



ROZWIĄZANIA ENERGOOSZCZĘDNE DEDYKOWANE DLA CONVENIENCE STORE
INTEGRACJA SYSTEMÓW

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Integration > Interaction > Optimization

1. Integration of:

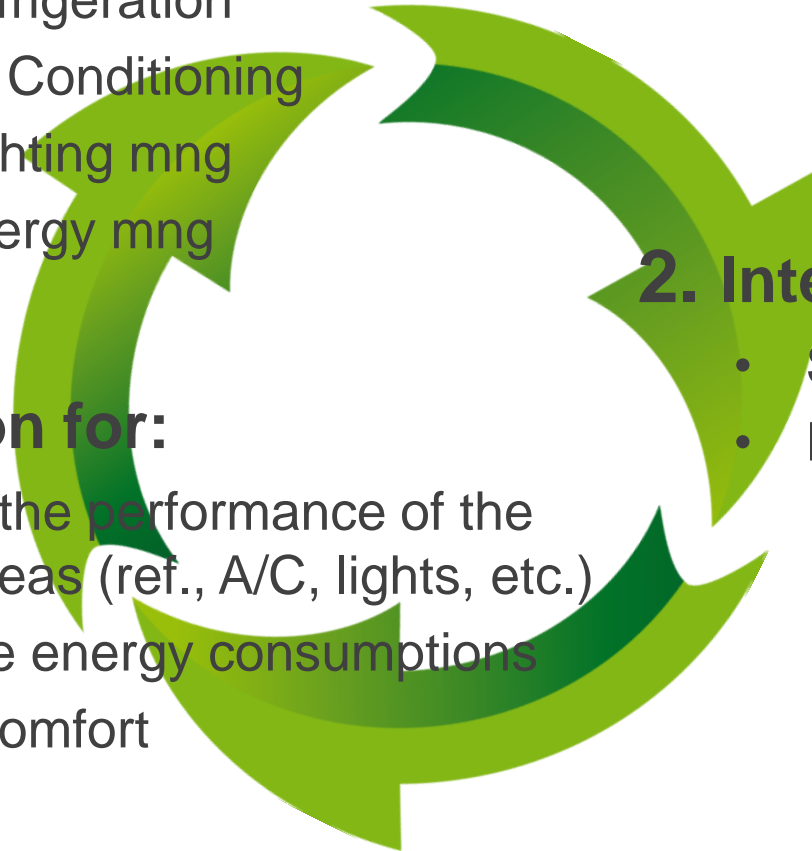
- Refrigeration
- Air Conditioning
- Lighting mng
- Energy mng

2. Interaction trough:

- Shared information
- Possible synergies

3. Optimization for:

- Optimized the performance of the different areas (ref., A/C, lights, etc.)
- Reduce the energy consumptions
- Keep the comfort



A convenience store, characteristics...

WHAT IS A CONVENIENCE-STORE?

Also named corner shop, it is a small store that stocks a range of everyday items such as groceries, snack foods, soft drinks and newspapers.

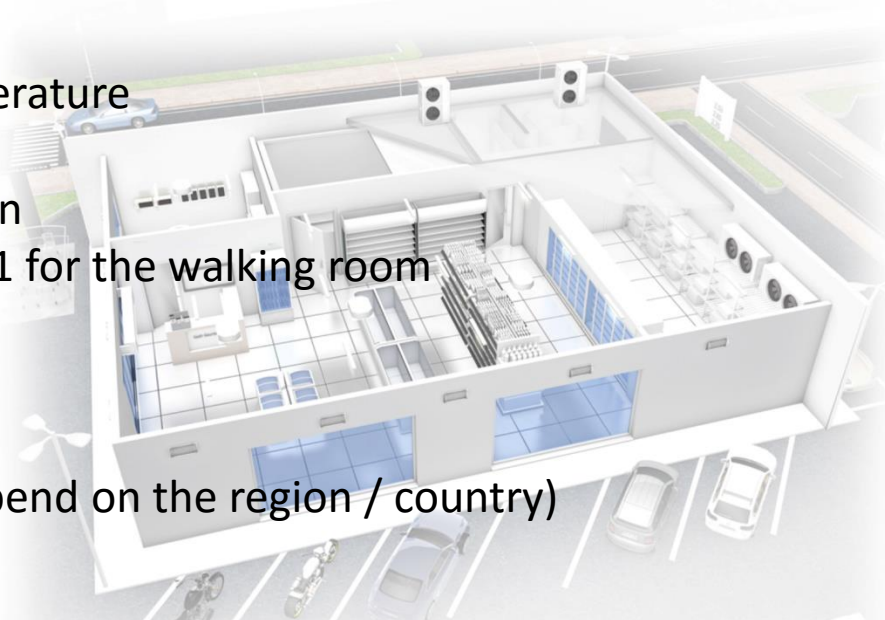
With a typical dimension **around 80-120 m²** and an operational time of **24/7**.

REFRIGERATION equipment? Typically:

- 3 open front cabinets at medium temperature
- 1 plugin cabinet at low temperature
- 1 walkin room for beverages distribution
- 2 CDU: 1 to 3 for the cabinets and 1 to 1 for the walking room

AIRCON equipment? Typically:

- 4 split units or 2 rooftop split units (depend on the region / country)



THE TREND: Year-on-Year, growth rate of 13.8% WW

A convenience store, characteristics...



C-Store, on field...

From the **simple** one...



C-Store, on field...

...to the **advanced** one!



TESCO Express (THAI)



Air Conditioning

Energy management

Fire alarm

Lighting, switches panel

Lighting main panel (3 areas)

Basic BMS for remote connection

Main panel supply switches

HI temperature alarm on cabinet

Type of Convenience Store

Which is the KEY PRODUCT / the watershed?

1. SIMPLE



2. ADVANCED



Type of Convenience Store

Which are the usually products on it?

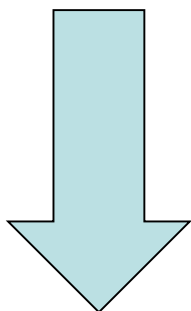
1. SIMPLE

2. ADVANCED

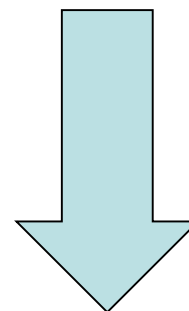


Type of Convenience Store

1. SIMPLE



2. ADVANCED



Which is the Carel
proposal?

**ENTRY LEVEL
SOLUTION**

**HIGHEND LEVEL
SOLUTION**

pChrono-CS, the product for C-Store offer



Store manager dashboard (pGDTouch 7")

Functionality:

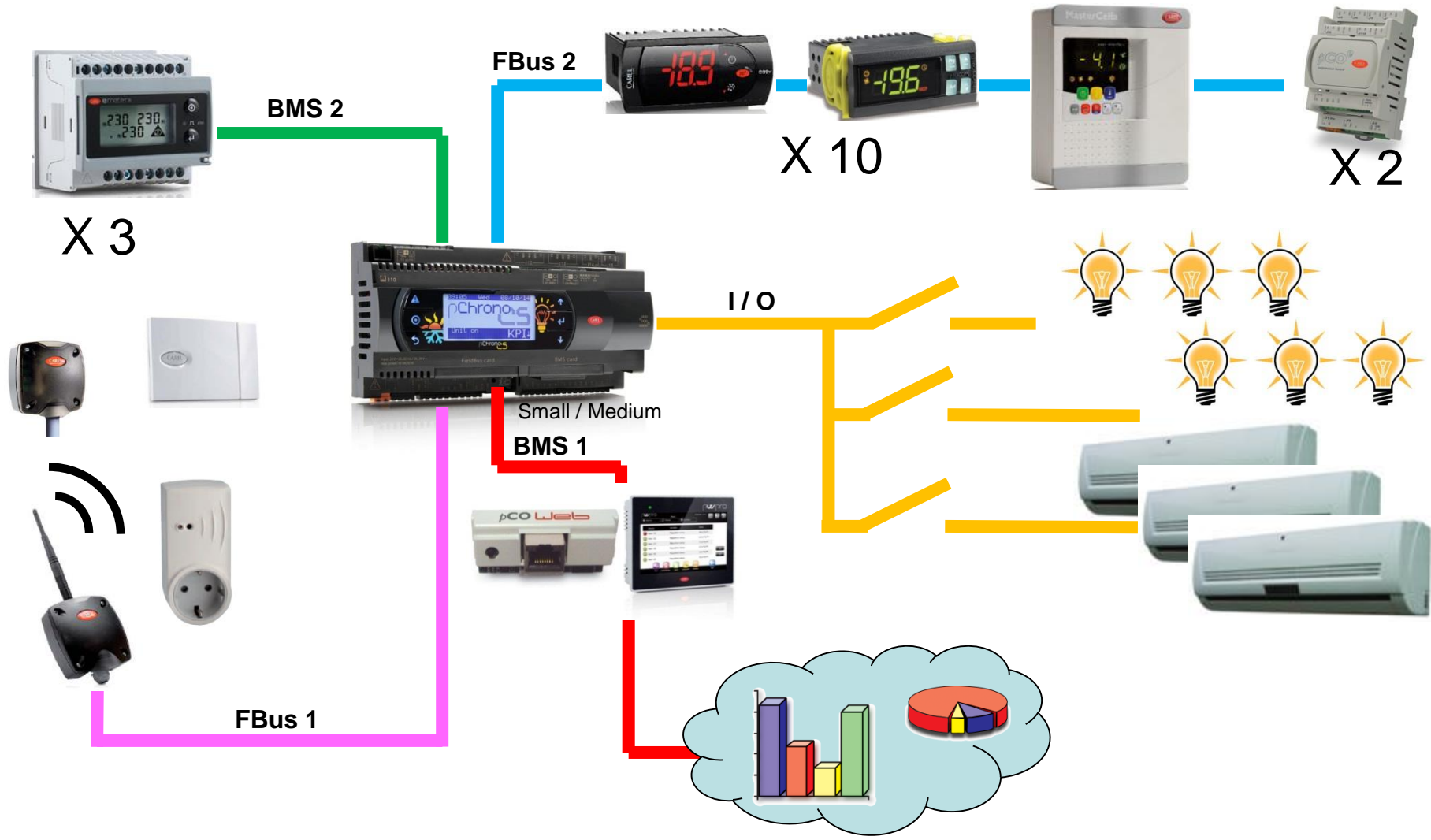
1. Light management
2. No-food devices management
3. + A/C split unit management
4. + Refrigeration monitoring
5. + Energy monitoring
6. + Database storage manager dashboard

pChrono STD



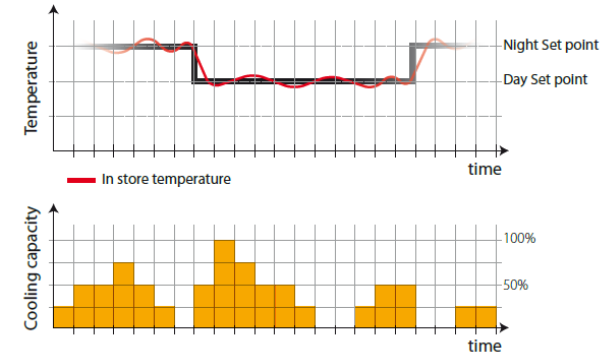
Dedicate and simple interface on BMS system (PWP)

pChrono-CS, the product for C-Store offer



A/C split unit management

- Only for ON/OFF units (as split unit)
- Control on average store temperature
- Unit rotation to balance operating hours
- Night-time set point and set point compensation on outside temp.
- Notification when temperature outside of 'comfort area'
- Notification when air-conditioning unit maintenance needed



Refrigeration monitoring

- Main variables monitoring as:
 - Regulation temperature
 - Regulation setpoint
 - Defrost status
 - Fan status
 - Compressor status
 - Active alarms

Energy monitoring

- Control of all the main variable of the CAREL emeter3 data base as:
 - Power consumption (kW)
 - Energy consumption (kWh)
 - Power factor, cos-fi
 - etc.

Database storage manager dashboard

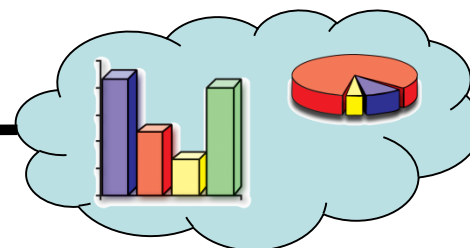
- 7 days log deep for each single device of the system:
 - Air Conditioning: daily min/max/avg regulation temperature
 - Refrigeration: daily min/max/avg regulation temperature and setpoint modification
 - Energy: daily energy consumption / pick power consumption

1. ENTRY LEVEL SOLUTION

REFRIGERATION



LIGHTS & AIR/CONDITIONING



ENERGY MONITORING

ENTERPRISE

2. HIGHEND LEVEL SOLUTION

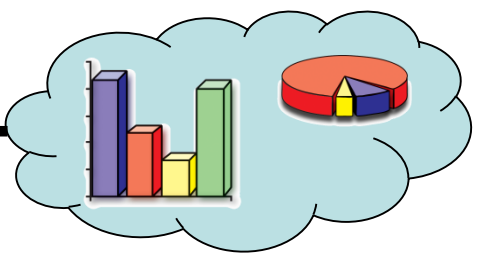
REFRIGERATION



LIGHTS & AIR/CONDITIONING



ENERGY & LEAKAGE MONITORING



ENTERPRISE

C-STORE Solution, When, what?

SUPERMARKET



Integration...

C-STORE

ENTRY LEVEL



ADVANCED



C-STORE Solution, When, what?

Functions point of view

ENTRY LEVEL

- AIR/CONDITIONING
- LIGHTING
- ENERGY
- REMOTE ACCESS
- **REF. MONITORING**
- **NO ALARM MANAGEMENT**

ADVANCED

- AIR/CONDITIONING
- LIGHTING
- **ENERGY & LEAKAGE**
- REMOTE ACCESS
- **REF. MANAGEMENT/OPTIMIZATION**
- **ALARM MANAGEMENT**

C-STORE Solution, When, what?

Key Point

ENTRY LEVEL

AGGRESSIVE PRICE

- poor / absence of technology
- huge number of stores
- as first step of automation

BUNDLE PROPOSAL

- good on retrofit

ROI

- <1year

ADVANCED

TOP OF EFFICIENCY

- high technology on field
- energy saving oriented customer

HIGH FLEXIBILITY

- good for a 'new generation' store

ROI

- >1year

pChrono-CS, Instore dashboard



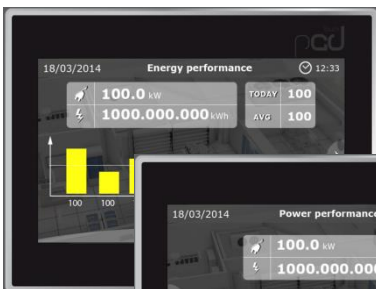
*Raccomanded for
Entry Level Solution
ONLY*

Refrigeration

Air Conditioning

Energy

Lighting



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C-Store Solution, The high-end analytics



Remote monitoring

remotepro Maintenance optimisation

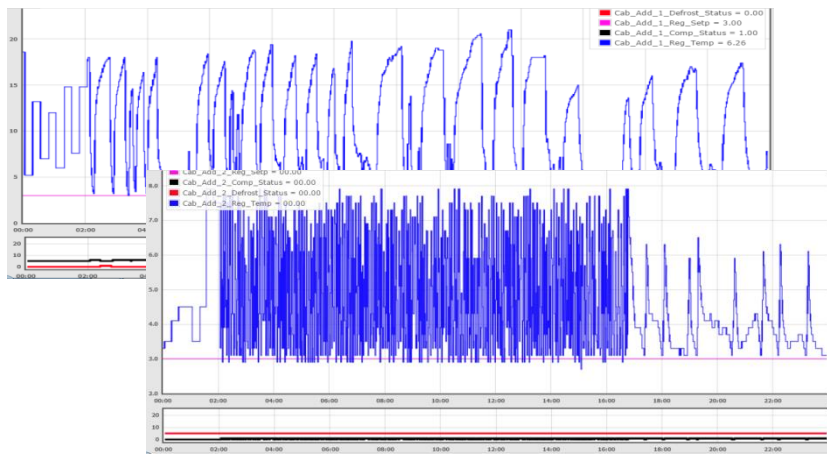
Improved energy performance

High-end analytics



Energy manager

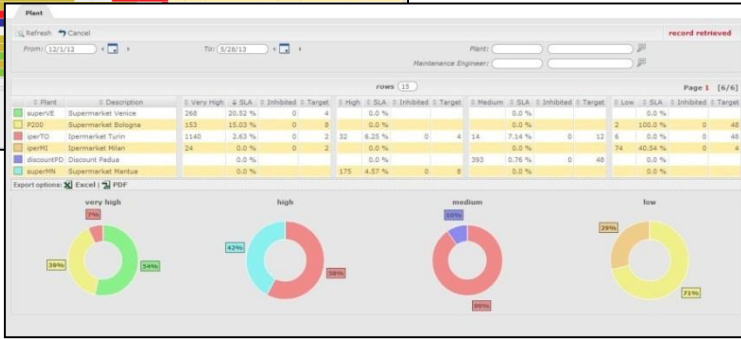
Cabinet performance



KPI Temperature analysis

Plant	Description	Very High	High	Medium	Low	Target
Palma	FRIGON SALAS 1 - 1	0	0	0	0	0
Palma	FRIGON SALAS 2 - 1	0	0	0	0	0
Palma	FRIGON SALAS 2 - 2	0	0	0	0	0
Palma	FRIGON SALAS 1 - 2	0	0	0	0	0
Palma	FRIGON SALAS 1 - 3	0	0	0	0	0
Palma	FRIGON SALAS 1 - 4	0	0	0	0	0
Palma	FRIGON SALAS 1 - 5	0	0	0	0	0
Palma	FRIGON SALAS 1 - 6	0	0	0	0	0
Palma	FRIGON SALAS 1 - 7	0	0	0	0	0
Palma	FRIGON SALAS 1 - 8	0	0	0	0	0
Palma	FRIGON SALAS 1 - 9	0	0	0	0	0
Palma	FRIGON SALAS 1 - 10	0	0	0	0	0
Palma	FRIGON SALAS 1 - 11	0	0	0	0	0
Palma	FRIGON SALAS 1 - 12	0	0	0	0	0
Palma	FRIGON SALAS 1 - 13	0	0	0	0	0
Palma	FRIGON SALAS 1 - 14	0	0	0	0	0
Palma	FRIGON SALAS 1 - 15	0	0	0	0	0
Palma	FRIGON SALAS 1 - 16	0	0	0	0	0
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Palma	FRIGON SALAS 1 - 21	0	0	0	0	0
Palma	FRIGON SALAS 1 - 22	0	0	0	0	0
Palma	FRIGON SALAS 1 - 23	0	0	0	0	0
Palma	FRIGON SALAS 1 - 24	0	0	0	0	0
Palma	FRIGON SALAS 1 - 25	0	0	0	0	0
Palma	FRIGON SALAS 1 - 26	0	0	0	0	0
Palma	FRIGON SALAS 1 - 27	0	0	0	0	0
Palma	FRIGON SALAS 1 - 28	0	0	0	0	0
Palma	FRIGON SALAS 1 - 29	0	0	0	0	0
Palma	FRIGON SALAS 1 - 30	0	0	0	0	0

Performance sites comparison



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