suction pressure		bara	27,2	28,8
Discharge pressure		bara	59,7	60,5
Suction temperature, CO <sub>2</sub>		°C	-7,2	-5,8
Discharge temperature, CO <sub>2</sub>		°C	65,6	61,8
Suction superheat		K	1,8	1,3
Power consumption		kW	11,3	11,3
Power consumption, calculated		kW	10,4	10,6
Rotation frequency		RPM	1451	1451
Flow CO <sub>2</sub> , calculated (RPM, vol.eff, density)		kg/min	11,15	12,12
GAS COOLER, Water		Unit	Value	Value
Pressure drop		kPa	118,3	151,3
Inlet temperature, CO <sub>2</sub>		°C	64,6	60,9
Outlet temperature, CO <sub>2</sub>		°C	21,7	22,8
Inlet temperature, throttle valve		°C	21,4	22,3
Inlet temperature, water		°C	9,9	14,7
Outlet temperature, water		°C	17,9	21,0
Temperature Approach, CO <sub>2</sub> outlet		K	12	8
Flow water		kg/h	4772	4875
Capacity, water heating		kW	44,56	35,52
Flow CO <sub>2</sub> , calculated (heat balance)		kg/min	20,11	12,12

Varmebalanse

kW

60bar

-1,1

-1,9