



Lyra – CGCN chillers & CXCN heat pumps

December 2017

The LYRA logo, with the word 'LYRA' in a bold, sans-serif font and a stylized red and black swoosh underneath.

Indoor AC units with plug fans

- Cooling only 
- Heat pump 



Refresher on product advantages

Applications it best fits:

- **Building roof curved or not large enough**
- **Floor-by-floor AC system with individual metering / billing**
Example: High class apartment buildings
- **Noise-sensitive installations**
 - ❖ “Hidden” indoor installation eliminates neighborhood complaints
 - ❖ Ducted air inlet and discharge:
 - Easy installation of customized duct silencers satisfying specific noise requirements
 - Allows isolating the machine room from low outdoor air temp.

Examples: Theaters/Hotels/Office buildings in (old) city centers

- **Areas with heavy air pollution.** Indoor installation protects unit against corrosion.
Apply good quality coating on condenser coil.





Indoor AC units with plug fans

Cooling capacity: 51 – 242 kW

Heating capacity: 56 – 268 kW

Main features & options

- EER up to 2.65 (+5% vs CXCM)
- COP up to 3.28 (+10% vs CXCM)

- **CXCN** - Full compliance with Ecodesign law for heat pumps <400 kW heating
- **CGCN** - Full compliance with EU Regulation 2016/2281 for comfort chillers

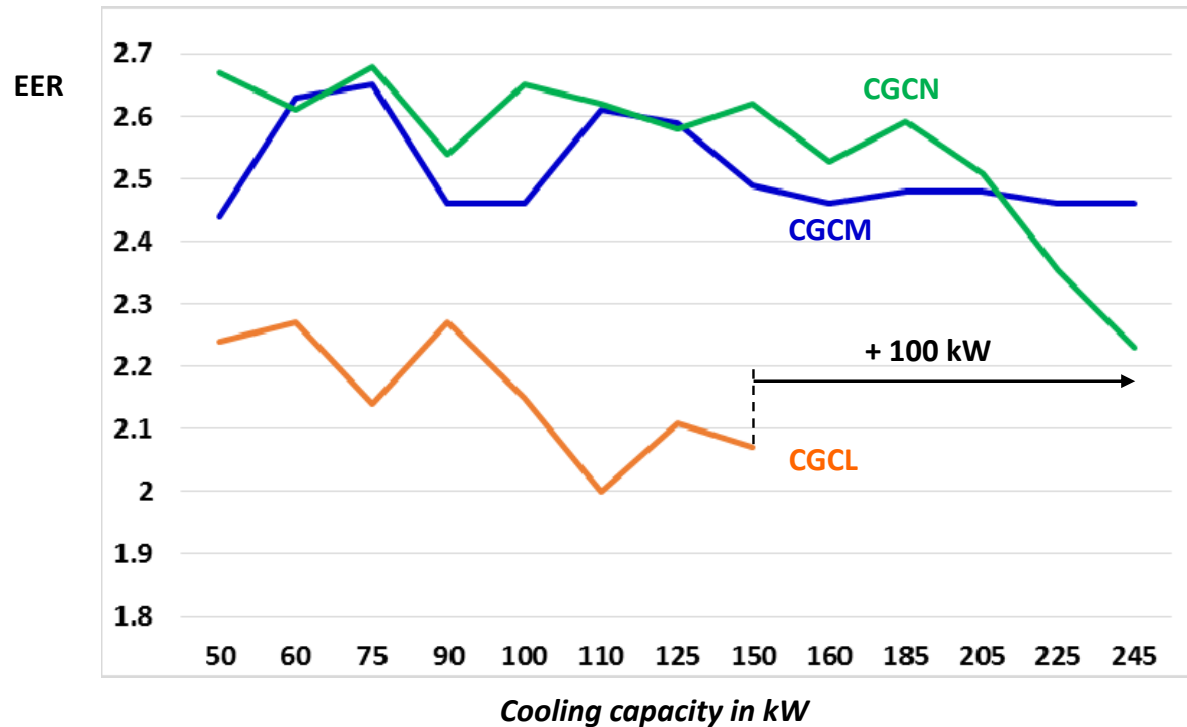
- CGCM/CXCM remain available in TRASel for projects outside EU 28 and associated countries for Ecodesign



Proven Indoor Heat Pump with Innovative Fan and Pump Drives



CGCN chiller

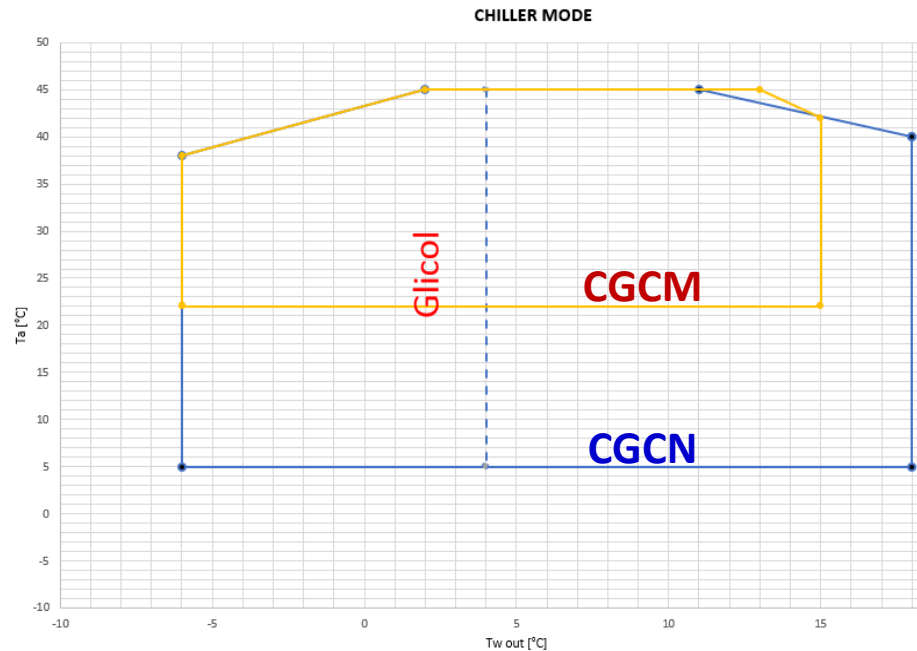


- ✓ Cooling capacities: 50 – 245 kW (13 sizes)
- ✓ Ecodesign compliant with SEER 3.8 – 3.9
- ✓ CGCL & CGCM only for outside EU

Today: Manual Selections + Pricing
Soon available in TRASE 1.9

Seasonal Efficiency Focus – Most CGCN Chillers Run 90% of Time in Part load

LYRA CGCN chiller



- ✓ Larger operating map compared to CGCM
- ✓ Microchannel condensers = higher efficiency + low refrigerant charge
- ✓ Operation down to +5 outdoor air temperature (was +10)
- ✓ Suitable for chilled beams
- ✓ Electronic expansion valves optional

Enhanced Geographic & Application Coverage



CGCN Refrigerant Charge

Refrigerant Charge Comparison					
Cooling capacity in kW	CGCM (kg)	CGCN (kg)	Reduction versus CGCM in %	CGCL (kg)	Reduction versus CGCL in %
50	8	8	0	12	33
65	11	9	18	15	40
85	19	13	32	24	46
95	19	13	32	24	46
120	25	17	32	24	29
130	26	17	35	30	43
150	28	21	25	30	30
160	28	21	25	N.A.	
185	38	25	34	N.A.	
205	38	25	34	N.A.	
225	39	26	33	N.A.	
245	39	26	33	N.A.	

Note: Not taking into account the strong EER improvement

Average charge reduction 28%

Average charge reduction 38%

- ✓ Microchannel coils = higher efficiency + low refrigerant charge
- ✓ Latest design of BPHE – brazed plate heat exchangers

Strong Charge Reduction + Higher Efficiency = Higher Sustainability + Lower Cost



CGCN Refrigerant Charge

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Example 1:

200 kW cooling capacity request => Compare CGCM with CGCN

CGCN = 13kg less R410A = 13 x €35/kg = €455 cost saving

Example 2:

130 kW cooling capacity request

CGCN vs CGCM = 9kg less R410A = 9x €35/kg = €315 cost saving

CGCN vs CGCL = 13kg less R410A = 13x €35/kg = €455 cost saving

Low Charge = Strong Benefit with Expected Price Increase R410A in 2018/2020



CXCN Heat Pumps

December 2017



Indoor AC heat pump
with plug fans



LYRA CXCN Heat Pump



- ✓ Ebm-papst EC plug fans (*all sizes*)
 - ✓ Higher efficiency compared to AC motors
- ✓ Static pressure: 120 Pa (*standard*) or 300 Pa with same fan model, without any additional cost !
- ✓ Continuous fan speed/air flow modulation based on condensing and evaporating pressures
- ✓ Plastic fans ensure lower sound power level (*metallic on CXCM*)
- ✓ Lower sound power level at part loads compared to standard AC plug fans
- ✓ Standard electronic expansion valves
- ✓ Hydraulic kits with single or dual pumps on-off or inverter driven (*optional*)

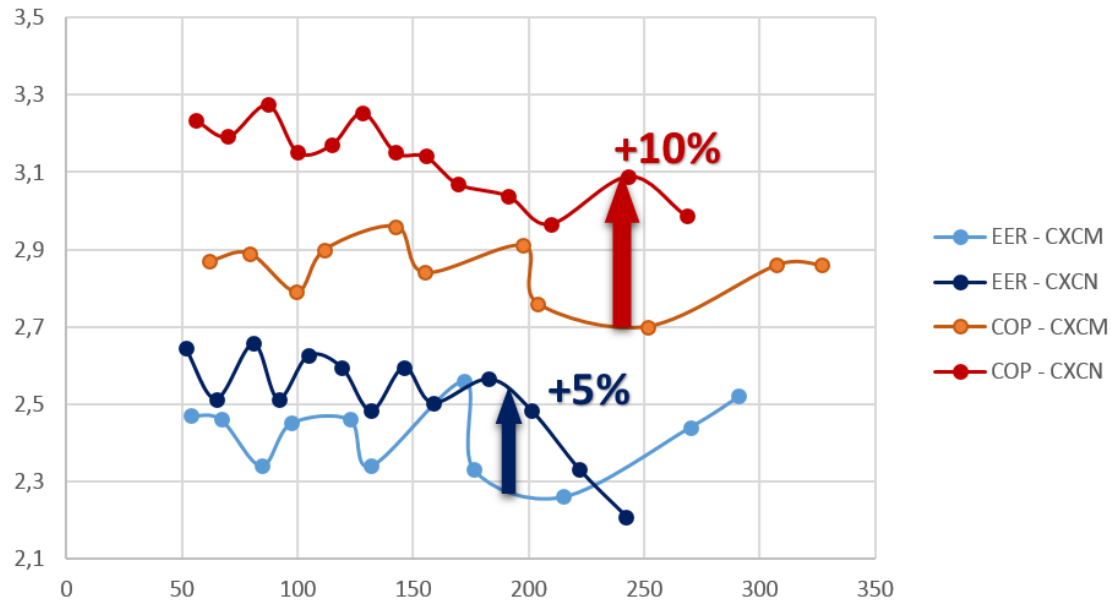


Proven Indoor Heat Pump with Innovative Fan and Pump Drives



CXCN Heat Pump

EER & COP COMPARISON



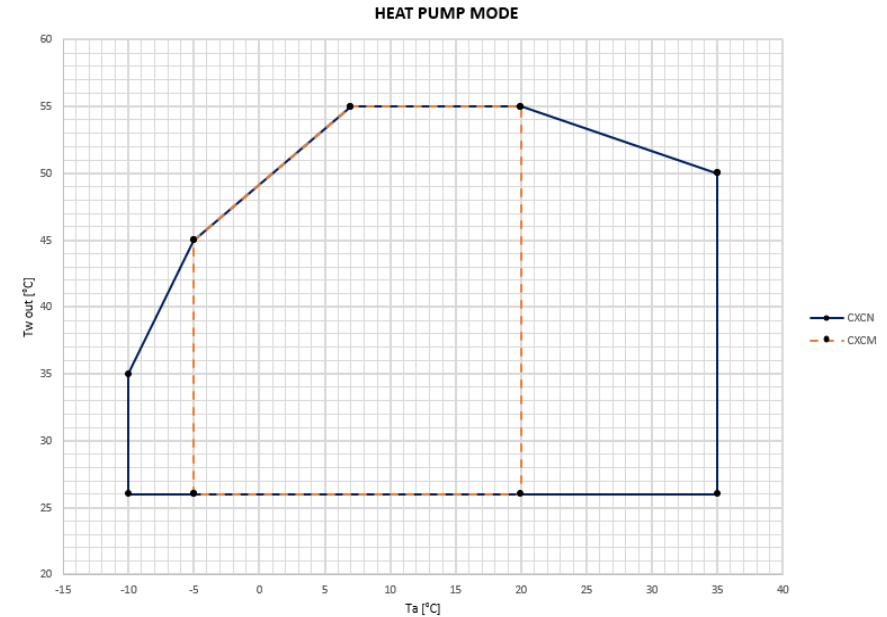
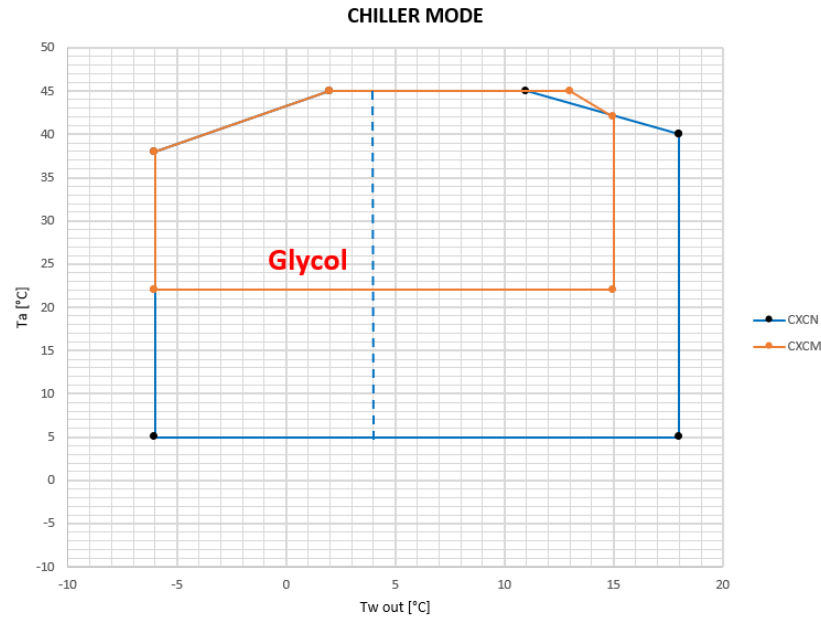
- ✓ Heating capacities 50 – 270 kW (13 sizes)
- ✓ Strong heating performances

Selections with TRASel 1.8

Focus On Heating Performances (COP and SCOP)



CXCN Heat Pump



- ✓ Larger operating maps (versus CXCM) ensured by oversized condensing coils and heating optimized evaporators
- ✓ Heating mode: down to -10°C outdoor air (was -5°C)
- ✓ At -5°C outdoor air = max. 45°C hot water
- ✓ Cooling mode: operation down to $+5^{\circ}\text{C}$ outdoor air (was $+22^{\circ}\text{C}$)
- ✓ Suitable for chilled beams

Enhanced Geographic & Application Coverage