

## **PRESSURE EQUIPMENT DIRECTIVE**

### **APPLIED TO COPELAND® BRAND PRODUCTS**

The Pressure Equipment Directive (PED) affects compressors, condensing units and other equipment for the refrigeration and air-conditioning industry that is produced in or imported into the European Community. An ASERCOM statement provides information about those aspects, which are common to all ASERCOM members. This bulletin gives those information that are specific to Emerson Climate Technologies' situation.

#### **1 Scope and categorization**

Only hermetic compressors in Category II, III and IV fall into the scope of the PED. The table next page shows the list of hermetic compressors and their category. Internal volumes and pressures, which are relevant for the categorization, can also be seen in the table.

Emerson Climate Technologies only produces Group II compressors (non-dangerous fluids) and therefore the applicable limit between Category I and Category II is 200 (Bar x Liters) for non-dangerous fluids.

It can be demonstrated that for Copeland Scroll™ compressors the standstill case is the relevant case to perform the categorization. Therefore, only the low side pressure at standstill and the combined low side and high side free internal volumes are considered in table overpage.

#### **2 Emerson Climate Technologies actions**

Emerson Climate Technologies is performing the necessary investigations and process adjustments to demonstrate compliance with PED regulations for the products listed above. A notified body is involved to perform an audit and verify that the required processes are in place. Compliance is demonstrated to our customers by a listing of the registration number of the notified body on the nameplate and by a declaration of conformity. This declaration is available from Emerson Climate Technologies Sales Offices upon request.

#### **3 Assemblies**

Assemblies of pressure vessels like tandem compressors and condensing units are addressed in the PED. Those assemblies which are not a functional entity, ie, they have to be part of a larger system in order to function, do not fall into the scope of the PED. Their components may fall within the scope as individual items. Copeland tandems and condensing units are not functional entities and are therefore excluded from the PED.

For those components of the assembly which do fall under the PED regulations, Emerson Climate Technologies makes sure that these components (manufactured by Emerson Climate Technologies or as purchased components) are in accordance with the PED. This will be demonstrated by a declaration of conformity, available upon request. There is no registration number of a notified body on the nameplates of tandems and condensing units.

#### **4 Implementation**

The implementation date of PED compliance for the listed products is January 1st, 2002. From this day on compressors will carry the registration number on the nameplate and declarations of conformity are available, also for condensing units.

This timing allows for a transition period of 5 months to use up compressors in stock that were not produced under a PED compliance scheme. However, these compressors have the same safety as the compressors produced earlier, the only difference being the formal approval by a notified body.

## 5 Compressor categorization for PED

Family	Product	Category definition*	PED category**
<b>COPELAND® BRAND PRODUCTS WITH CE-MARK UNDER PED</b>			
Scrolls A/C	ZR90K3, ZR11M3 ... ZR19M3 ZR84K3 ... ZR190K3 ZR250KC ... ZR380KC ZP90KC...ZP235KC	P x V, Group 2 (refrigerant)	Cat. II
Scrolls Heat Pump	ZH24KVE ... ZH48KVE ZH56K4, ZH75K4, ZH92K4, ZH11M4	P x V, Group 2 (refrigerant)	Cat. II
Scrolls Ref (MT)	ZS56K4, ZS75K4, ZS92K4, ZS11M4 ZB56K4, ZB75K4, ZB92K4, ZB220KCE	P x V, Group 2 (refrigerant)	Cat. II
Scrolls Ref (LT)	ZF24K4E ... ZF48K4 ZF24KVE ... ZF48KVE	P x V, Group 2 (refrigerant)	Cat. II
<b>COPELAND® BRAND PRODUCTS WHICH ARE EXCLUDED</b>			
Open & Semi-hermetic Compressors		Par. 3.10, Art. 1	excluded
Dual Scrolls	ZR620KCE, ZR760KCE		
Condensing units and Tandems		not a functional entity	excluded
<b>COPELAND® BRAND PRODUCTS WHICH ARE EXCLUDED FROM PED (COVERED BY ANOTHER DIRECTIVE)</b>			
Scrolls A/C	ZR18K ... ZR81K ZP16K ... ZP83KC	P x V, Group 2 (refrigerant)	Cat. I / excluded
Scrolls Heat Pump	ZH09KVE ... ZH18KVE ZH15K4E ... ZH45K4E	P x V, Group 2 (refrigerant)	Cat. I / excluded
Scrolls Ref (MT)	ZB15KCE ... ZB45KCE ZS15K4E ... ZS45K4E	P x V, Group 2 (refrigerant)	Cat. I / excluded
Scrolls Ref (LT)	ZF09K4E ... 18K4E ZF13KV4E, ZF18KV4E	P x V, Group 2 (refrigerant)	Cat. I / excluded

\* Emerson Climate Technologies only produces Group 2 compressors for non-dangerous fluids and therefore the applicable limit between Category I and Category II is 200 (Bar x Liters).

\*\* Only hermetic compressors in Category II, III and IV fall into the scope of the PED. The above table shows the list of hermetic compressors and their category. Internal volumes and pressures, which are relevant for the categorization, can be also seen in the table.

## 6 Copeland® Brand products under PED

Compressor	Refrigerant					Temp. (LS)	Pressure (LS)	IFV	PXV	Category
	R134a	R22	R407C	R507	R410A	°C	Bar(g)	Liter	BarXL	
<b>ZR</b>										
ZR18K4	X	X	X			50	18.8	2.0	37	1
ZR22K3	X	X	X			50	18.8	3.4	65	1
ZR28K3	X	X	X			50	18.8	3.4	65	1
ZR34K3	X	X	X			50	18.8	3.4	65	1
ZR40K3	X	X	X			50	18.8	3.4	65	1
ZR48K3	X	X	X			50	18.8	6.5	123	1
ZR49KC		X	X			50	18.8	6.5	123	1
ZR61KC	X	X	X			50	18.8	6.5	123	1
ZR72KC	X	X	X			50	18.8	6.5	123	1
ZR81KC	X	X	X			50	18.8	6.5	123	1
ZR84K3	X	X	X			50	18.8	10.5	197	1
ZR94K3	X	X	X			50	18.8	10.5	197	1
ZR108K3	X	X	X			50	18.8	13.3	250	2
ZR125K3	X	X	X			50	18.8	13.3	250	2
ZR144K3	X	X	X			50	18.8	13.3	250	2
ZR160K3	X	X	X			50	18.8	14.0	264	2
ZR190K3	X	X	X			50	18.8	14.0	264	2
ZR250KC	X	X	X			50	18.8	26.9	507	2
ZR310KC	X	X	X			50	18.8	34.8	655	2
ZR380KC	X	X	X			50	18.8	31.6	594	2
<b>ZR Previous generation</b>										
ZR90K3	X	X	X			50	18.8	19.8	374	2
ZR11M3	X	X	X			50	18.8	19.8	374	2
ZR12M3	X	X	X			50	18.8	19.8	374	2
ZR16M3	X	X	X			50	18.8	20.2	380	2
ZR19M3	X	X	X			50	18.8	21.2	399	2
<b>ZP</b>										
ZP23K3E					X	50	29.5	3.4	102	1
ZP26K3E					X	50	29.5	3.4	102	1
ZP32K3E					X	50	29.5	3.4	102	1
ZP41K3E					X	50	29.5	3.4	102	1
ZP54K3E					X	50	29.5	5.8	171	1
ZP61KCE					X	50	29.5	5.8	171	1
ZP72KCE					X	50	29.5	5.8	171	1
ZP67KCE					X	50	29.5	5.8	171	1
ZP83KCE					X	50	29.5	5.8	171	1
ZP90KCE					X	50	29.5	10.5	309	2
ZP103KCE					X	50	29.5	13.3	392	2
ZP120KCE					X	50	29.5	13.3	392	2
ZP137KCE					X	50	29.5	13.3	392	2
ZP154KCE					X	50	29.5	14.0	414	2
ZP180KCE					X	50	29.5	21.2	626	2
ZP182KCE					X	50	29.5	14.0	414	2
ZP235KCE					X	50	29.5	26.9	795	2
ZP285KCE					X	50	29.5	33.5	990	2
ZP295KCE					X	50	29.5	33.5	990	2
ZP385KCE					X	50	29.5	31.6	933	2

Compressor	Refrigerant					Temp. (LS)	Pressure (LS)	IFV	PXV	Category
	R134a	R22	R407C	R507	R410A	°C	Bar(g)	Liter	BarXL	
ZB										
ZB15KC				X		50	22.6	2.5	56	1
ZB19KC				X		50	22.6	2.5	56	1
ZB21KC				X		50	22.6	2.5	56	1
ZB26KC				X		50	22.6	2.6	59	1
ZB30KC				X		50	22.6	4.3	96	1
ZB38KC				X		50	22.6	4.3	96	1
ZB45KC				X		50	22.6	5.9	134	1
ZB56KC				X		50	22.6	19.8	449	2
ZB75KC				X		50	22.6	19.8	449	2
ZB92KC				X		50	22.6	20.2	457	2
ZB11MC				X		50	22.6	21.2	479	2
ZB220KC				X		50	22.6	26.9	609	2
ZF										
ZF06K4				X		50	22.6	4.1	93	1
ZF08K4				X		50	22.6	4.3	98	1
ZF09K4				X		50	22.6	4.1	93	1
ZF11K4				X		50	22.6	4.1	93	1
ZF13K4				X		50	22.6	6.1	137	1
ZF15K4				X		50	22.6	5.9	134	1
ZF18K4				X		50	22.6	5.7	128	1
ZF24K4				X		50	22.6	19.8	449	2
ZF33K4				X		50	22.6	19.8	449	2
ZF40K4				X		50	22.6	20.2	457	2
ZF48K4				X		50	22.6	21.2	479	2
ZF EVI										
ZF13KVE				X		50	22.6	6.1	137	1
ZF18KVE				X		50	22.6	5.7	128	1
ZF24KVE				X		50	22.6	19.8	449	2
ZF33KVE				X		50	22.6	19.8	449	2
ZF40KVE				X		50	22.6	20.2	457	2
ZF48KVE				X		50	22.6	21.2	479	2
ZS										
ZS15K4				X		50	22.6	4.1	93	1
ZS19K4				X		50	22.6	4.3	98	1
ZS21K4				X		50	22.6	4.1	93	1
ZS26K4				X		50	22.6	4.1	93	1
ZS30K4				X		50	22.6	6.1	137	1
ZS38K4				X		50	22.6	5.9	134	1
ZS45K4				X		50	22.6	5.7	128	1
ZS56K4				X		50	22.6	19.8	449	2
ZS75K4				X		50	22.6	19.8	449	2
ZS92K4				X		50	22.6	20.2	457	2
ZS11M4				X		50	22.6	21.2	479	2

Compressor	Refrigerant					Temp. (LS)	Pressure (LS)	IFV	PXV	Category
	R134a	R22	R407C	R507	R410A	°C	Bar(g)	Liter	BarXL	
Heat Pump ZH 1Ph										
ZH15K4E			X			50	18.8	2.8	53	1
ZH19K4E			X			50	18.8	2.6	50	1
ZH21K4E			X			50	18.8	3.0	57	1
ZH26K4E			X			50	18.8	2.9	54	1
ZH30K4E			X			50	18.8	3.6	68	1
Heat Pump ZH 3Ph										
ZH15K4E			X			50	18.8	2.9	54	1
ZH19K4E			X			50	18.8	3.1	58	1
ZH21K4E			X			50	18.8	3.1	58	1
ZH26K4E			X			50	18.8	3.1	59	1
ZH30K4E			X			50	18.8	4.3	82	1
ZH38K4E			X			50	18.8	4.2	79	1
ZH45K4E			X			50	18.8	4.1	77	1
ZH56K4E			X			50	18.8	17.0	320	2
ZH75K4E			X			50	18.8	17.0	320	2
ZH92K4E			X			50	18.8	17.4	327	2
ZH11M4E			X			50	18.8	18.4	346	2
Heat Pump ZH EVI										
ZH13KVE			X			50	18.8	4.3	98	1
ZH18KVE			X			50	18.8	4.1	92	1
ZH24KVE			X			50	18.8	17.0	320	2
ZH33KVE			X			50	18.8	17.0	320	2
ZH40KVE			X			50	18.8	17.4	327	2
ZH48KVE			X			50	18.8	18.4	346	2
Horizontals										
ZSH15K4			X			50	18.8	13.8	261	2
ZSH21K4			X			50	18.8	13.8	261	2
ZSH30K4			X			50	18.8	12.2	229	2
ZSH38K4			X			50	18.8	12.2	229	2
ZSH45K4			X			50	18.8	12.2	229	2
ZFH06K4			X			50	18.8	13.8	261	2
ZFH09K4			X			50	18.8	13.8	261	2
ZFH13K4			X			50	18.8	12.2	229	2
ZFH15K4			X			50	18.8	12.2	229	2
ZFH18K4			X			50	18.8	12.2	229	2

## 7 ASERCOM Statement\*

On May 29th, 1997 the European Parliament and the Council of the European Union adopted Directive 97/23 EC on the approximation of laws of the Member States concerning Pressure Equipment (PED).

ASERCOM has involved a notified body in the interpretation and implementation of this directive with respect to compressors produced by ASERCOM members and obtained the following assessment:

- According to Par. 3.6. Article 1 of the PED, motor-compressors classified as no higher than category I of the PED are excluded from the scope of the Pressure Equipment Directive.
- According to Par. 3.10. Article 1 of the PED, semi-hermetic and open-type compressors are excluded from the scope of the Pressure Equipment Directive. Specific documents have to be prepared for these products to justify this exemption.
- For those compressors falling into the scope of the PED, ASERCOM has developed guidelines for their members on how to establish compliance of these products with the directive. ASERCOM is confident that the application of the guidelines will enable ASERCOM members to implement the necessary modifications to the products and the production processes so that compressors placed on the market in due time before May 29th, 2002 will meet all the requirements of the directive.

The following explanations shall serve as guidance to customers of ASERCOM members to understand the implications of the PED upon our business:

- The PED differentiates between two GROUPS of fluids:
  - GROUP 1 is for dangerous fluids (toxic, flammable, explosive)
  - GROUP 2 is for all other fluids (HFC's and HCFC's fall into this group)

The fluid group will be stated on the nameplate of the compressors.

- The PED differentiates between categories of pressure equipment. Four categories are defined, differentiated by ranges of Pressure x Volume. These ranges are defined separately for each fluid group.
- The category is not indicated on the nameplate. However, this information may be obtained from the manufacturer. The category of the equipment is used to establish if equipment is subjected to the scope of the PED or not, and in what way compliance with the PED must be demonstrated.
- For those compressors falling into the scope of the PED, an audit by a notified body must be performed at the compressor manufacturers' plants to establish compliance with the regulations of the PED.
- Compressors falling into the scope of the PED will demonstrate the compliance with the directive and a successful audit by additional information on the nameplate giving the registration member of the notified body which performed the audit.
- Additionally, a declaration of conformity issued by the manufacturer is available. This is generally not supplied with each compressor but is available upon request.
- Use of compressors on stock:
  - Compressors from stock, produced and sold prior to May 29th, 2002 without a conformity declaration may be used in pressure equipment systems if this equipment has been put on the market prior to May 29th, 2002.
  - Compressors used in pressure equipment systems which are put on the market after May 29th, 2002 must conform to the PED and therefore must have the necessary marking on the nameplate.
  - Compressor manufacturers are working for an early introduction of the PED compliance scheme and this should allow a sufficient time to use up existing stock of compressors without a PED compliance indication.
- Further details and explanations may be found on the following website: <http://ped-eurodyn.com>.

\* This is an update from a previous ASERCOM statement on this topic.