



Tecumseh

SILENSYS® NEW GENERATION



Silence to meet your highest expectation

September, 2011



AGENDA

1. THE SILENT MARKET

- Sales Trends & Market Opportunities

2. SILENSYS® NEW GENERATION OFFER

- New Range And Families
- Content And Options
- Spare Parts



AGENDA

3. PRODUCT BENEFITS

- Key Features
- Cooling Performances
- Acoustic Performances
- Efficiency (Cop)
- End User Benefits

4. TOOLS FOR SALES

- Marketing Plan
- Communication Tools



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1. THE SILENT MARKET



SILENSYS TARGETED MARKET MARKET OPPORTUNITY

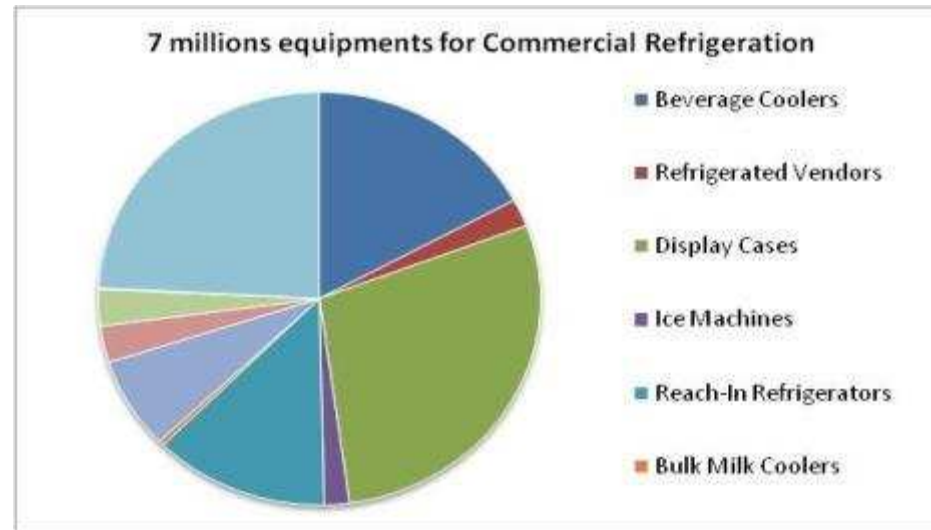
Technology	Market	Opportunity	Market Share	Market Size	Market Growth
Scroll	1.5M	1.5M	1.5M	1.5M	1.5M
Rotary	1.5M	1.5M	1.5M	1.5M	1.5M
Recip.	1.5M	1.5M	1.5M	1.5M	1.5M
Other	1.5M	1.5M	1.5M	1.5M	1.5M

Wide offer for products to large market share.



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MARKET EXCHANGE

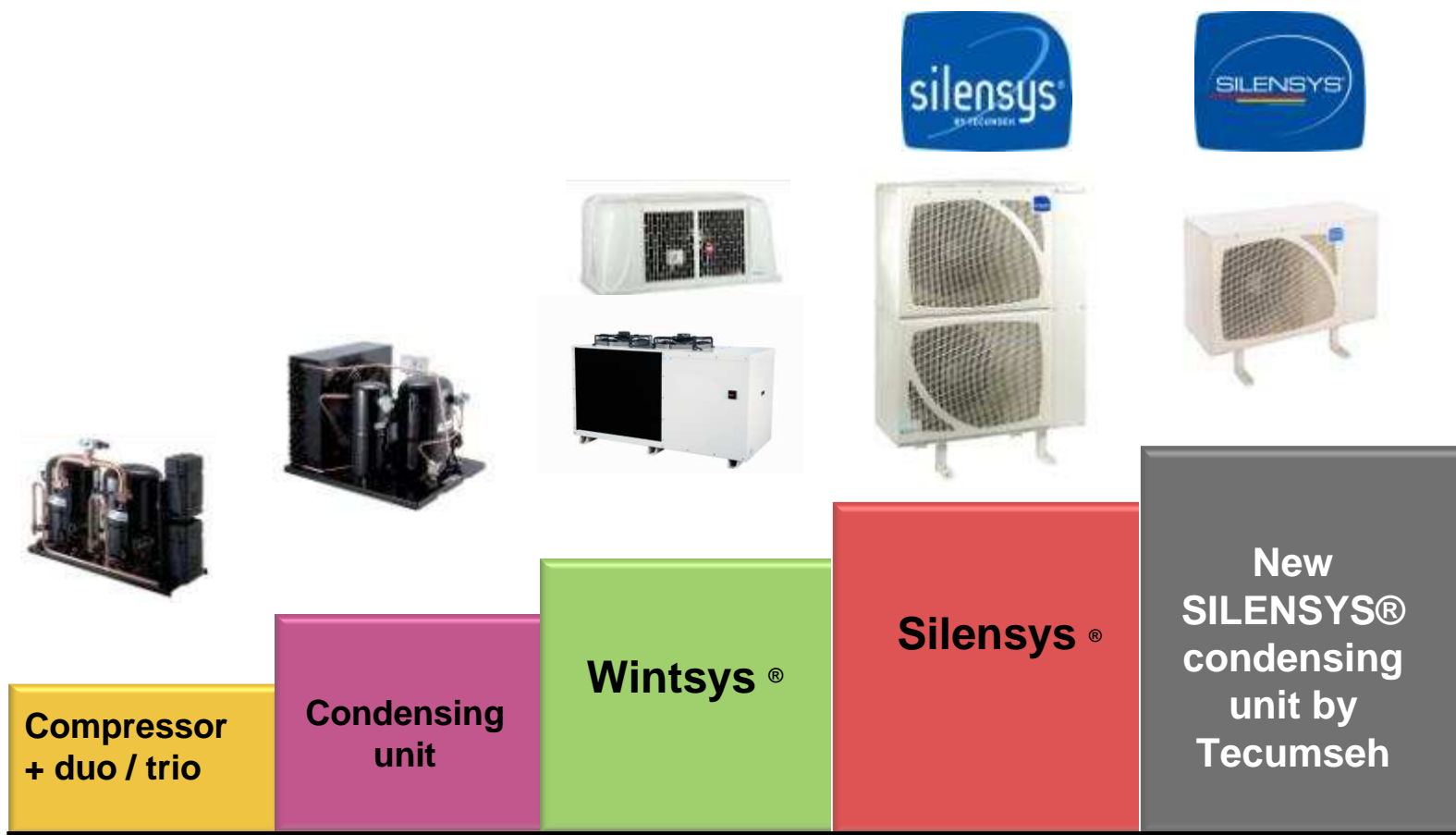


Tecumseh data for 2010
based on market research .

- Very large number of new equipment in Europe Middle East every year in Commercial Refrigeration,
- Only 12% of the total market is equipped with CU,
- Walk in coolers & Freezers (positive & negative) are really the main market for CU with already 70% of total volume equipped with CU
- Other applications display cases & Reach in refrigerators are real opportunities.



CONDENSING UNITS OFFER

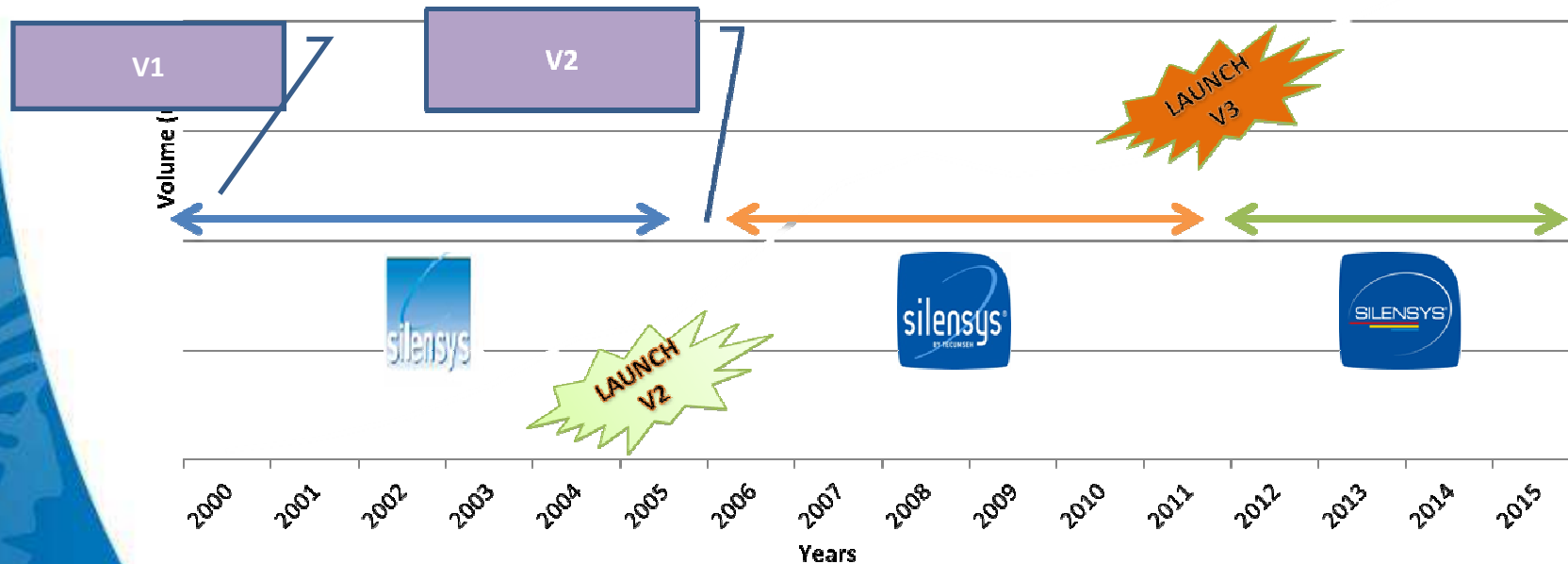




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SILENSYS® SUCESS STORY

Silensys evolution

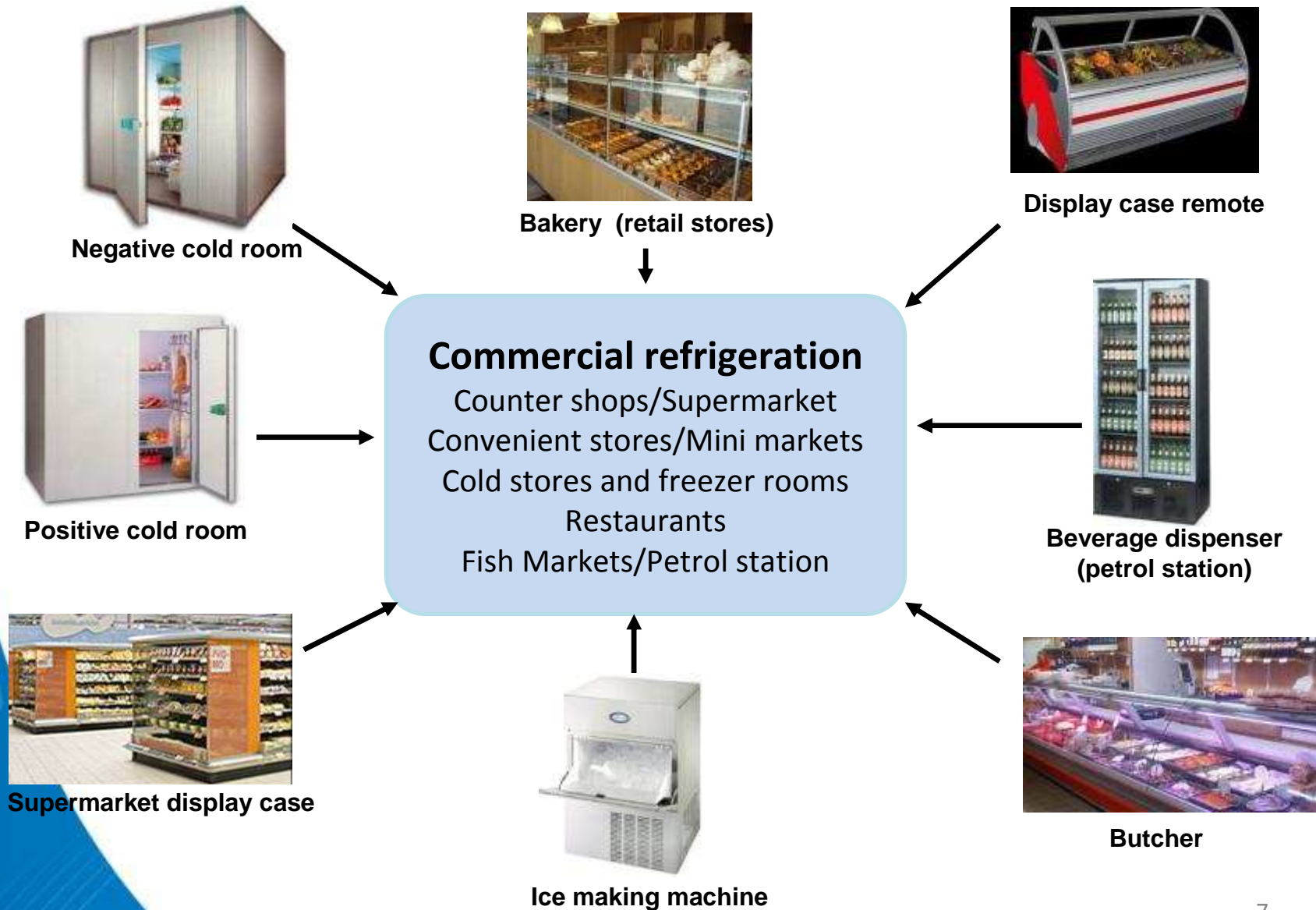


**Silensys® receipt technology will keep growing
while scroll and rotary will ramp up**
















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SILENSYS® TARGETED MARKET





SILENSYS® MARKET OPPORTUNITY

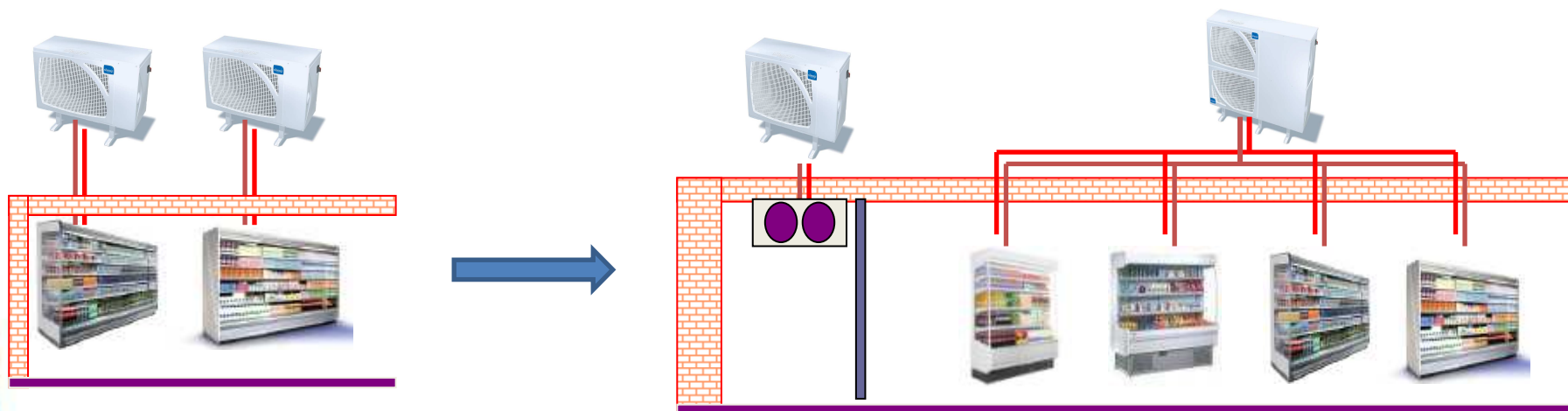
		Refrigeration System			
Store format	Surface	Medium Temp	Silensys Model	Low Temp	Silensys Model
Proximity	< 120 m2	3 ~ 5 kW		Self Contained	Compressor 
Convenience	100 - 700 m2	15 kW		Self Contained	Compressor 
Petrol stations	300 m2	5 ~ 20 kW		Self Contained	Compressor 
Hard discount	200 - 900 m2	20 ~ 40 kW		5 ~ 10 kW	
Small supermarkets	600 - 1800 m2	40 ~ 120 kW	Racks 	10 ~ 30 kW	
Medium supermarkets	1000 - 2500 m2	60 ~ 180 kW	Racks 	15 ~ 45 kW	
Large supermarkets	> 6000 m2	> 300 kW	Racks 	> 75 kW	

 Not for Silensys

Wide offer for proximity to large market stores



SILENSYS® MARKET OPPORTUNITY



Target applications:

- Cold rooms
- Wine cellars
- Refrigerated cabinets
- Fermentation chambers

Target segments:

- Proximity stores: Bakery, butcher, florist, chocolate maker etc...
- Petrol stations: Agip, BP, Esso, Shell, Total, Elf, Texaco etc...
- Small supermarkets: Lidl, Ed, Carrefour Market etc...

With New Silensys® offer new opportunities



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2. SILENSYS® NEW GENERATION OFFER

NEW RANGES & FAMILIES

NEW RANGE & FAMILIES RECIPROCATING RANGE

Silensys range

Bar chart showing performance metrics for the Silensys range compared to other models.

NEW RANGE & FAMILIES NEW DESIGNATION

Compressor & voltage identification

Model: 4 4 32 2 3C
1 2 3 4 5 6 7 8

1. Condensing unit name: Silensys
2. Compressor family: VS (Scroll) / W (Rotary) / AELAFPHAD (Piston)
3. Cup compressor: D
4. Application: 2 LRP & LRP Scroll / 3 Liquid Injection / 4 HRP / 5 HRP & HRP
5. Number of digits of cooling capacity
6. 3 first digits of cooling capacity: 4000, 4000, 4000
7. Refrigerant code: 2: R404A, 1: R134a
8. Voltage: 400-500V, 200-240V, 100-120V, 230V, 240V, 250V, 260V, 270V, 280V, 290V, 300V, 310V, 320V, 330V, 340V, 350V, 360V, 370V, 380V, 390V, 400V, 410V, 420V, 430V, 440V, 450V, 460V, 470V, 480V, 490V, 500V

15% new product offer

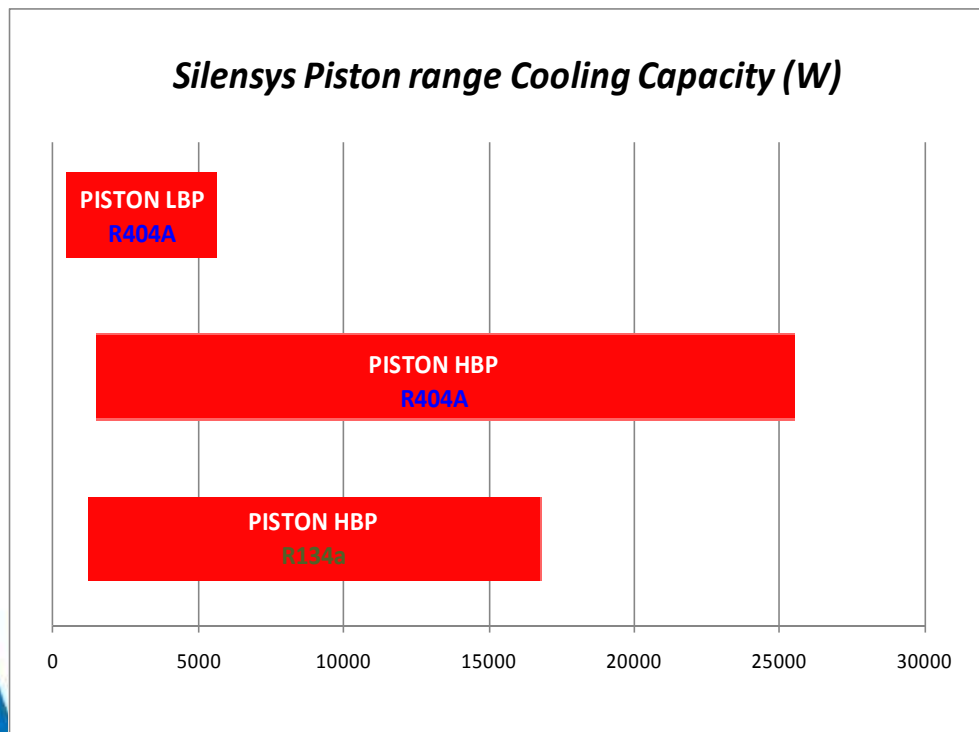
Completely & more product description



NEW RANGE & FAMILIES

RECIPROCATING RANGE

Silensys® range



Technology	Refrigerant	Number of designations
Reciprocating	R134a/R404	45
Rotary	R134a/R404	12
Scroll	R404A	12
		69

Conditions d'annonces :

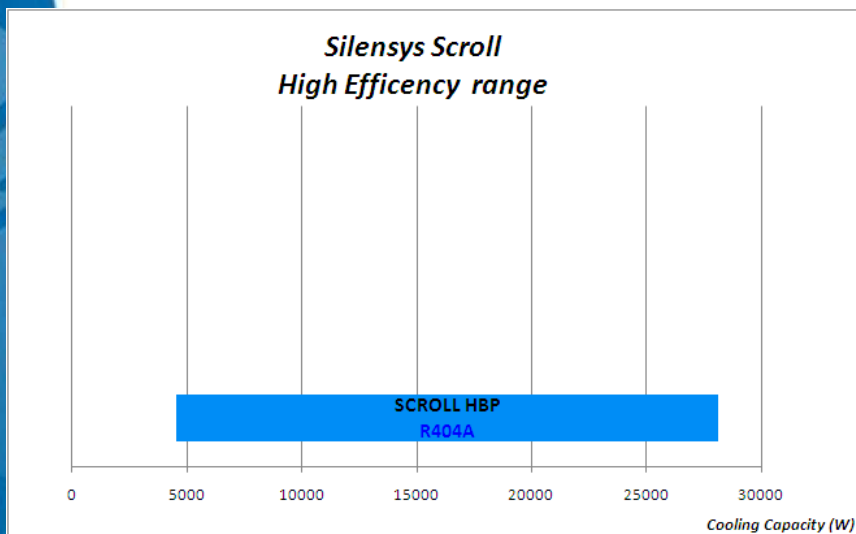
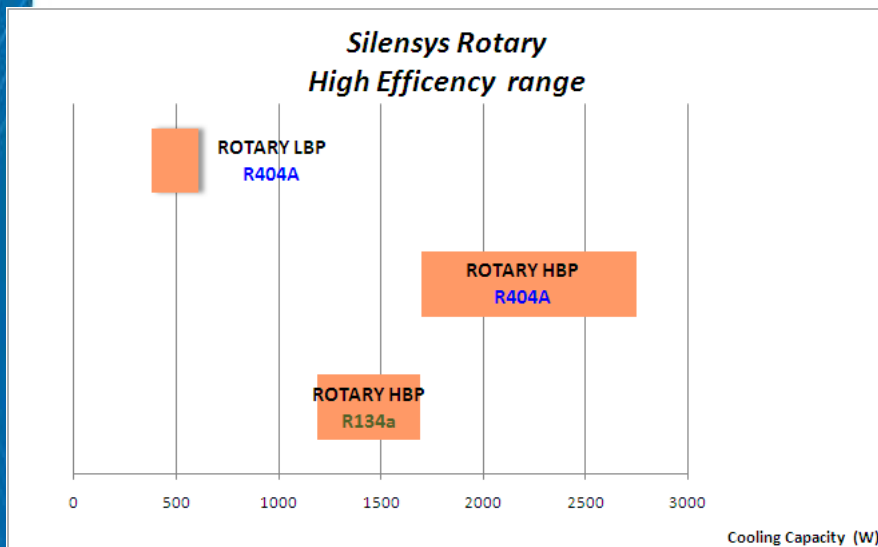
EN 13215 – température ambiante 32°C,
Température d'aspiration 20K, Sous refroidissement 3K
MHP évaporation à + 5°C
LBP évaporation à - 35°C

35% new product offer



NEW RANGE & FAMILIES

HIGH EFFICIENCY RANGES : **NEW**



NEW HIGH EFFICIENCY RANGES

Application	Technology	Refrigerant	Minimum Capacity (W)	Maximum Capacity (W)
HBP	Reciprocating	R134a	1 186	16 739
		R404A	1 494	25 435
	Rotary	R134a	1 190	1 690
		R404A	1 700	2 750
	Scroll	R404A	4 530	28 125
LBP	Reciprocating	R404A	459	5 659
	Rotary	R404A	380	605

Conditions d'annonces :

EN 13215 – température ambiante 32°C,
 Température d'aspiration 20°K, Sous refroidissement 3°K
 MHP évaporation à + 5°C
 LBP évaporation à - 35°C

From 1 kW to 28 kW in MBP range



NEW RANGE & FAMILIES

NEW DESIGNATION

Compressor & voltage identification

SIL **RG** **4** **4** **92** **Z** **TZ**
1 **2 3** **4 5** **6 7 8**

1. Condensing unit name: “**Silensys**”
2. Compressor family: **VS** (Scroll) / **RG** (Rotary) / **AE/AJ/FH/AG** (Piston)
3. Duo compressors : **D**
4. Application: **2** LBP/ **G** LBP-Scroll / **3** Liquid Injection / **4** HBP / **9** MHP & HBP
5. Number of digits of cooling capacity
6. 2 first digits of cooling capacity in (*) Btu/hr at 60Hz *ex: 9200 Btu/hr*
7. Refrigerant type: Z: R404A Y: R134a
8. Voltage: FZ single phase 220V/240V - 50Hz
TZ three phase 400V - 50HZ / 440V - 60Hz
KZ threeTriphase 220-50Hz/ 220V-60Hz
XC single phase 220/240V- 50Hz
XG threeTriphase 380/420V-50Hz / 460V-60Hz

*Btu/h at 60Hz in standard TE conditions

Complete & easy product designation



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SPARE PARTS



caisse S

Spare parts - Pièces de rechange - Ersatzteile
Запасные части - Piezas de repuesto
Parti de ricambio



R	SIL...	⚡	M	⚙️	🔌	Disjoncteur Magnéto + Contacteur	🔧	🌀	🌀	🌀	Auto Man	🌀	🌀	🌀	Fusib	🌀	🌀	🌀	🌀	Silencieux de refoulement			
Piston	R404A	SILAJ2432ZFZ	FZ	CAJ2432Z	CSR	8655183	8527135													8348074			
		SILAJ2440ZFZ	FZ	CAJ2440Z	CSR	8655196	8527136	8527108						8338279	8683049						8348074		
		SILAJ2446ZFZ	FZ	CAJ2446Z	CSR	8655180	8527136									8661567	8661544				8348074		
		SILAJ2446ZTZ	TZ	TAJ2446Z	3PH	8682305	8527135	8527109														8348074	
		SILAJ2464ZFZ	FZ	CAJ2464Z	CSR	8655179	8527134	8527108														8348074	
		SILAJ2464ZTZ	TZ	TAJ2464Z	3PH	8682306	8527135	8527109															8348074
		SILA E9450ZFZ	FZ	CAE9450Z	CSR	8655218	8527136															8348074	
	SILA E9460ZFZ	FZ	CAE9460Z	CSR	8655212	8527136	8527108				8580091										8348074		
	SILAJ9480ZFZ	FZ	CAJ9480Z	CSR	8655193	8527136															8348074		
	SILAJ9480ZTZ	TZ	TAJ9480Z	3PH	8682615	8527135	8527109														8348074		
	SILAJ9510ZFZ	FZ	CAJ9510Z	CSR	8655095	8527134	8527108														8348074		
	SILAJ9510ZTZ	TZ	TAJ9510Z	3PH	8682302	8527135	8527109														8348074		
	SILAJ9513ZFZ	FZ	CAJ9513Z	CSR	8655185	8527134	8527108														8348074		
	SILAJ9513ZTZ	TZ	TAJ9513Z	3PH	8682306	8527135	8527109														8348074		
R134a	SILA E4440YFZ	FZ	CAE4440Y	CSIR	8655318	8583026	8527136	8527108												8348074			
	SILAJ4461YFZ	FZ	CAJ4461Y	CSIR	8655142	8527136														8348074			
	SILAJ4461YFZ	TZ	TAJ4461Y	3PH	8682304	8527135	8527109													8348074			
	SILAJ4476YFZ	FZ	CAJ4476Y	CSIR	8655189	8527134															8348074		
	SILAJ4492YFZ	FZ	CAJ4492Y	CSIR	8655174	8583027	8527134														8348074		
	SILAJ4492YFZ	TZ	TAJ4492Y	3PH	8682302	8527135	8527109														8348074		
	SILAJ4511YFZ	FZ	CAJ4511Y	CSR	8655175	8527134	8527108														8348074		
SILAJ4511YFZ	TZ	TAJ4511Y	3PH	8682306	8527135	8527109														8348074			
Rotary	R404A	SILRG2426ZFZ	FZ	RGA2426Z	CSR	8655284	8583033	8527135	8527108											8348074			
		SILRG2432ZFZ	FZ	RGA2432Z	CSR	8655285	8583033	8527135													8348074		
		SILRG2436ZFZ	FZ	RGA2436Z	CSR	8655286	8583033	8527135													8348074		
		SILRG2446ZFZ	FZ	RGA2436Z	CSR	8655287	8583033	8527136	8527108												8348074		
	R134a	SILRG4445YFZ	FZ	RGA4445Y	CSIR	8655164	8583033	8527135													8348074		
		SILRG4550YFZ	FZ	RGA4450Y	CSIR	8655272	8583033	8527136													8348074		
		SILRG4460YFZ	FZ	RGA4460Y	CSIR	9655298	8583033	8527136	8527108												8348074		
		SILRG4476YFZ	FZ	RGA4476Y	CSIR	8655163	8583033	8527136													8348074		
		SILRG4467ZFZ	FZ	RGA4467Z	CSR	8655311	8583033	8527135	8527108													8348074	
		SILRG4480ZFZ	FZ	RGA4480Z	CSR	8655312	8583033	8527136														8348074	

High quality components => Available & Easy after sales



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3. PRODUCT BENEFITS

KEY FEATURES

PERFORMANCES IMPROVEMENT



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KEY FEATURES

- ✓ Low acoustic level
- ✓ Energy saving (Fan motor & Technologies)
- ✓ Plug and play
- ✓ Reliability and robustness



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ACOUSTIC IMPROVEMENT

PRODUCT IMPROVEMENTS SUMMARY COMPARED WITH SIL V2				
	S size	M size	L size	XL size
Compressor technology	Reciprocating	Reciprocating	Reciprocating	Reciprocating
Technologie compresseur	Rotary	Scroll	Scroll	Scroll
Amélioration Acoustique	3dBA	3dBA	3dBA	6dBA

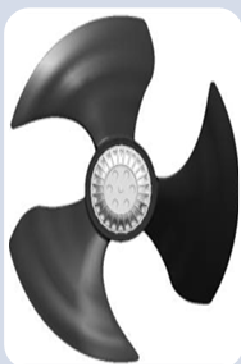
-50 %
sound power reduction

- 75%
↑

Unmatchable acoustic performance



ACOUSTIC IMPROVEMENT: How we succeed



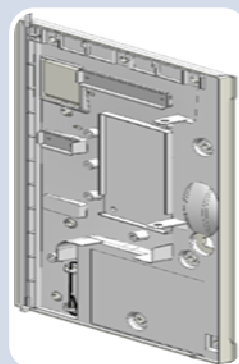
Fan blades

→ Design to optimize acoustics



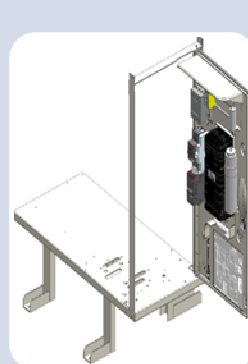
Air duct

→ optimum acoustics + optimum airflow



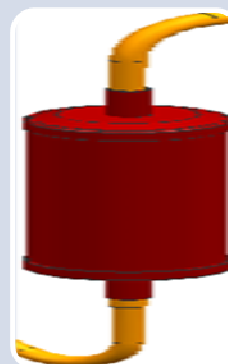
Lateral door

→ Double plastic skin to limitate sound transmission



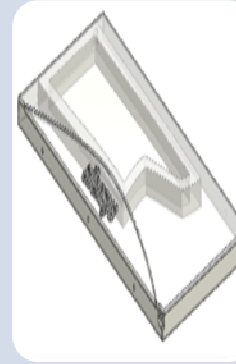
Global stiffness

→ Metal frame around door to reduce solid transmission



Discharge side

→ HP line muffler to minimize pressure pulsations



Air circulation

→ Foam Under top cover to encapsulate noise



Piping

→ Specific design to reduce and absorb vibrations

Many modifications lead to set up a new standard



ENERGY SAVING & ELECTRICAL CHANGES

2 New fans blades desing →

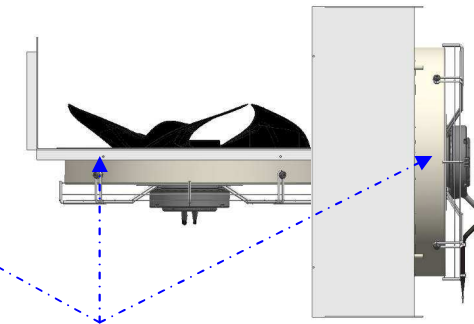
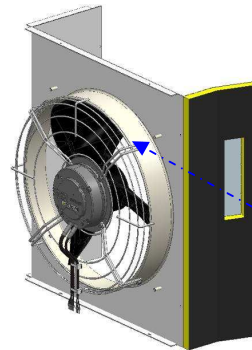


AC fan



EC fan

New fan housing →



Air duct

EC fan motors on M, L, XL sizes → ErP directive

High Efficiency EC motors → up to 50% less input power than AC ones

New fans design fit & anticipate the new regulation



ENERGY SAVING : ERP DIRECTIVE

Energy related Product Directive (ErP): applicable for electrical motors placed in european market (imported or not)

ErP directive sets minimum efficiency numbers for fans: applicable for fan input power > 125 W (Ø 350 mm fans and above)

2 requirements levels : first in **2013** and second in **2015**

- **2013** (1st level of efficiency requirements): about 30% of fans on european market will not meet these ErP requirements
- **2015** (2nd level of efficiency requirements, harder than 2013 one): about 20% more fans will not meet these ErP requirements

- Fans that meet ErP efficiency requirements will have **CE** marking

 **TECUMSEH has anticipated ErP requirements during design phase on new Silensys by selecting EC fans for M, L and XL sizes (*)**

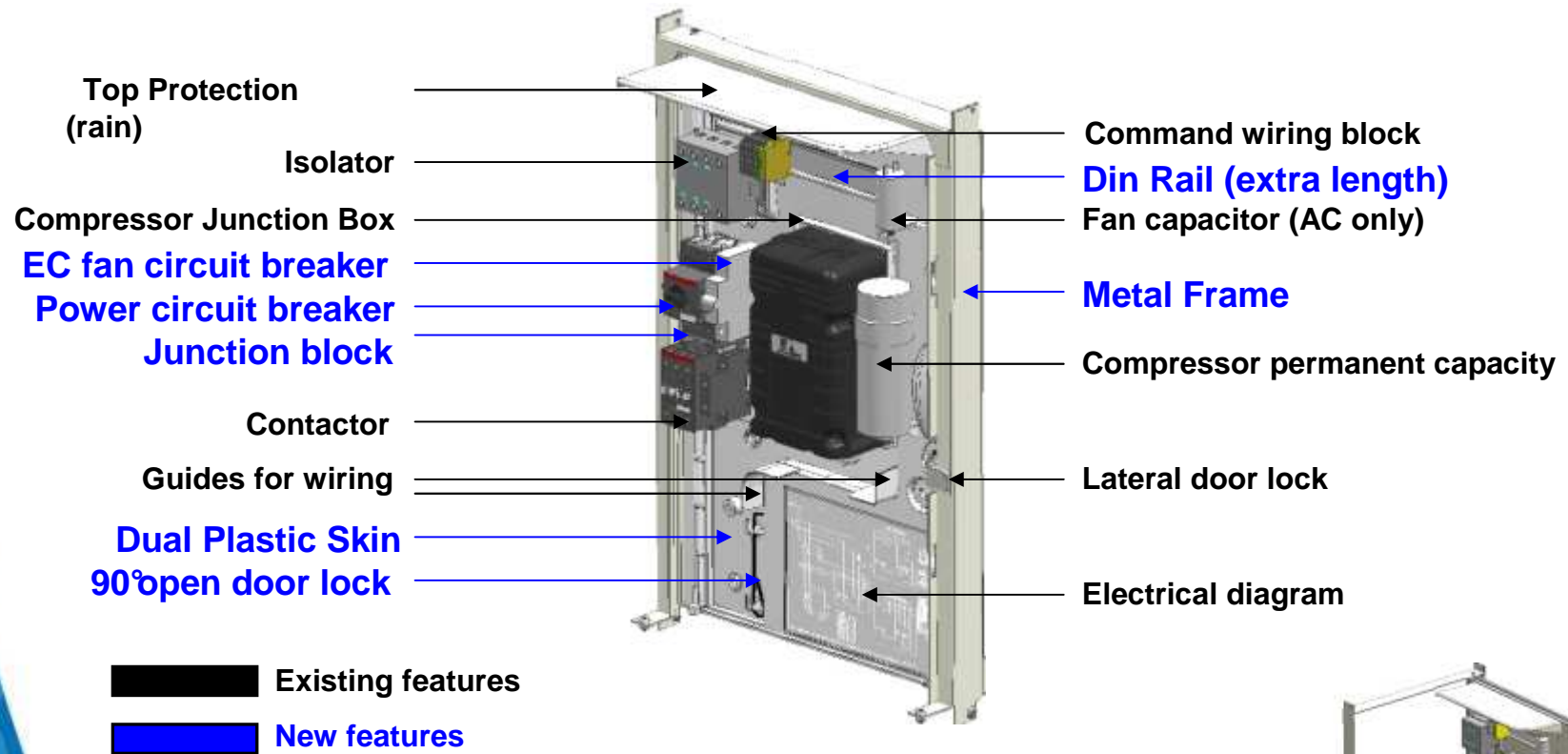
(*) EC: Electronically Commuted

More constraints on energy consumption => Silensys is ready





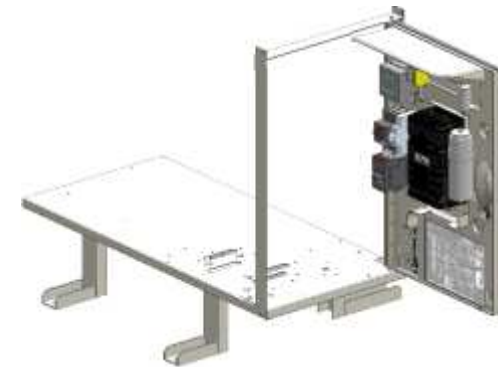
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ELECTRICAL CHANGES



Advantages:

-  Overall stiffness
-  Accessibility and maintenance
-  Electrical equipment



Confidential document - Tecumseh Europe property

40% new equipment on the door



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KEY FEATURES

- ✓ Low acoustic level
- ✓ Energy saving (Compressors Technologies & Fan motors)
- ✓ Plug and play
- ✓ Reliability and robustness





PERFORMANCES IMPROVEMENT COEFFICIENT OF PERFORMANCE

PRODUCT IMPROVEMENTS SUMMARY COMPARED WITH SIL V2				
	S size	M size	L size	XL size
Compressor technology	Reciprocating	Reciprocating	Reciprocating	Reciprocating
Coefficient Of Performance improvement (COP)	0%	5%	5%	5%
Technologie compresseur	Rotary	Scroll	Scroll	Scroll
Coefficient Of Performance improvement (COP)	15%	15%	15%	15%

Due to compressor only

Due to compressor &
EC fan motor

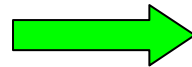
$$\text{COP} = \frac{\text{Cooling capacity}}{\text{Electrical input power}}$$

Energy consumption improvement on all sizes



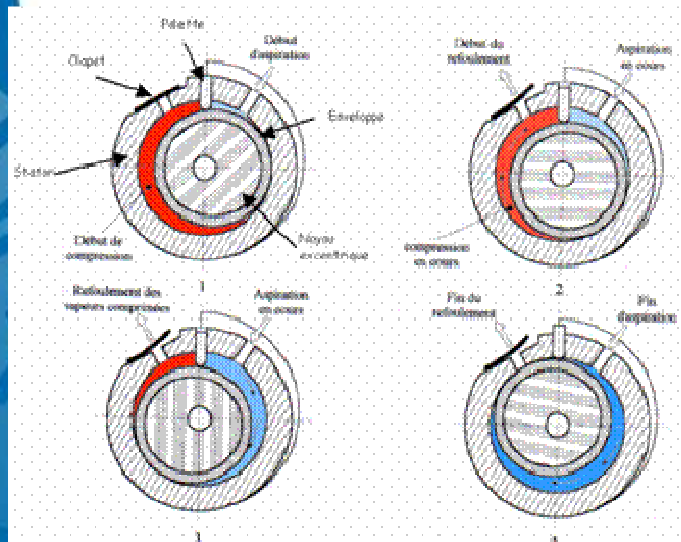
ENERGY SAVING : Rotary Technology

ROTARY:



Reduced electrical Input Power on a large evaporation range:

- ❖ up to - 25% energy consumption
- ❖ average of - 15% energy consumption



- **Direct suction** → thermal exchange reduction and high mass flow rate
- **Continuous compression** cycle and very high volumetric efficiency
- **Low consumption** on complete working temperature range related to constant torque
- **Limited** number of **components** → more compact
- Smooth operation and **low resisting** torque compared with reciprocating (no unbalanced mass)
- **Lower oil** charge than reciprocating
- Dedicated to small cooling capacities
- Compact design

Tecumseh rotary solution allow reduce energy bill



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ENERGY SAVING : Rotary

No discharge line muffler

— New
- - - Options

Pressostat HP/BP

Filter drier

Suction accumulator

Rotary compressor

Oil return line

Liquid line

Fan speed regulator

3 way valve

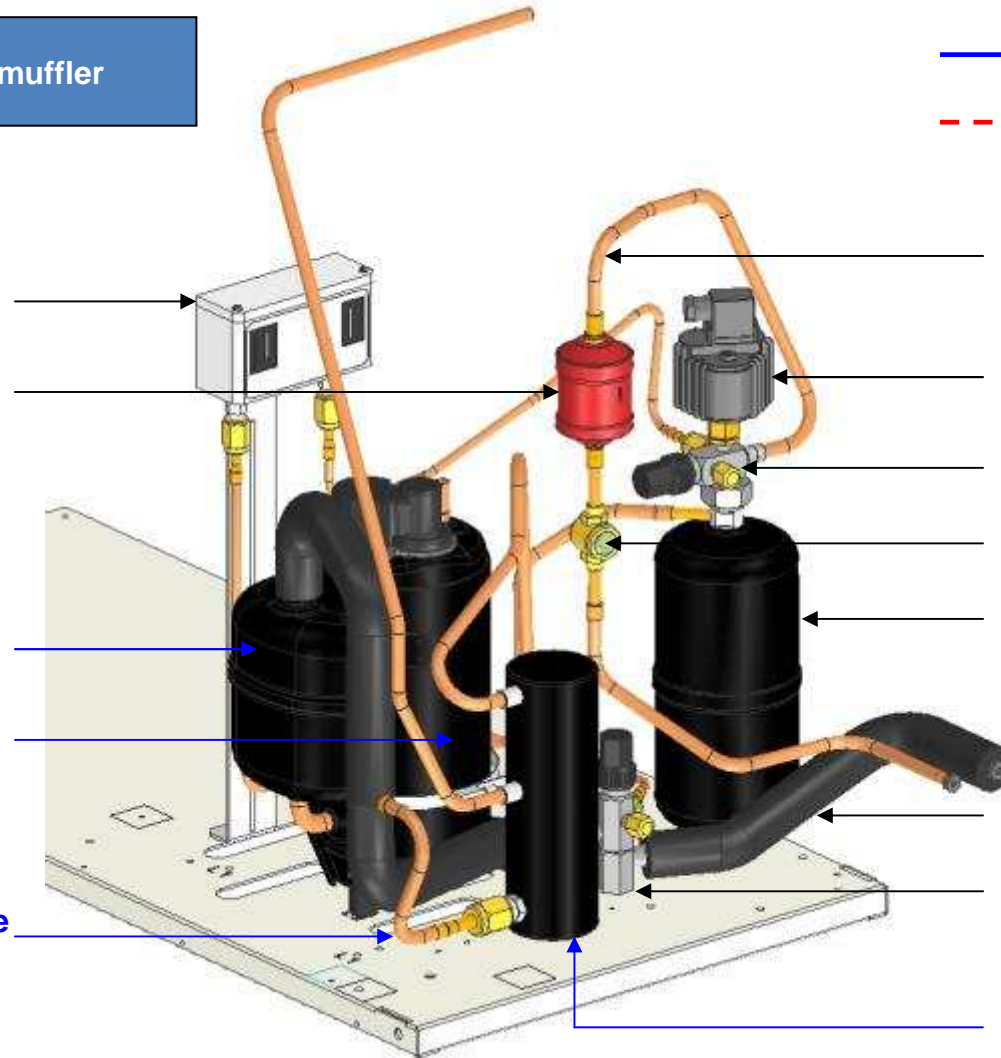
Refrigerant sightglass

Liquid receiver

Insulated suction line

Service valve

Oil separator





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ENERGY SAVING: Rotary

No discharge line muffler with Rotary technology

— New
- - - Options

HP/BP pressure switch

Filter drier

Check valve

Rotary compressor

Oil separator

Liquid line

Fan speed regulator

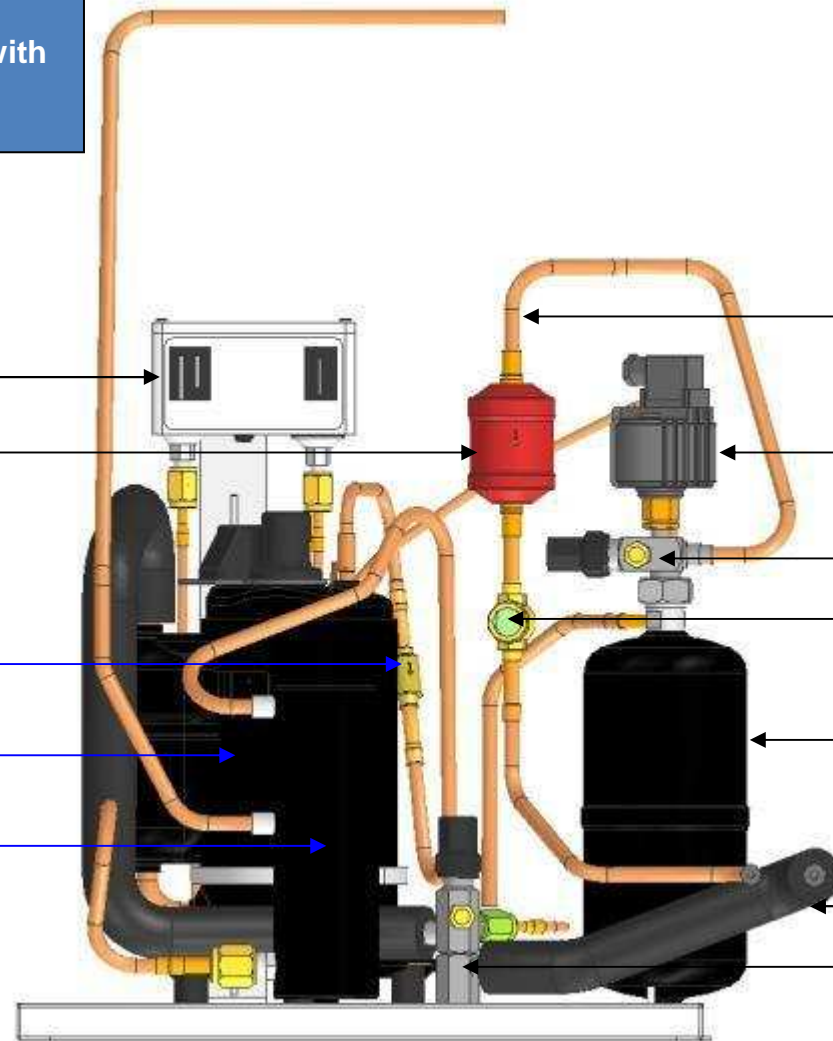
3 way valve

Refrigerant sightglass

Liquid receiver

Insulated suction line

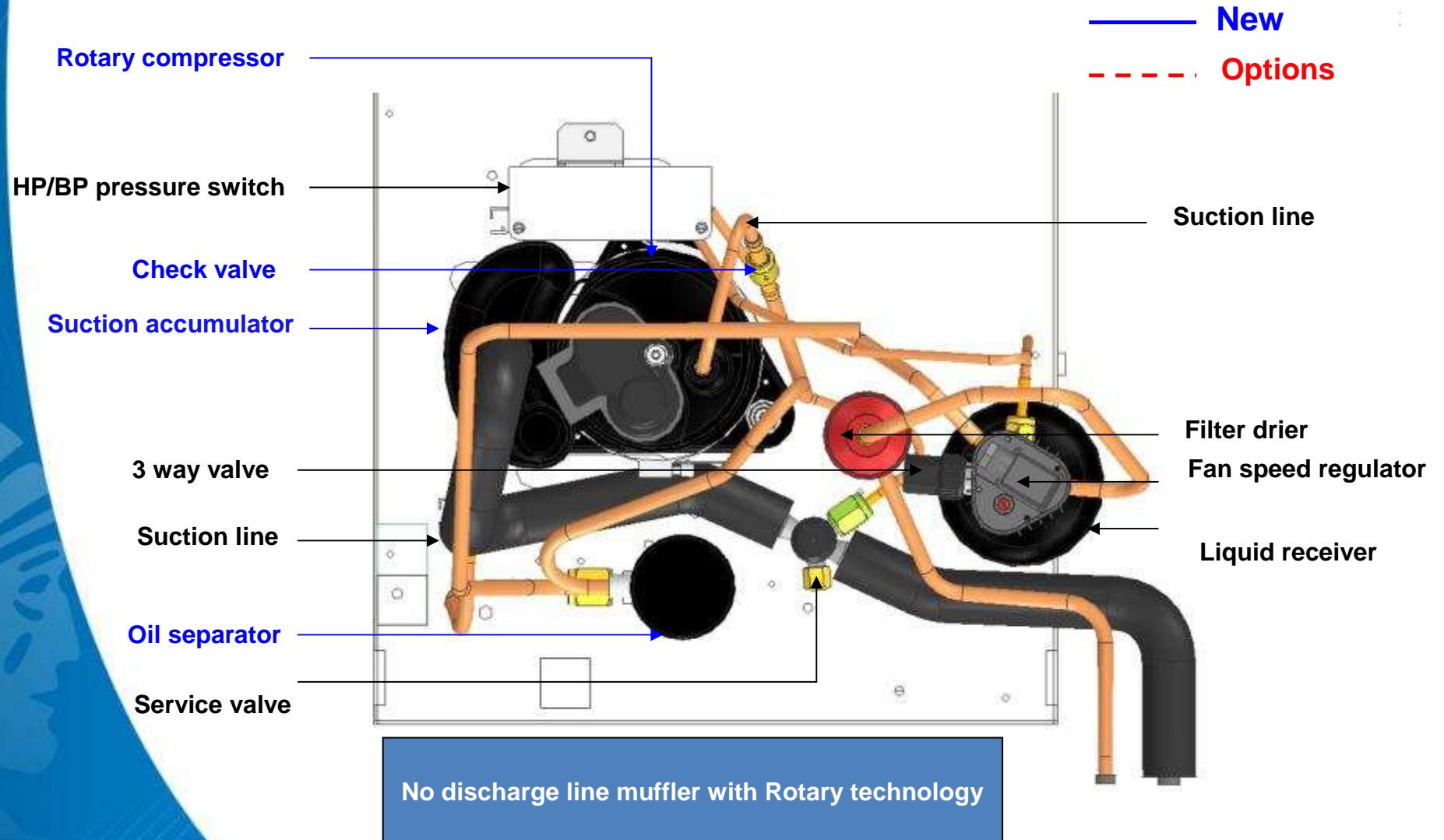
Service valve





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ENERGY SAVING: Rotary





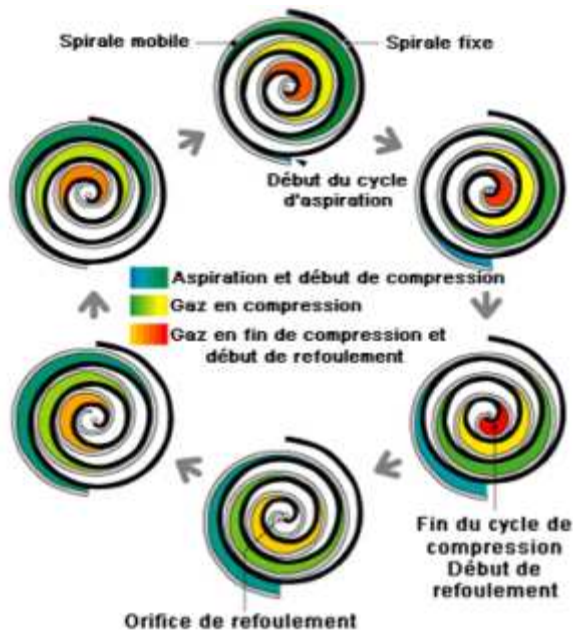
ENERGY SAVING : Scroll Technology

SCROLL:



Reduced electrical Input Power on a large evaporation temp range:

- ❖ up to - 15% energy consumption
- ❖ average of - 10% energy consumption

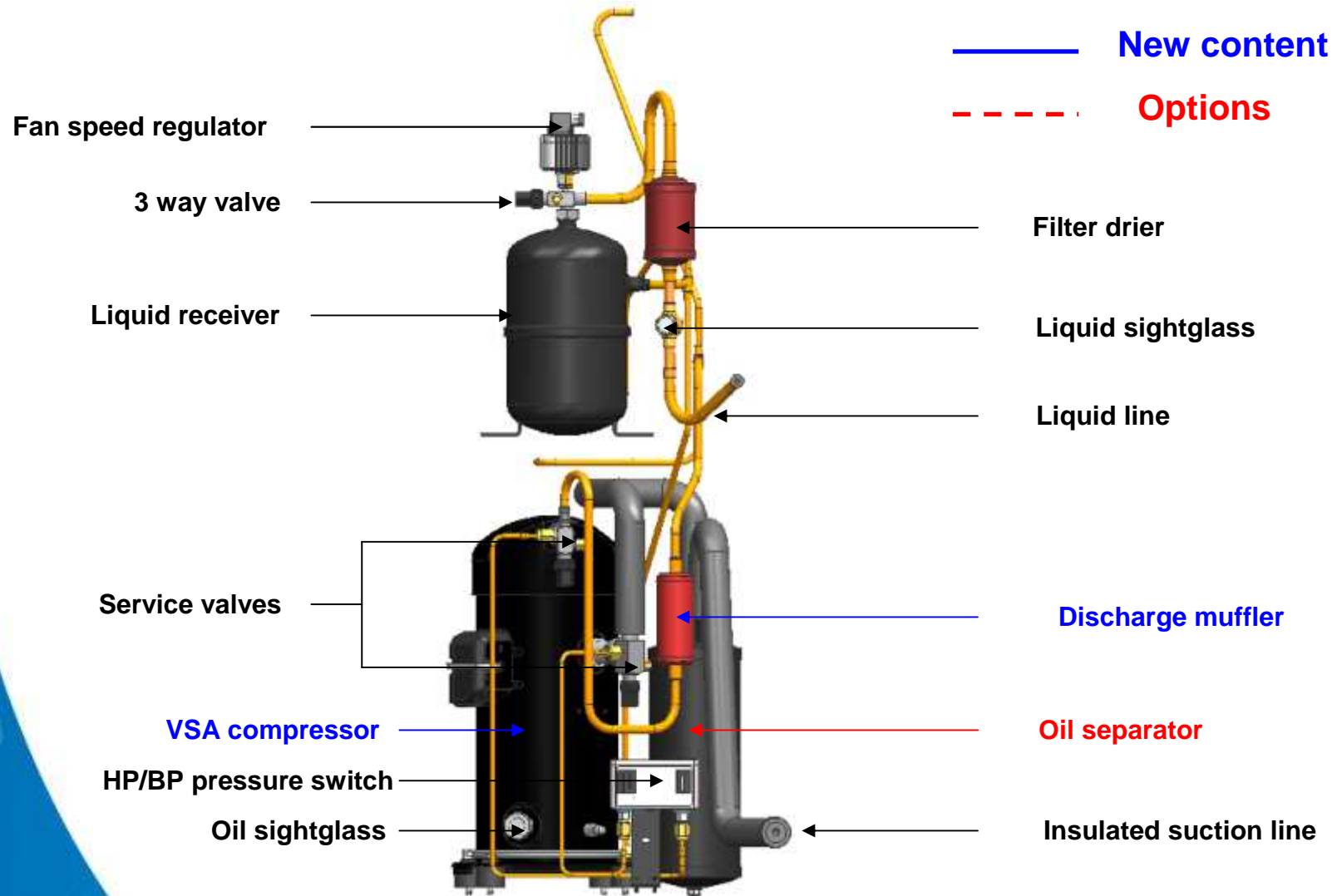


- About 50% less oil charge than reciprocating compressor
- No check valve (almost no sensitivity to liquid flooding)
- About 60% less mechanical parts than reciprocating → more compact
- 2 moving parts only (15 for a double piston)
- High volumetric efficiency & constant compression ratio
- Internal LP/HP heat exchanges reduction
- Discharge temp monitoring capability (liquid injection)
- Dedicated to medium & High cooling capacities

Alternative high efficiency solution for large evaporation temp range



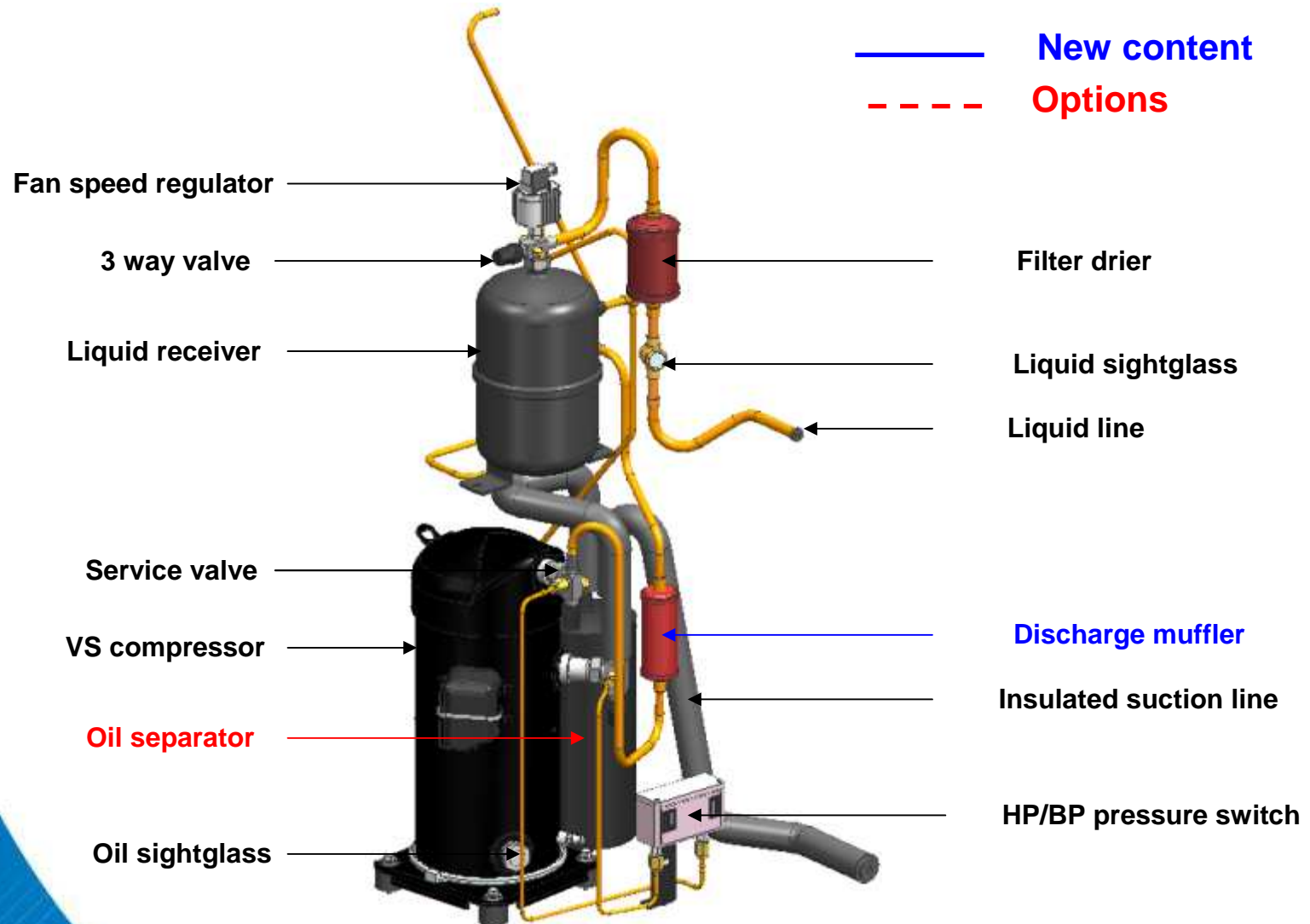
ENERGY SAVING : Scroll Technology (L SIZE)



Energy saving => largest application opportunities

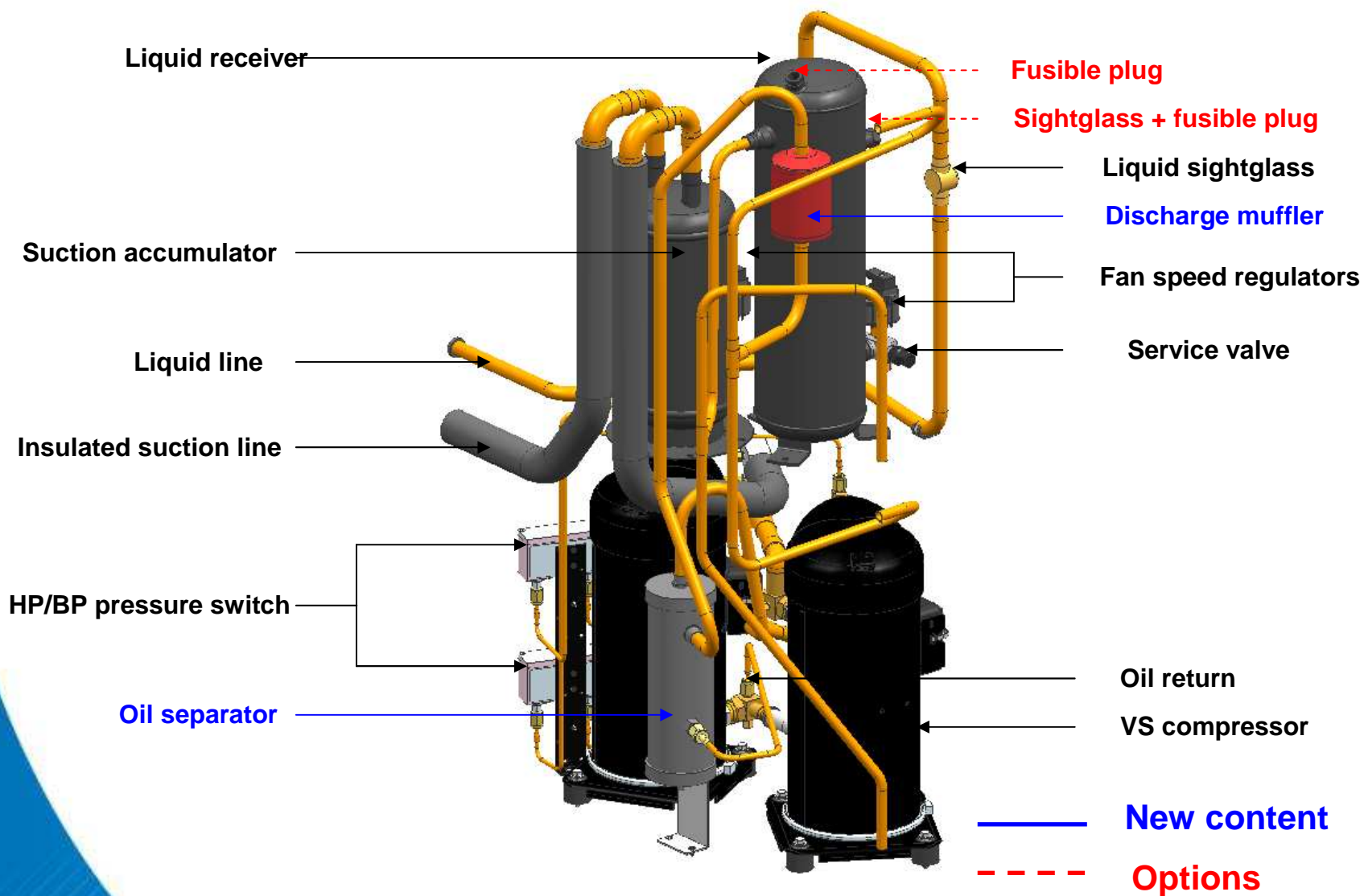


ENERGY SAVING : Scroll Technology (L size)





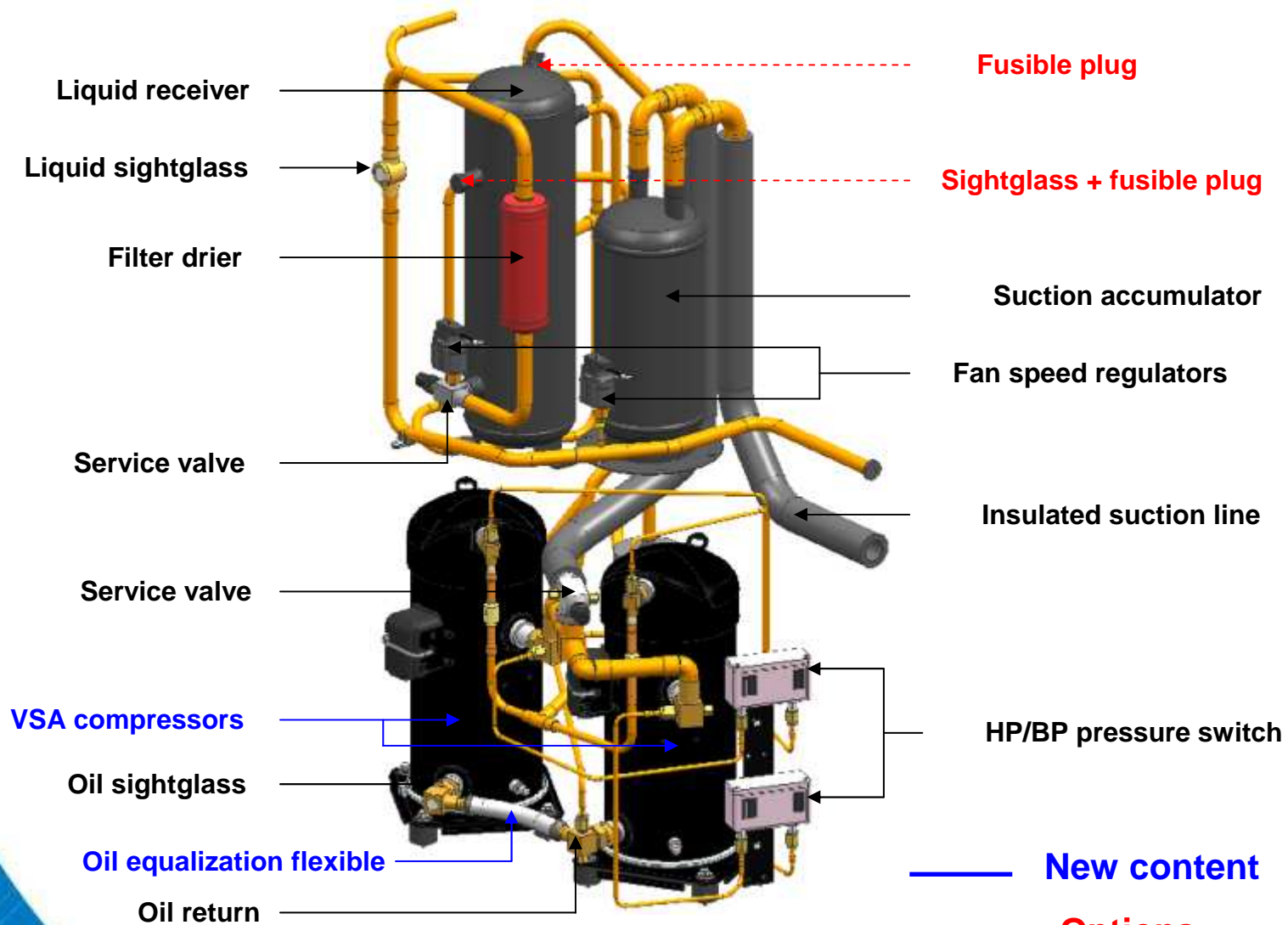
ENERGY SAVING : XL Duo Scroll



Energy saving => opportunity for even more large application



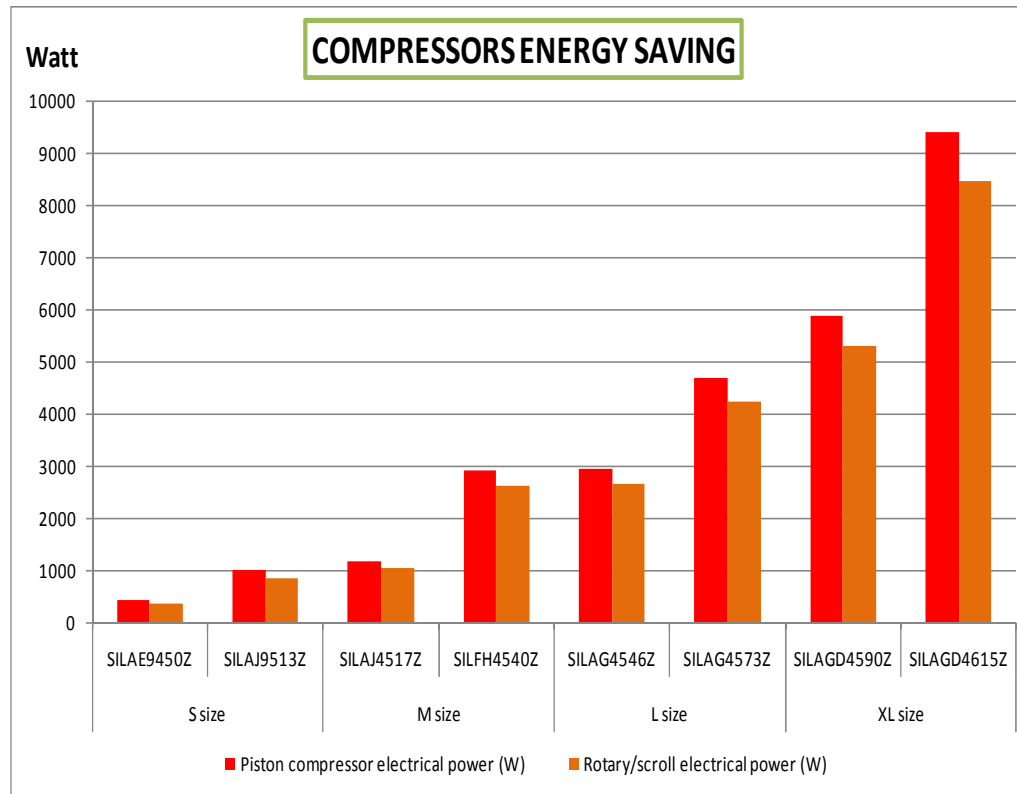
ENERGY SAVING : XL Duo Scroll





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ENERGY SAVING: Compressors



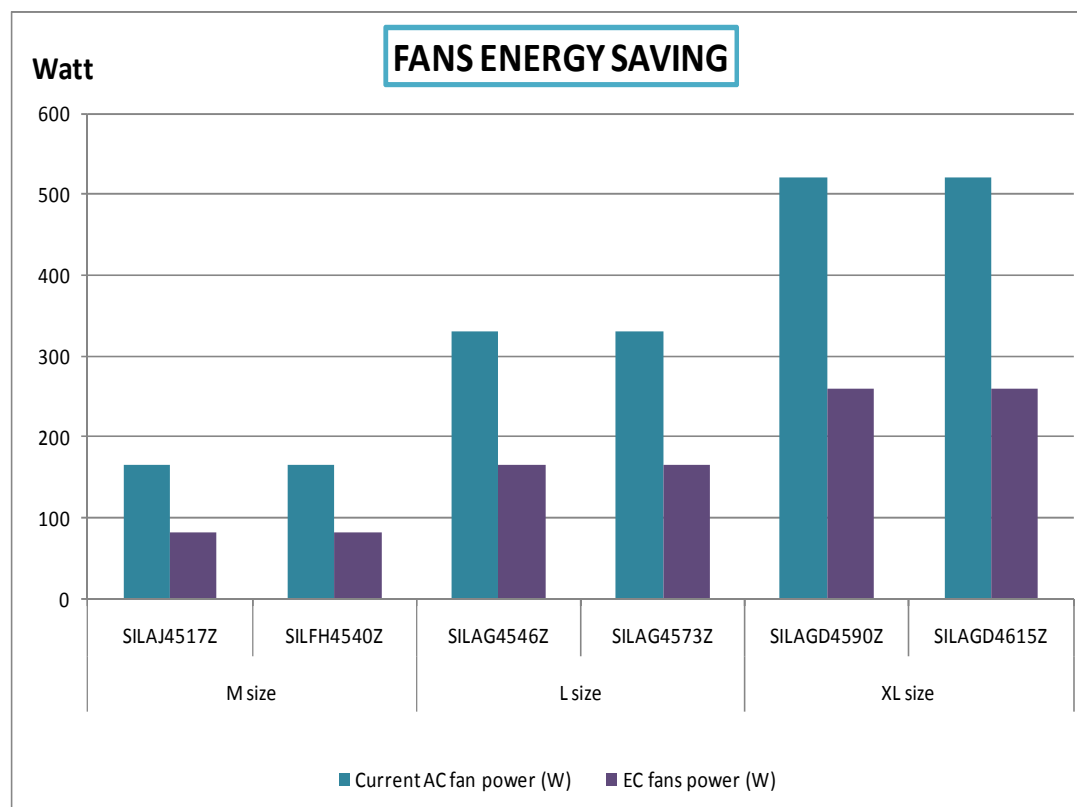
Power (W) / Saving (€)	S size		M size		L size		XL size	
	SILAE9450Z	SILAJ9513Z	SILAJ4517Z	SILFH4540Z	SILAG4546Z	SILAG4573Z	SILAGD4590Z	SILAGD4615Z
Piston compressor electrical power (W)	413	1000	1168	2926	2939	4701	5877	9401
Rotary/scroll electrical power (W)	351	850	1051	2633	2645	4231	5289	8461

- Evaporating temp -10°C / Condensing temp 43°C / Eva p SH 5°C / Return gas temp 5°C / Subcooling 2°C
- 16 hours per day running time (365 days per year)

up to -15 % energy saving due to compressor



ENERGY SAVING: Fans



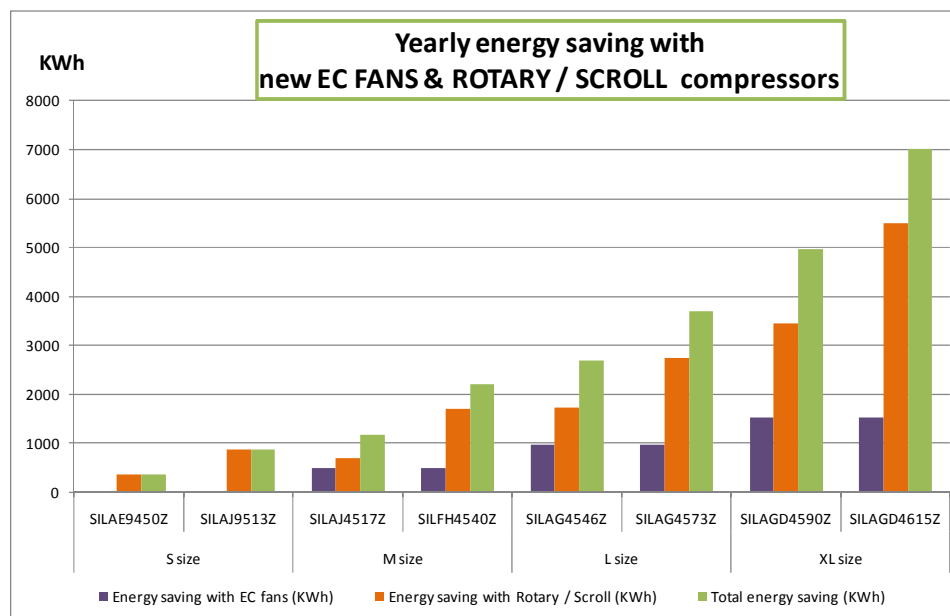
Power (W)	M size		L size		XL size	
	SILAJ4517Z	SILFH4540Z	SILAG4546Z	SILAG4573Z	SILAGD4590Z	SILAGD4615Z
Current AC fan power (W)	165	165	330	330	520	520
EC fans power (W)	82,5	82,5	165	165	260	260

- Evaporating temp -10°C / Condensing temp 43°C / Evap SH 5°C / Return gas temp 5°C / Subcooling 2°C
- 16 hours per day running time (365 days per year)

50 % energy saving gain with EC fan



ENERGY CONSUMPTION SAVING : HE RANGE



	KWh (€)	S size		M size		L size		XL size	
Total yearly saving DENMARK (€)	0,2462	89 €	216 €	287 €	540 €	660 €	913 €	1 219 €	1 725 €
Total yearly saving GERMANY (€)	0,2282	83 €	200 €	266 €	500 €	612 €	846 €	1 130 €	1 599 €
Total yearly saving ITALY (€)	0,1946	70 €	170 €	227 €	427 €	522 €	722 €	964 €	1 364 €
Total yearly saving AUSTRIA (€)	0,1937	70 €	170 €	226 €	425 €	519 €	718 €	959 €	1 357 €
Total yearly saving BELGIUM (€)	0,1896	69 €	166 €	221 €	416 €	508 €	703 €	939 €	1 329 €
Total yearly saving NETHERLANDS (€)	0,1735	63 €	152 €	202 €	380 €	465 €	644 €	859 €	1 216 €
Total yearly saving SPAIN (€)	0,172	62 €	151 €	200 €	377 €	461 €	638 €	852 €	1 205 €
Total yearly saving PORTUGAL (€)	0,1668	60 €	146 €	194 €	366 €	447 €	619 €	826 €	1 169 €
Total yearly saving SWEDEN (€)	0,145	52 €	127 €	169 €	318 €	389 €	538 €	718 €	1 016 €
Total yearly saving UNITED KINGDOM (€)	0,1347	49 €	118 €	157 €	295 €	361 €	500 €	667 €	944 €
Total yearly saving FINLAND (€)	0,1287	47 €	113 €	150 €	282 €	345 €	477 €	637 €	902 €
Total yearly saving FRANCE (€)	0,1215	44 €	106 €	142 €	266 €	326 €	451 €	602 €	851 €

Winning association (HE range +EC fan) => Electricity bill saving



Tecumseh

KEY FEATURES

- ✓ Low acoustic level
- ✓ Energy saving (Fan motor & Technologies)
- ✓ Plug and play
- ✓ Reliability and robustness





KEY FEATURES

PLUG & PLAY : Contents



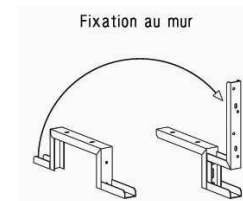
NEW SILENSYS CONTENT										
Unit frame	Taille S		Taille M		Taille L		Taille XL			
Compressor technology	Piston	Rotatif	Piston	Scroll	Piston	Scroll	Piston	Scroll		
Compressor family	AE	AJ	RGA	AJ	FH	VSA	AG	VSA	AG	VSA
STANDARD CONTENT										
Acoustics	Acoustic foam	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	High efficiency fans	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Fan speed regulation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Fan air diffuser	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Discharge line muffler	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Electrical / Reliability / Energy saving	Isolator	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	IP44	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	EC fan motor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Energy Compliant fans (ErP)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Fan motor internal protection	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	EC fan circuit breaker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Power circuit breaker	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Compressor internal protection	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Compressor crankedcase heater	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Factory test	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Oil separator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Oil equalization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Start delay	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Digital controller	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Refrigerating circuit	Filter drier	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Refrigerant sightglass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	HP/BP pressure switch	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Check valve	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Anti corrosion condenser	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	HTA condenser	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Nitrogen filled in	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Installation / Maintenance	Floor / wall mounting	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Weather proof housing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Open door lock	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Extended din rail	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Access front panel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Service valves	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Use	R134a / R404a refrigerants	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Large ambient T° range	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Multi evaporator operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OPTIONAL CONTENT										

SILENSYS® one of the best equipped CU on the market



KEY FEATURES PLUG & PLAY

- ▣ **Accessibility and intervention** : Best in class installation and easy maintenance
 - ▣ Rail DIN length increased to ease additional components plug
 - ▣ 2 Circuit breakers to reinforce electrical safety (power & EC fan)
 - ▣ Valve on liquid receiver for refrigerant capture during maintenance
 - ▣ Floor or wall setting installation
 - ▣ Easy removable front panel for accessibility (M,L,XL sizes)
 - ▣ 90° open door lock

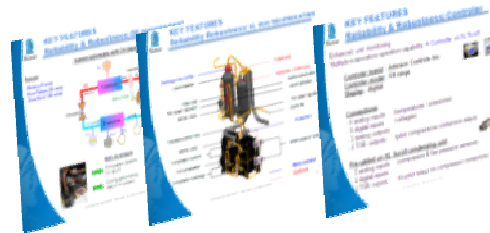




Tecumseh

KEY FEATURES

- ✓ Low acoustic level
- ✓ Energy saving (Compressors technologies & Fan motors)
- ✓ Plug and play
- ✓ Reliability and robustness



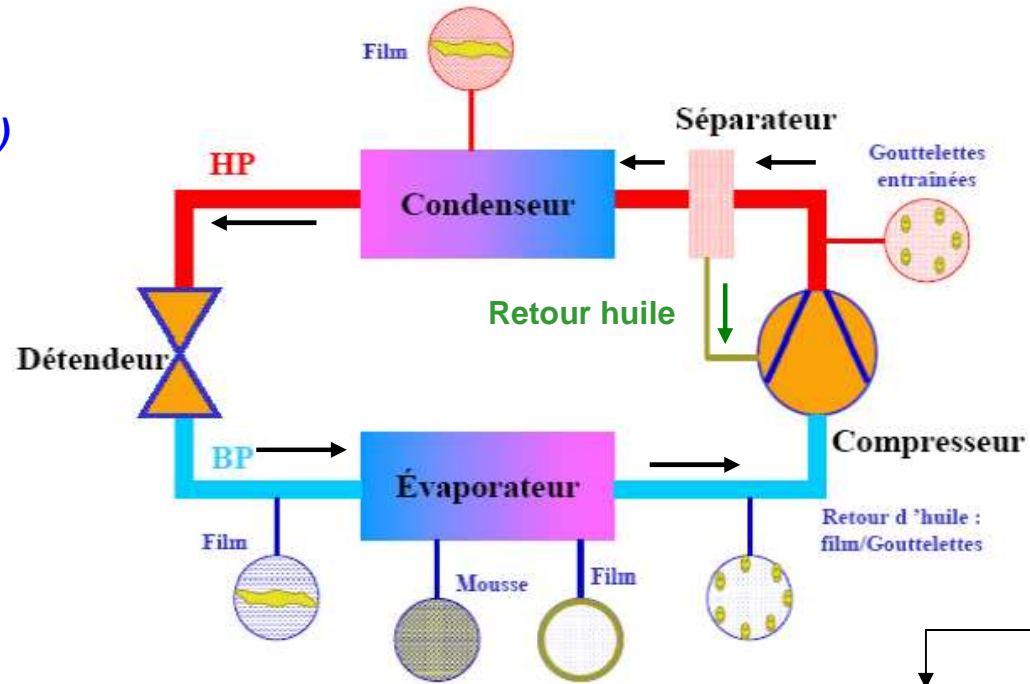


RELIABILITY & ROBUSTNESS: Oil management

System schematic with Oil Separator:

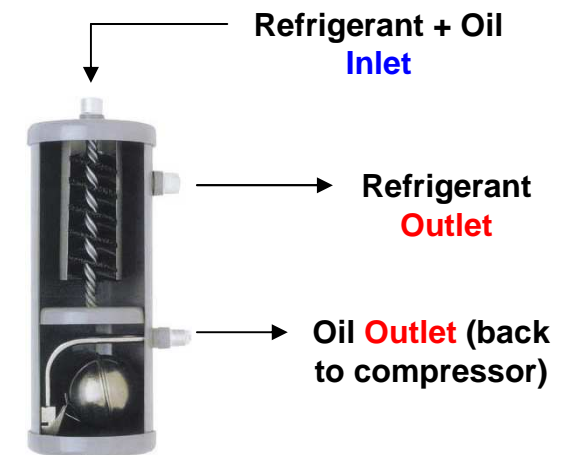
Ranges:

- Rotary (S size)
- Duo Piston (XL size)
- Duo Scroll (XL size)



Main advantages:

- ➔ Compressor reliability (oil return)
- ➔ Cooling performance (less oil in system)



Specific circuit design to guarantee long life product



RELIABILITY & ROBUSTNESS: Oil equalization piping

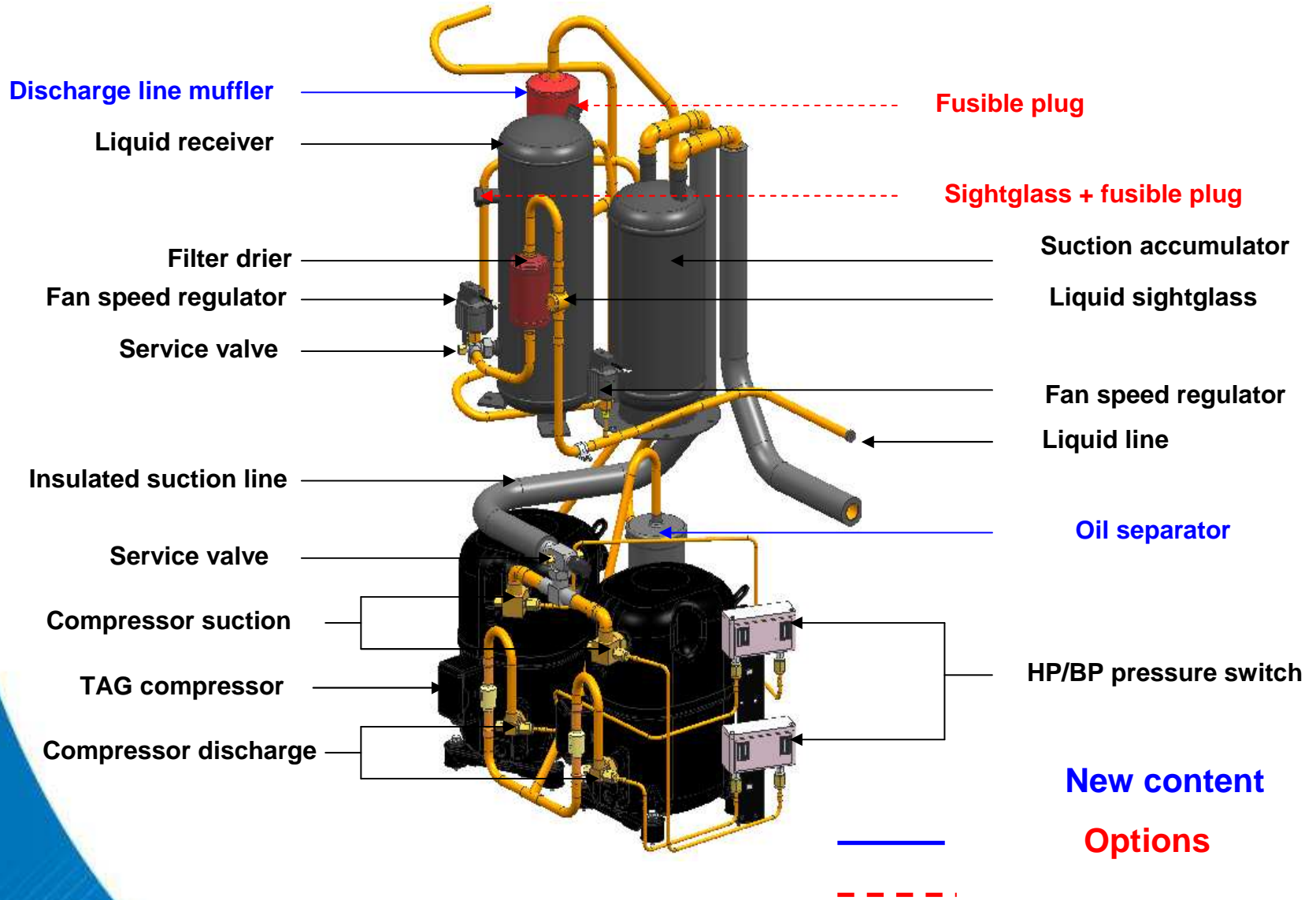
New oil equalization piping on Piston & Scroll XL units with flexible hoses

PROVISIONAL ONLY



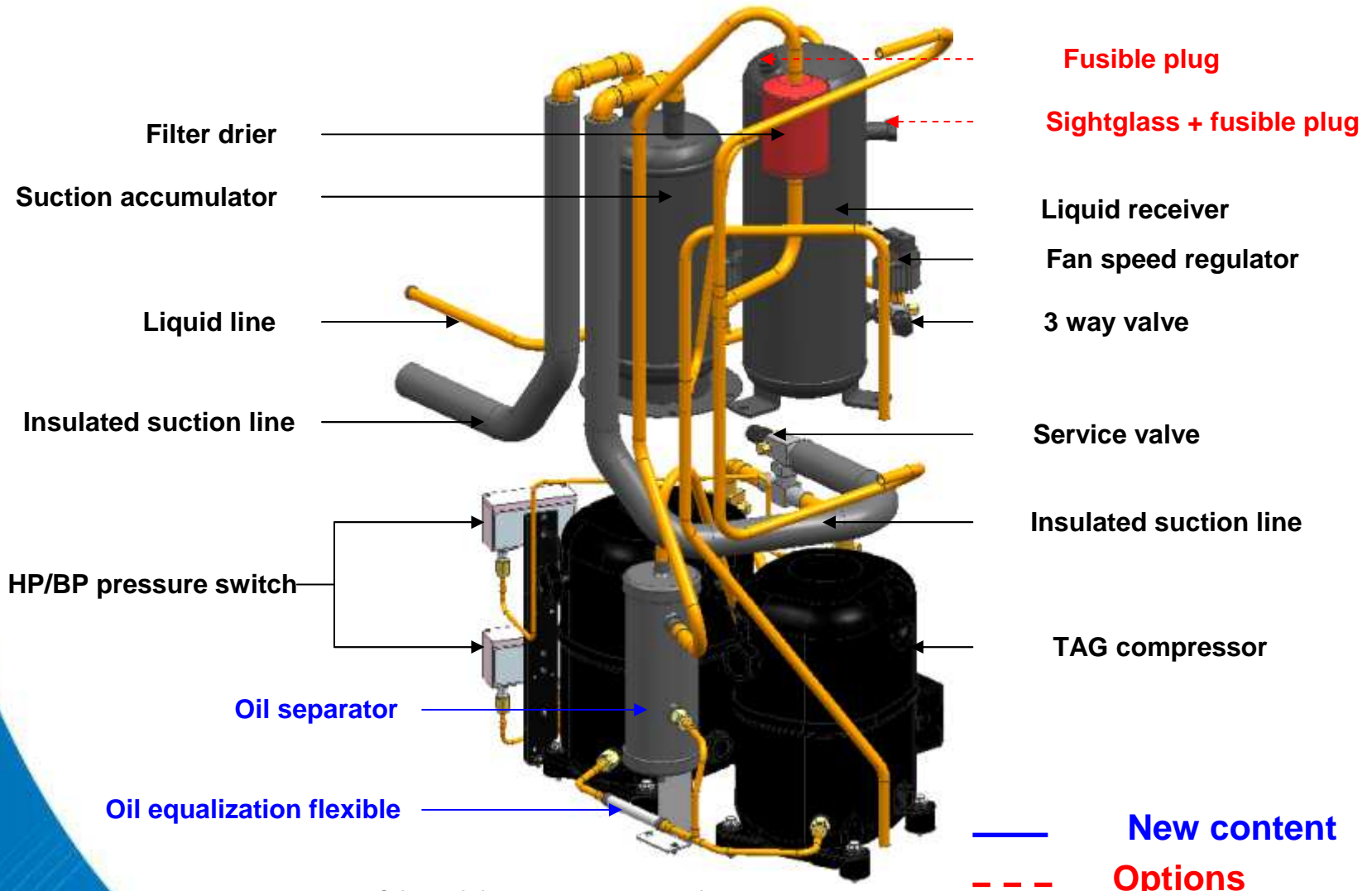


RELIABILITY & ROBUSTNESS: XL Duo Reciprocating





RELIABILITY & ROBUSTNESS: XL Duo Reciprocating





RELIABILITY & ROBUSTNESS: more details

- ① Metal frame around door



- ① Fan speed regulator direct mount on 3 way valve

- ① AC Fan motor (Size S) : internal protection
EC fan motor (M, L, XL) : internal protection + circuit breaker



- ① Electrical safety reinforcement → Circuit breakers
Protection in the following situations: Circuit shortage + Circuit overload

- ① HTA condensor design to operate in High Ambient Temperature



- ① Improved quality : Upgraded plant assembly process

All details optimized => best in class



RELIABILITY & ROBUSTNESS: Controller

Enhanced unit monitoring

Multiple evaporators operation capability → Controller on XL Scroll

Controller brand : Johnson Controls Inc.

Controller model : FX range

Display : digital



Connections:

- 4 analog inputs (temperatures / pressures)
- 5 digital inputs (voltages)
- 2 analog outputs
- 6 TOR outputs (pilot compressors contactors relays)



Pre cabled on XL Scroll condensing unit:

- 2 analog inputs (compressor & fan pressure sensors)
- 2 digital inputs
- 2 TOR outputs (to pilot relays on compressor contactors)

Opening up to new applications => multi evaporators



RELIABILITY & ROBUSTNESS: Controller

Controller capabilities:

- data retrieving
- alarms reading
- anti short cycle
- 2nd compressor start delay
- compressors run time equalization

Communication services:

connection to a modem via RS232C Serial Communication Module



“Multi evaporator control” means:





Evaporator solenoid valves are energized or not according to the cold room temperature

In parallel, the controller is piloting the ON/OFF operation of the compressor by measuring the suction pressure



TECHNICAL CHANGES SUMMARY

UNCHANGED CONTENT		COMMON CONTENT CHANGES	
	Sizes		Sizes
Plastic front grid		Plastic lateral door	
Plastic lateral panel		Door 90° open lock	
Mounting brackets		Condenser top foam	
Liquid receiver		Metal frame around door	
Refrigerant sightglass		Fans blades	
Isolator		Integrated air diffuser	
		Power circuit breaker	
		Electrical wiring & plate	
		Extended Din rail	
		Refrigerating piping	
		Filter drier (brazed fittings)	
		Discharge line muffler	

SPECIFIC CONTENT CHANGES PER SIZE			
S size	M size	L size	XL size
New AC fan	EC fan	EC fans	EC fans
Plastic top cover length	EC fan speed regulator and mount	EC fan speed regulator and mount	EC fans speed regulator and mount
Rear plastic plate length	EC fan circuit breaker	EC fans circuit breaker	EC fans circuit breaker
Bottom plate length	Front panel easy removal	Front panel easy removal	Oil separator
Compressor related:	Plastic top cover length	Plastic top cover length	Oil equalization flexible
- Rotary compressor	Rear plastic plate length	Rear plastic plate length	Front panel easy removal
- Check valve (Rotary)	Bottom plate length	Bottom plate length	Compressor related:
- Oil separator (Rotary)	Compressor related:	Compressor related:	- Duo Scroll compressors
	- Scroll compressor	- Scroll compressor	- Digital controller
			



Tecumseh

4. TOOLS FOR SALES

Marketing plan & communication





ACTION PLAN

COMMERCIAL REFRIGERATION

NEW SILENSYS®

The first condensing unit which combines silence and performance, available in 3 technologies.

For more than 10 years, Tecumseh Europe has developed its know-how and high performance solutions to produce quality quiet condensing units.

With experience and innovation, Tecumseh Europe launches 3 new SILENSYS® condensing unit ranges. Products at the forefront of technology, committed to a close partnership with distributors and installers.

The brand new SILENSYS® generation is even more powerful and competitive in acoustic, energy efficiency, installation, maintenance and reliability.

ACOUSTICS
Low noise levels
The new SILENSYS® units are designed to be quiet and efficient.

ENERGY EFFICIENCY
Energy saving
The new SILENSYS® units are designed to be energy efficient and to reduce operating costs.

INSTALLATION AND MAINTENANCE
Easy to install
The new SILENSYS® units are designed to be easy to install and maintain.

RELIABILITY
Long life
The new SILENSYS® units are designed to be reliable and to last for many years.



Sparsam, effizient, leise
NEUER SILENSYS®
Wenn Leisethe mit hohem Qualitätsanspruch einhergeht.

www.tecumseh.com

GAMME SILENSYS®
Les nouveautés

NOUVEAUX 3 gammes de SA

NOUVEAUX 3 gammes de SA

NOUVEAUX 3 gammes de SA

NOUVEAUX 3 gammes de SA

Wholesalers communication

- Launch product announcement
- E-mailing (PDF majors arguments, preliminary data, cross ref - 20/80 (mi july & mi september)

Communication

- Press insertion
- Press relation « Cold chain, Climatechno) to be confirmed
- Press release
- Web

Supports

- Commercial brochure
- Kakémono, Posters
- Stickers for wholesalers agency (Silensys & Tecumseh)
- Goodies
- Samples

Installers communication

- Mailing
- Technical manual

Internal communication

- FDV & ADV technical training
- Silensys presentation
- Posters

Multi channel communication and launch package to face customers



UNITS & PACKAGING DIMENSIONS

Models	A	B	C
S size	896	574	690
M size	1108	574	690
L size	1108	574	1319
XL size	1613	574	1297



TIME TO HAVE A LOOK

Dou you still want to see that !

We do have a solution.



Esthetic evolution offer a real opportunity



Tecumseh

THANK YOU FOR YOUR ATTENTION

Silence to meet your highest requirement

