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GESTIONE DEGLI IMPIANTI FRIGORIFERI E DI CONDIZIONAMENTO

AREA PROFESSIONALIZZANTE: TECNOLOGIE PER LA CONSERVAZIONE E TRASFORMAZIONE
UF: GESTIONE DEGLI IMPIANTI FRIGORIFERI E DI CONDIZIONAMENTO
DOCENTE: ING. GIUSEPPE GARIFOLI



COLD ENERGY

LONG LIFE TO YOUR FRUITS AND VEGETABLES



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WE WANT TO HELP YOU TO IMPROVE THE CONSERVATION OF YOUR FRUITS AND VEGETABLES.



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WHY TODAY ARE YOU HERE TO LISTEN TO A PERFECT STRANGER THAT HE WANTS TO SPEAK ABOUT COOLING? (WHEN YOU HAVE VERY IMPORTANT THINGS TO DO)



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THE HEART OF WORK OF **COLD ENERGY** IS TO PROTECT YOUR PRODUCTS, RESULT OF MONTHS OF HARD WORK IN THE FIELDS



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THE PLANTS ARE BUILT FOR YOUR PRODUCTS, NOT THE OPPOSITE

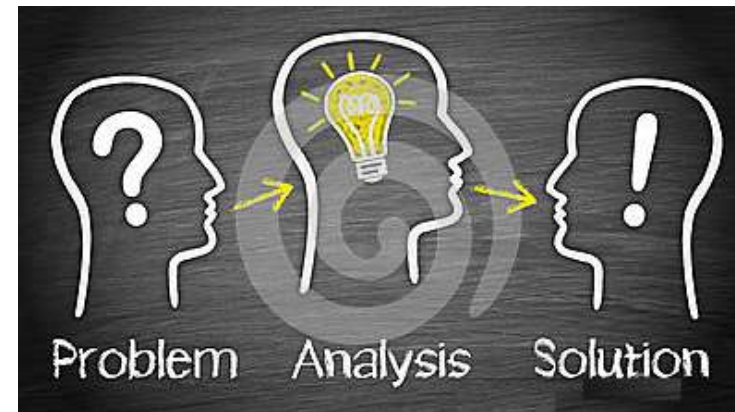


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THE PLANTS ARE BUILT FOR YOUR PRODUCTS, NOT THE OPPOSITE

EACH PRODUCT HAS ITS PROBLEMS AND FOR EACH PROBLEM THERE IS THE RIGHT SOLUTION



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NO TO STANDARD REFRIGERATING SYSTEMS



COLD ENERGY BUILT PLANTS TAYLOR MADE



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EXPERIENCE: GROWING TOGETHER

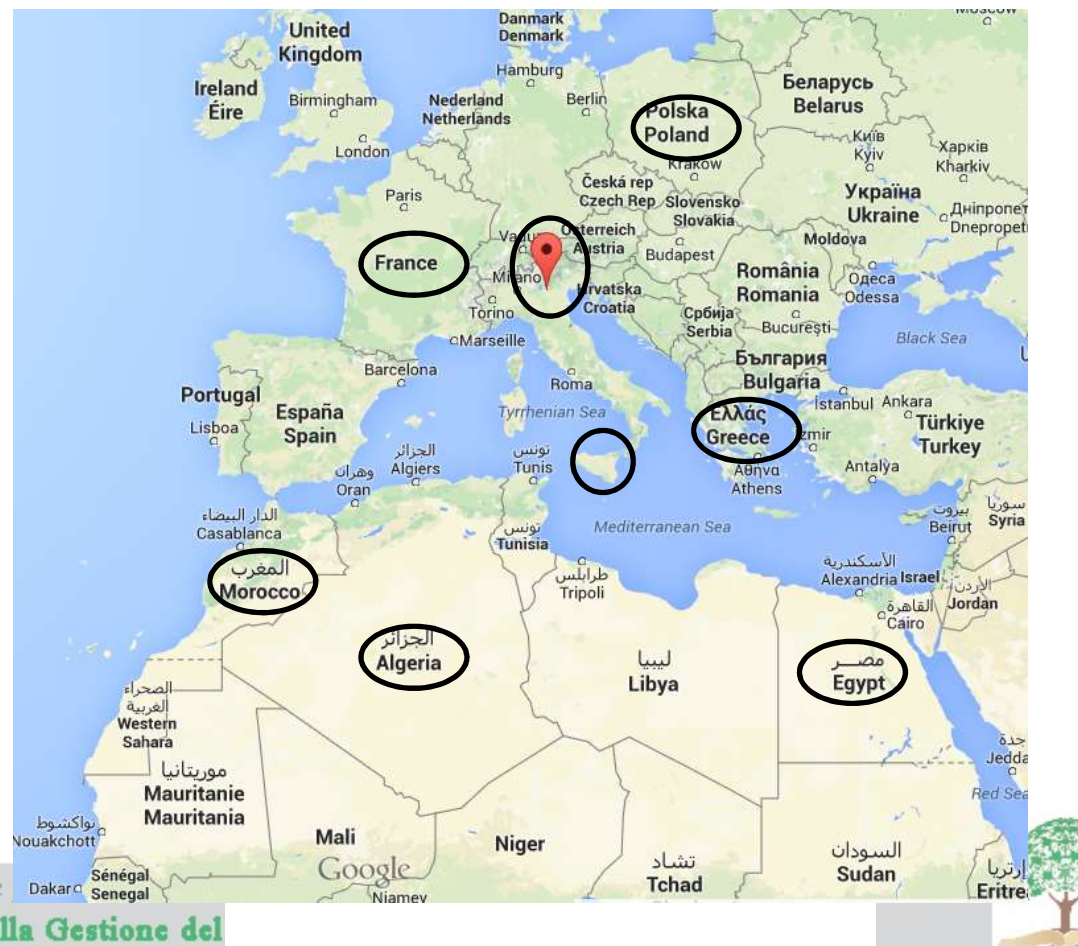


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COLD ENERGY NEAR CUSTOMERS

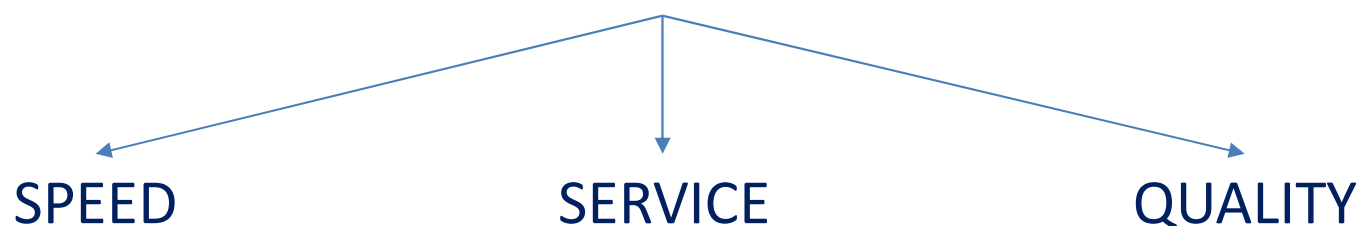
COLD ENERGY
ORGANIZATION



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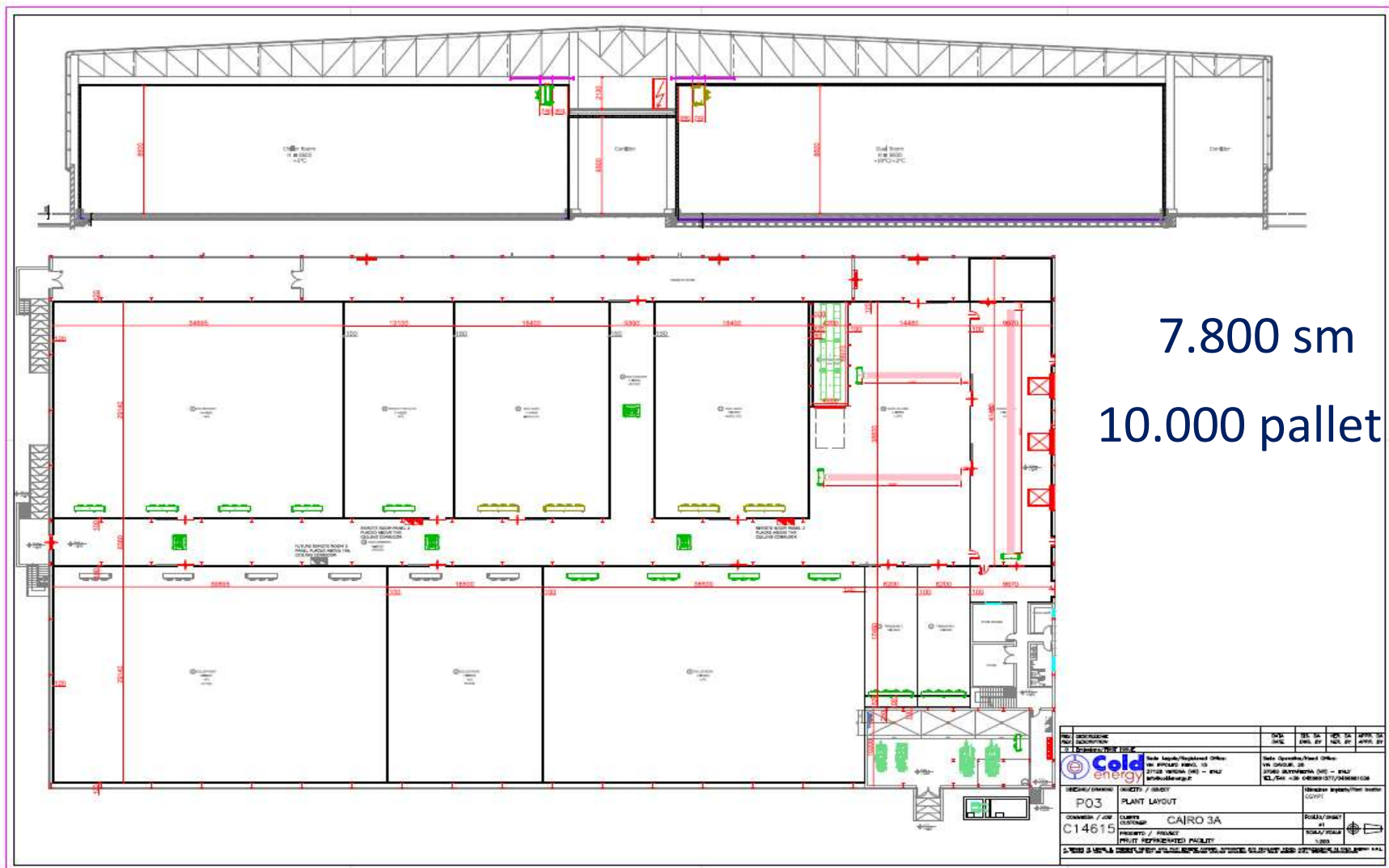
RULES OF COLD ENERGY



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CAIRO 3A AGRICULTURE PROJECT



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LONG LIFE TO YOUR FRUITS AND VEGETABLES – NEW TECHNOLOGY

NEW TECHNOLOGY



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ECOLOGY AND ENERGY CONSUMPTION



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RELIABILITY



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PRECOOLING TUNNEL



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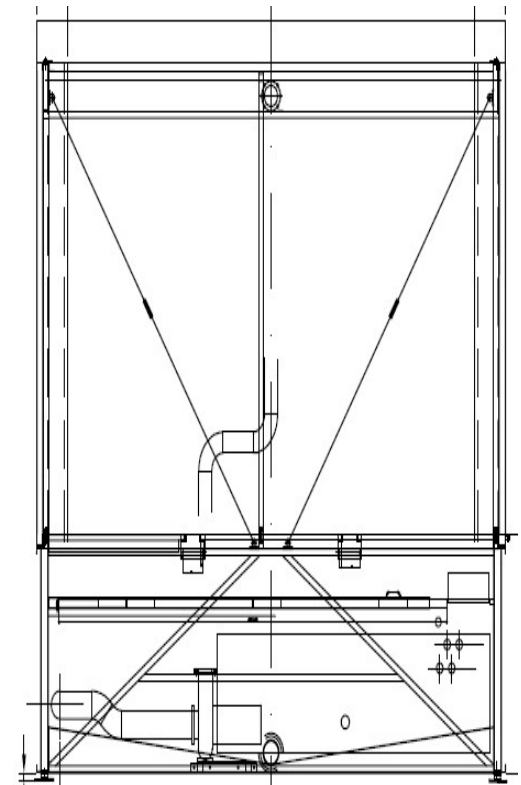
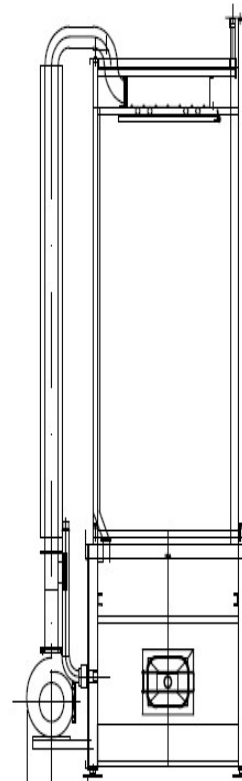
PRECOOLING TUNNEL



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HYDROCOOLER



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HYDROCOOLER



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VACUUM



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ADIABATIC COOLER



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RIPENING SYSTEM FOR MANGO, AVOCADO AND BANANA

CALIFORNIA SYSTEM



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RIPENING SYSTEM FOR MANGO,AVOCADO AND BANANA

CENTRAL DEPRESSION SYSTEM



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RIPENING SYSTEM FOR MANGO, AVOCADO AND BANANA

ECOTOP SYSTEM PATENTED



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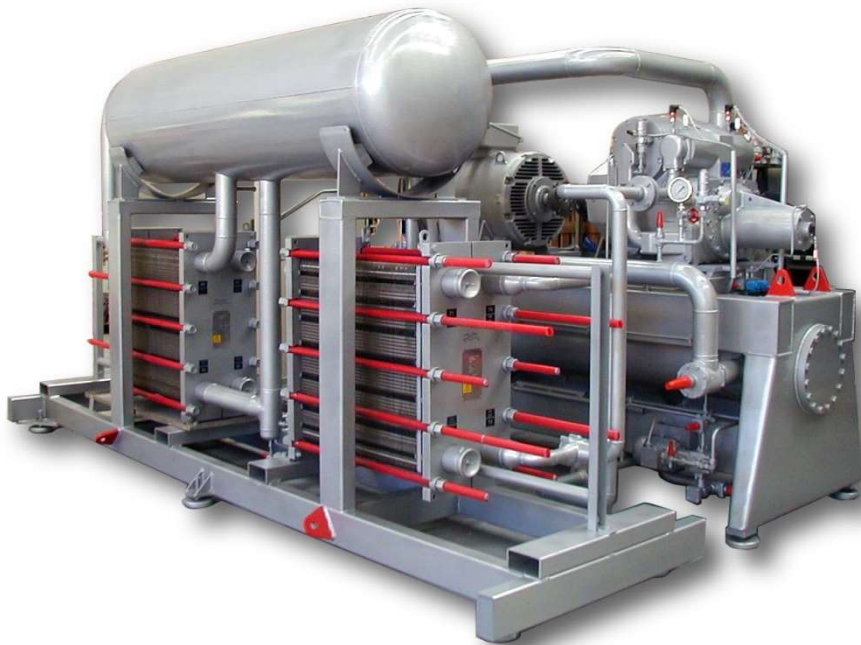
FREON CHILLER



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AMMONIA CHILLER



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AMMONIA PLANT

HIGH PERFORMANCE



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PERFORMANCE COMPARISON – DATA SHEET CHILLER FREON

Prestazioni			
Capacità di Raffreddamento		719,37 kW	
Efficienza		1,87 EER (kW/kW)	
Carica refrigerante per circuito R134a	188 kg	188 kg	
Sound Power Level		103 dBA	
Evaporatore		Condensatore	
Tipo	Low w/o freeze protection	Temp. Ambiente	38,00 C
Temperatura in uscita	-8,00 C	Altitudine	0,0 m
Temperatura in ingresso	-3,94 C	Tipo di aletta	Alluminio
Portata acqua	48,39 L/s	Ambiente	Alta temperatura esterna
Perdita di carico	35,0 kPa	Motore di ventilatore	Ventilatori di condensazione standard
Fattore di incrostazione	0,017700 m2-deg C/kW	Potenza assorbita ventilatori	33,70 kW
Tipo di fluido	Glicole etilenico	Numero di ventilatori	24
Concentrazione antigelo in peso	35,00 %	Portata d'aria totale del condensatore	102,74 m3/s
Punto di congelamento del liquido			
Configurazione evaporatore	Isolato		
Dati elettrici			
Alimentazione	400v/50Hz/3Ph	Corrente massima	1124,00 A
Potenza	385,10 kW	Corrente di avviamento	1030,00 A
Potenza assorbita dal compressore	349,80 kW		
Dati generali			
Lunghezza	12244 mm	Peso in spedizione	11881 kg
Larghezza	2250 mm	Peso in funzionamento	11929 kg
Altezza	2530 mm		

COOLING CAPACITY = 719,37 kW

POWER COMSUPTION = 349,80 kW

COP = 2,05



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PERFORMANCE COMPARISON

Input Evaporator Conditions

Evap. Temp.	-12.00	°C
Evap. Press.	2.678151	bara
Useful	0	°C
Non Useful	0	°C
Suct. Press. Loss	0.05	bar

Input Compressor Conditions

Suct. Press.	2.63	bara
Suct. Temp.	-12	°C
Disch. Press.	14.92	bara
Liquid Subcooling	4	°C

Input Condenser Conditions

Cond. Temp.	38	°C
Cond. Press.	14.70935	bara
Disch. Press. Loss	0.21	bar

Economiser SuperFeed

Economiser Superfeed	No Economiser
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SideLoad SuperFeed

Side Load Superfeed	No Side Load
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Oil Cooling

Oil Cooling	LRI (LP Port)	
Oil / Discharge	50	°C

Specific Gravity	0.9	
Specific Heat	1.842	kJ/(kg.°C)

Performance at Full Load

Evap. Capacity	771.06	kWR
Abs. Power	245.18	kW
Abs. Torque	787.98	Nm
COP	3.14	
Cond. Capacity	1016.61	kWR

Disch. Temp.	50	°C
Disch. Superheat	11.49	°C
Disch. Dew Temp.	38.51	°C
Suct. Flow	0.71	kg/s

Oil Temp.	50	°C
Oil/Gas Press.	2.07	bar
Oil Pump	3.75	l/s
Oil Flow	2.9	l/s
LRI Flow	0.15	kg/s
LRI Press.	5.45	bara

Performance at Min Load

Disch. Temp.	50	°C
LRI Flow	0.13	kg/s

Oil Temp.	50	°C
Oil Flow	2.02	l/s

COOLING CAPACITY = 771,06 kW

POWER COMSUPTION = 245,18 kW

COP = 3,14

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PERFORMANCE COMPARISON

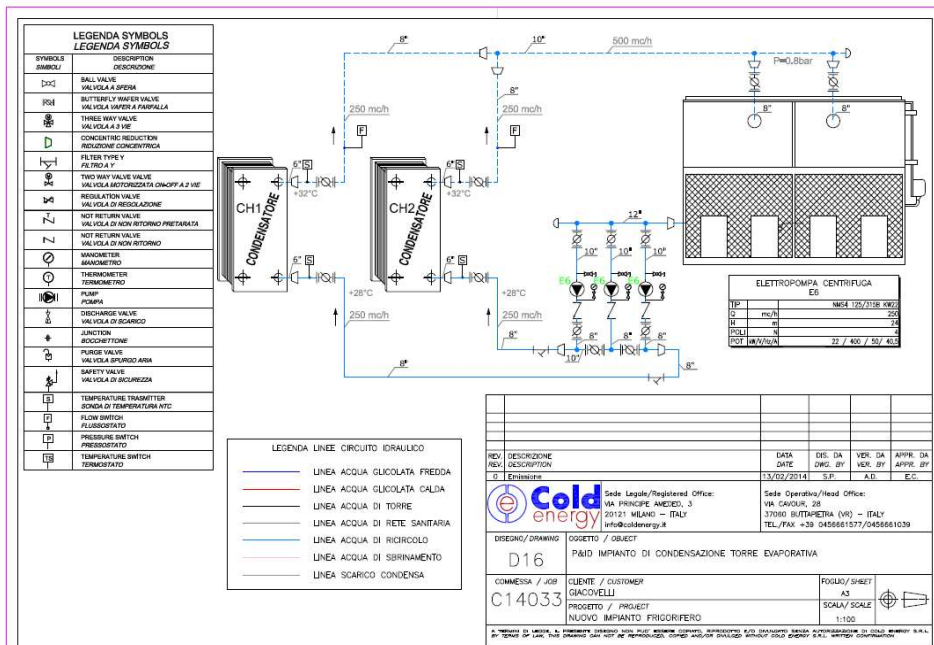
FREON CHILLER
COP 2,05

AMMONIA CHILLER
COP 3,14

UNDER EQUAL CONDITION FOR EACH HOUR OF OPERATION YOU HAVE A SAVINGS
OF 120,8 kW



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COLD ENERGY

LONG LIFE TO YOUR FRUITS AND VEGETABLES

WORKING ROOM CONDITIONATED IN MILAN



COLD ENERGY

LONG LIFE TO YOUR FRUITS AND VEGETABLES

BANANAS RIPENING ROOM IN AUSTRIA



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ENGINE ROOM IN MILAN



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WAREHOUSE IN POLAND



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WAREHOUSE IN POLAND



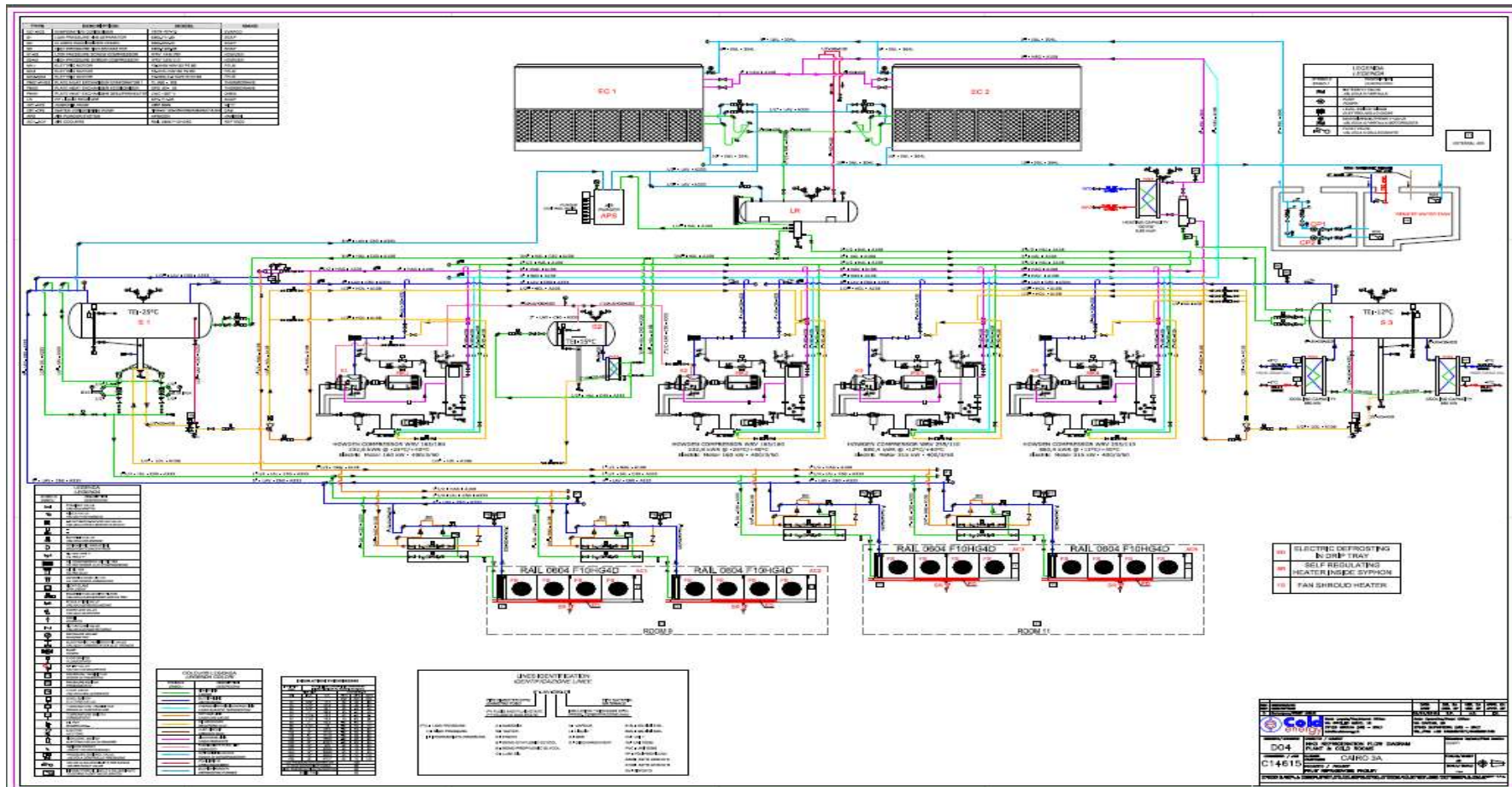
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WAREHOUSE IN SOUTH OF ITALY



LONG LIFE TO YOUR FRUITS AND VEGETABLES – USE CASE



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LONG LIFE OF YOUR FRUITS AND VEGETABLES – NEW TECHNOLOGY

THANK YOU FOR YOUR ATTENTION



INDUSTRIAL REFRIGERATION AND RIPENING TECHNOLOGY

