

# Rittal – The System.

Faster – better – everywhere.

## ► Performans grafikleri – İklimlendirme



ENDÜSTRİYEL PANOLAR

GÜÇ DAĞITIMI

İKLİMLENDİRME

BT ALTYAPISI

YAZILIM & SERVİS

FRIEDHELM LOH GROUP



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# Performans grafikleri

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BT ALTYAPISI

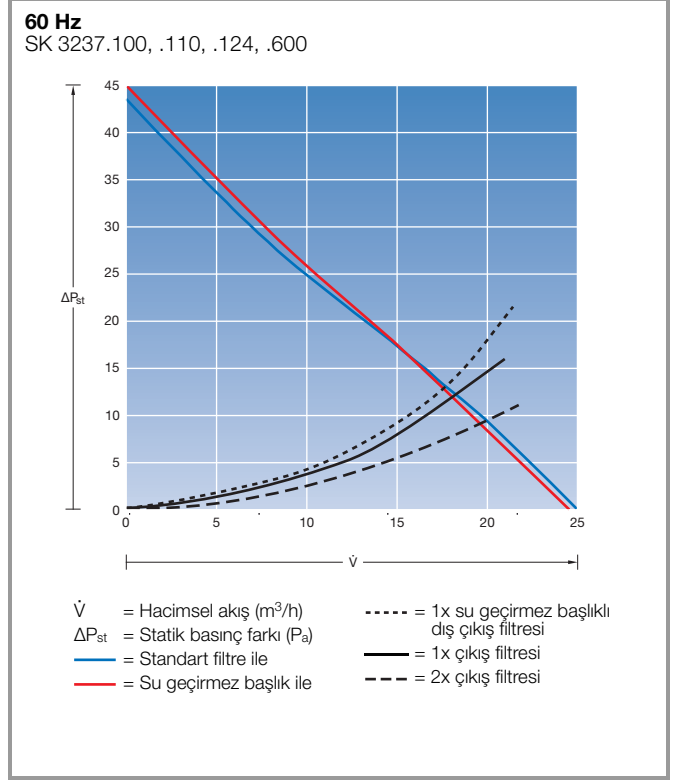
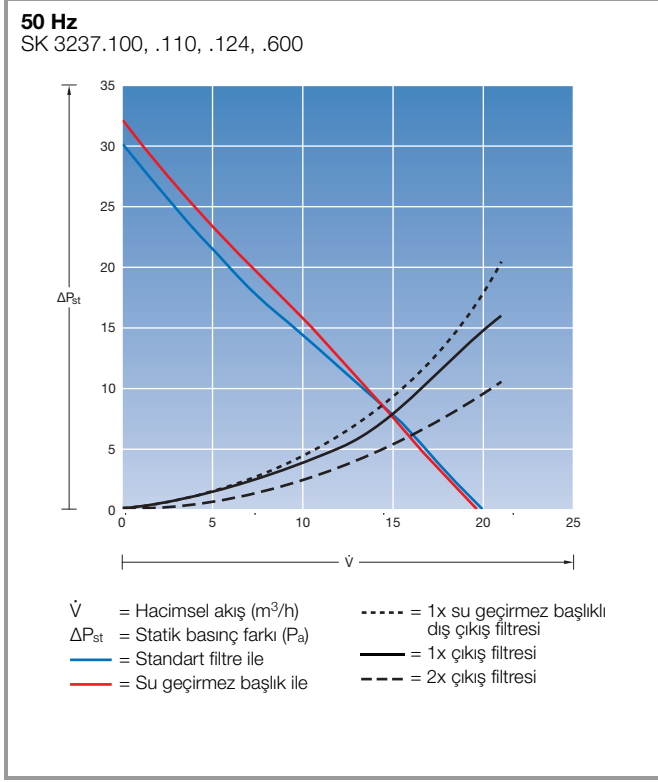
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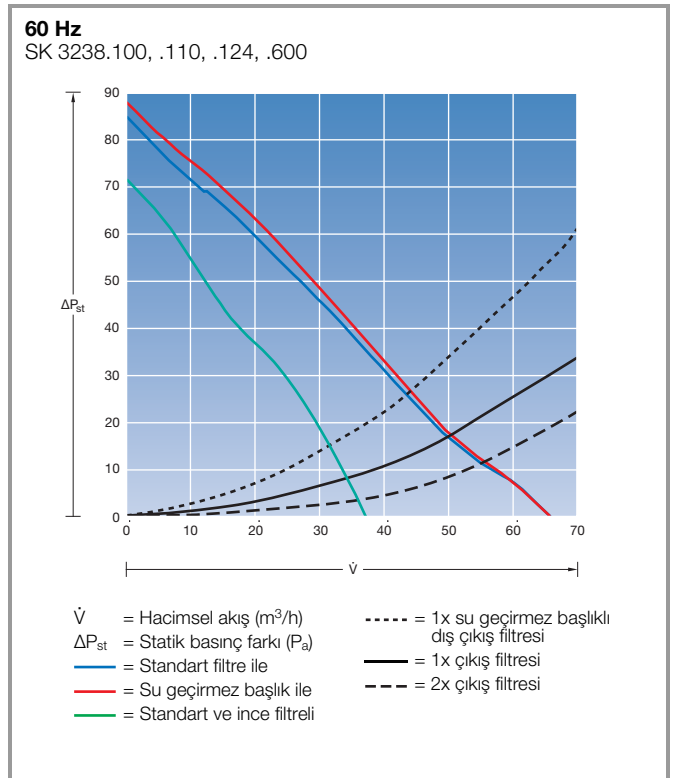
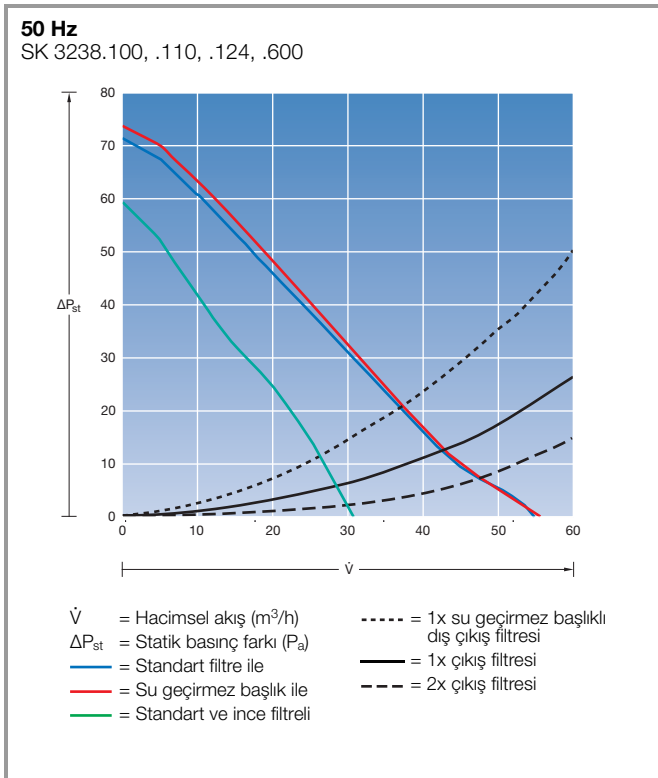
# Ortam havası ile soğutma sistemleri

## TopTherm fan-filtre üniteleri ve EMC TopTherm fan-filtre üniteleri

Hava debisi 20/25 m<sup>3</sup>/h



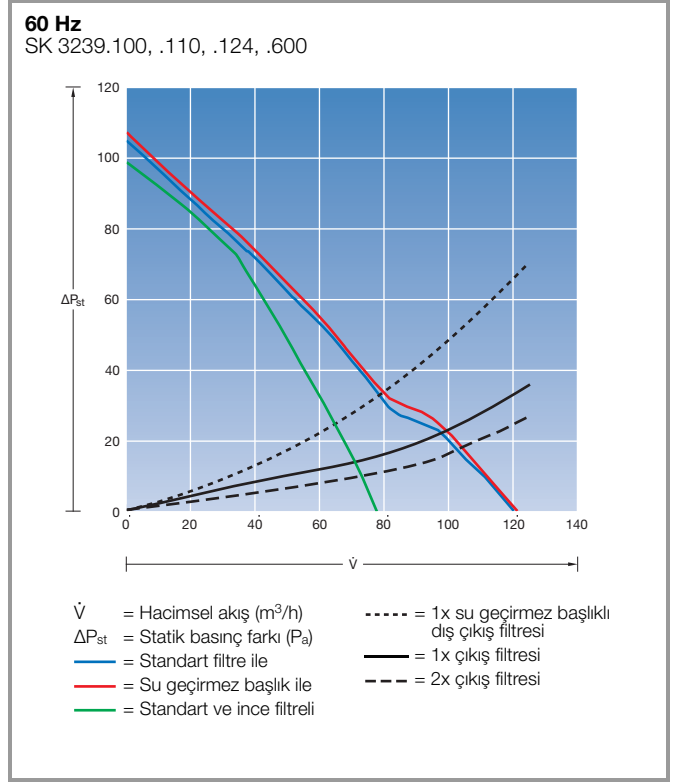
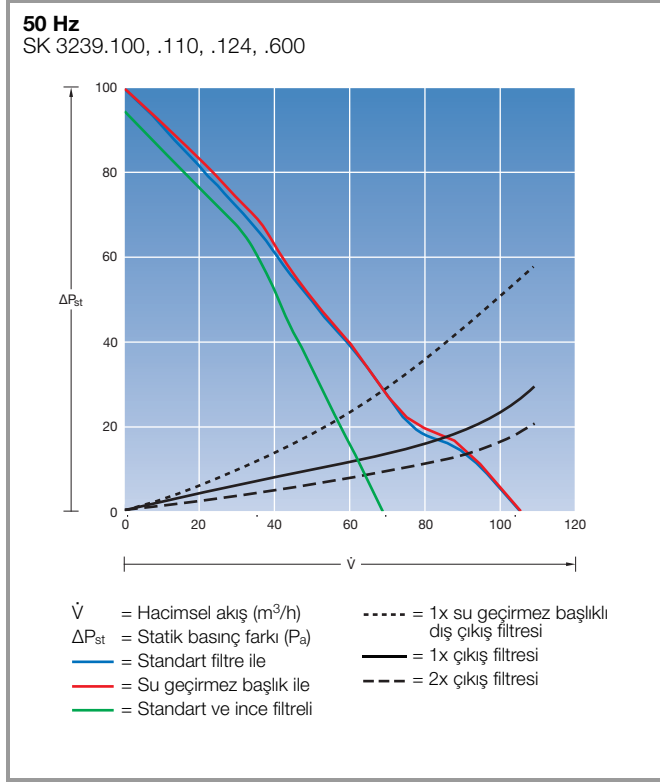
Hava debisi 55/66 m<sup>3</sup>/h



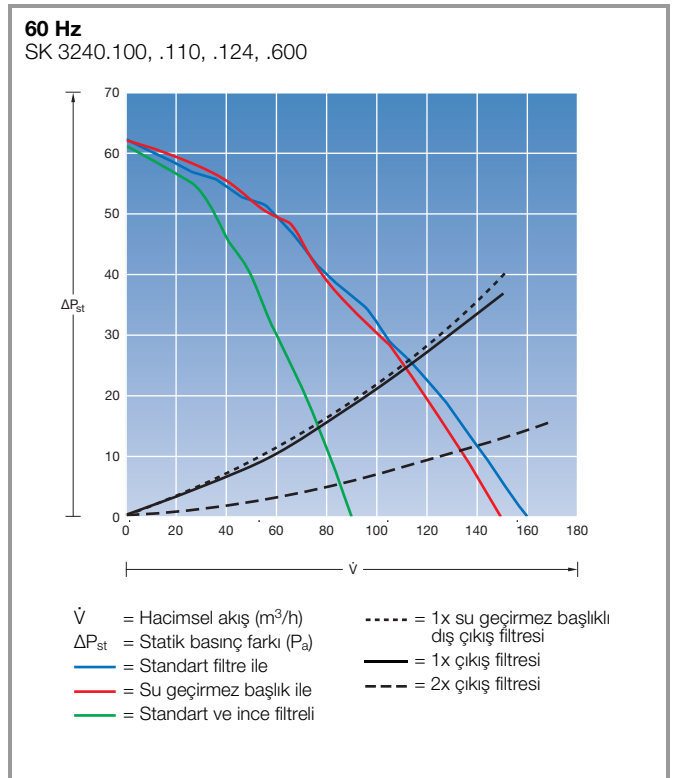
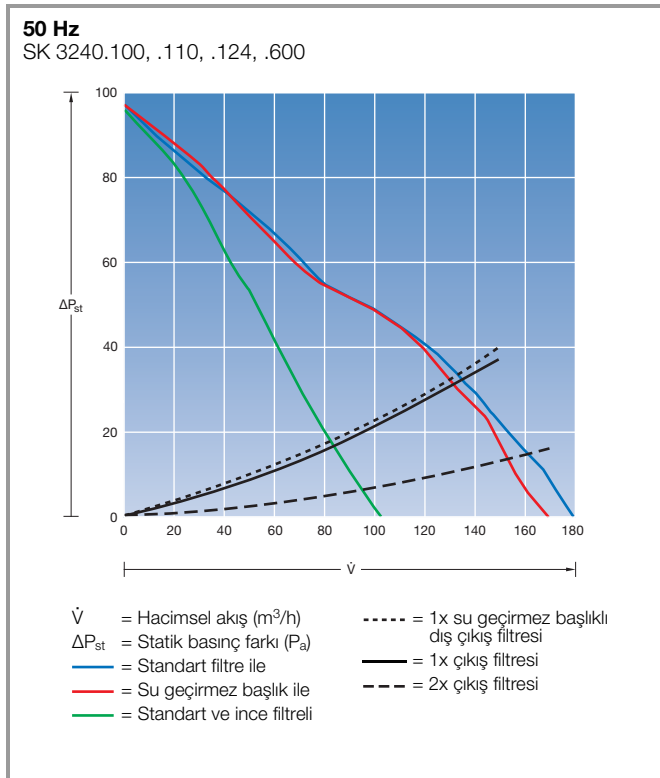
# Ortam havası ile soğutma sistemleri

## TopTherm fan-filtre üniteleri ve EMC TopTherm fan-filtre üniteleri

Hava debisi 105/120 m<sup>3</sup>/h



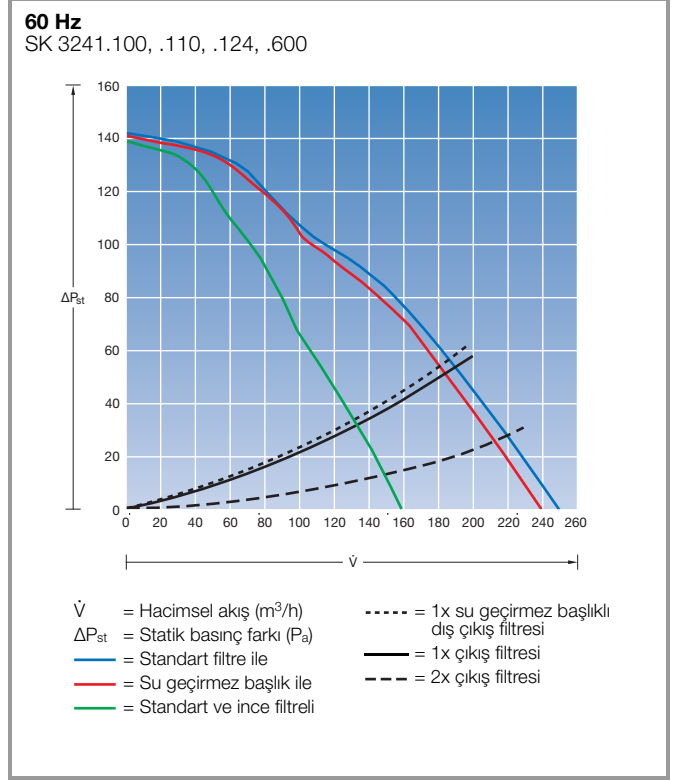
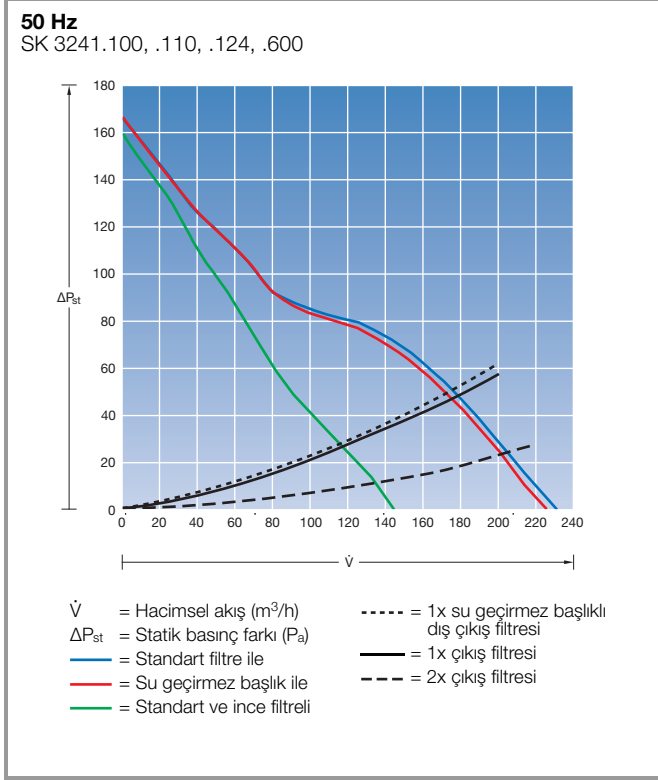
Hava debisi 180/160 m<sup>3</sup>/h



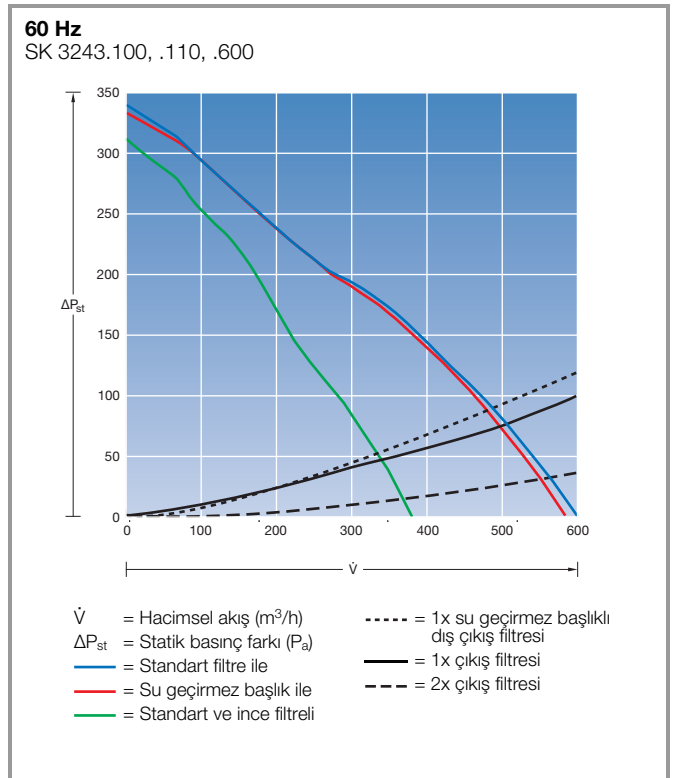
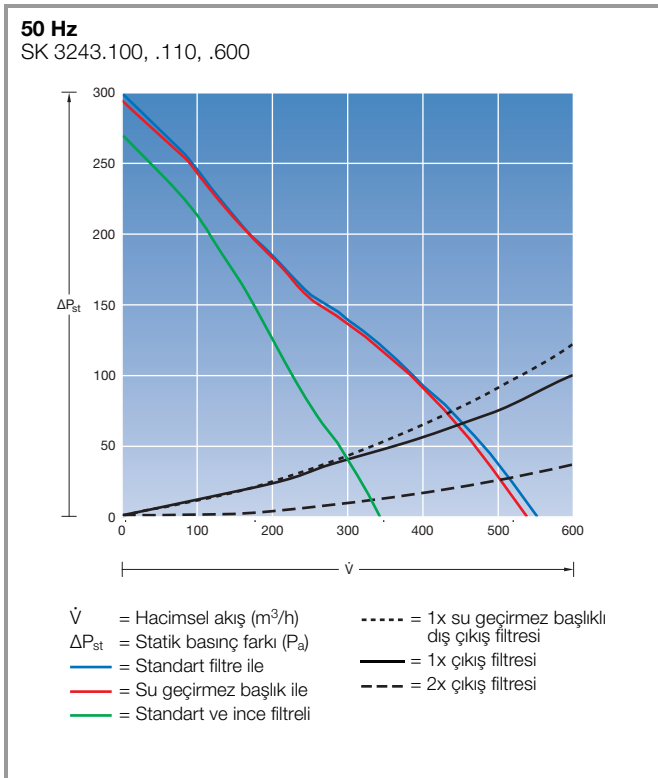
# Ortam havası ile soğutma sistemleri

## TopTherm fan-filtre üniteleri ve EMC TopTherm fan-filtre üniteleri

Hava debisi 230/250 m<sup>3</sup>/h



Hava debisi 550/600 m<sup>3</sup>/h

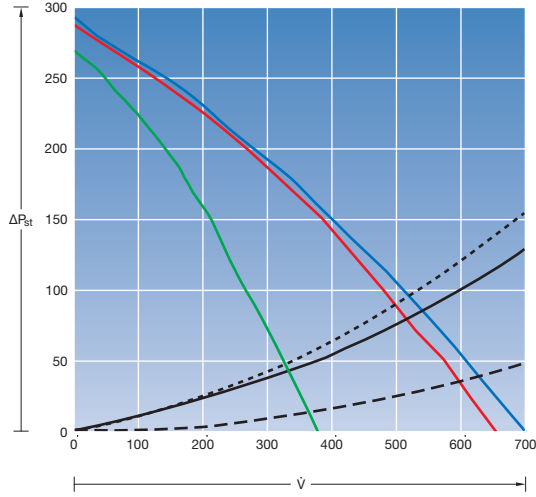


## TopTherm fan-filtre üniteleri ve EMC TopTherm fan-filtre üniteleri

Hava debisi 700/770 m<sup>3</sup>/h

50 Hz

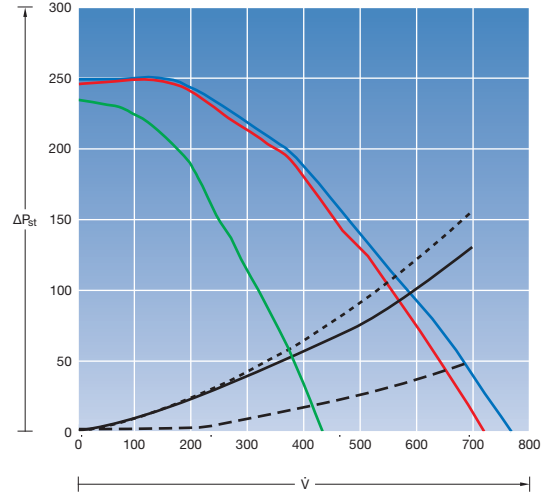
SK 3244.100, .110, .140, .600



$\dot{V}$  = Hacimsel akış (m<sup>3</sup>/h)  
 $\Delta P_{st}$  = Statik basınç farkı (Pa)  
— = Standart filtre ile  
— = Su geçirmez başlık ile  
— = Standart ve ince filtreli  
- - - = 1x su geçirmez başlıklı dış çıkış filtresi  
— = 1x çıkış filtresi  
- - - = 2x çıkış filtresi

60 Hz

SK 3244.100, .110, .140, .600

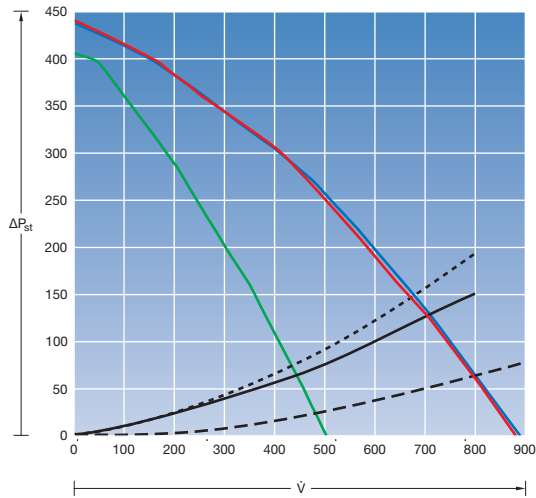


$\dot{V}$  = Hacimsel akış (m<sup>3</sup>/h)  
 $\Delta P_{st}$  = Statik basınç farkı (Pa)  
— = Standart filtre ile  
— = Su geçirmez başlık ile  
— = Standart ve ince filtreli  
- - - = 1x su geçirmez başlıklı dış çıkış filtresi  
— = 1x çıkış filtresi  
- - - = 2x çıkış filtresi

Hava debisi 900 m<sup>3</sup>/h

50/60 Hz

SK 3245.600



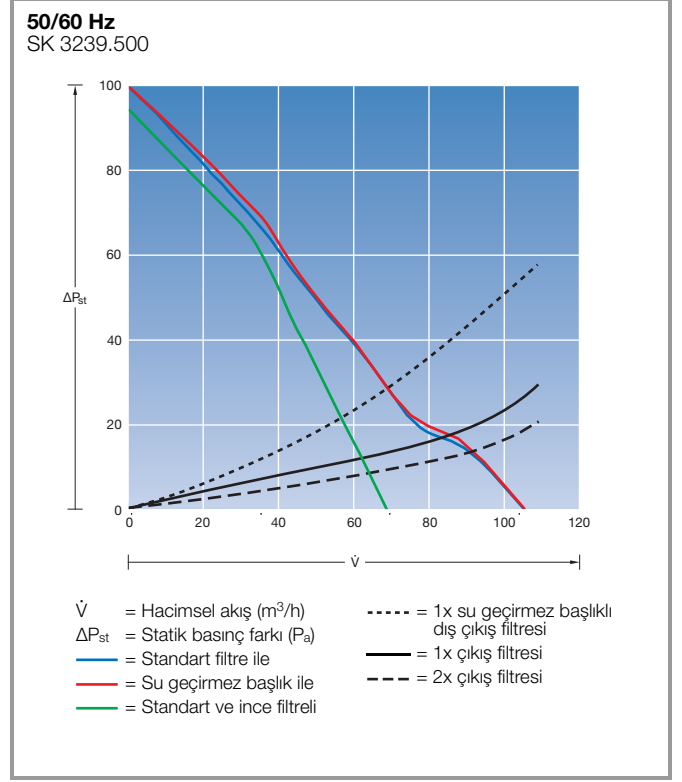
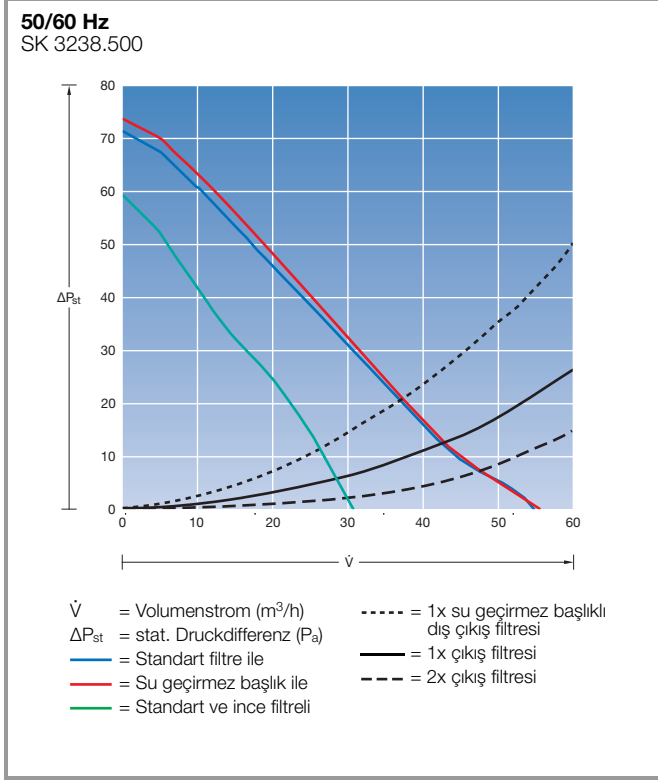
$\dot{V}$  = Hacimsel akış (m<sup>3</sup>/h)  
 $\Delta P_{st}$  = Statik basınç farkı (Pa)  
— = Standart filtre ile  
— = Su geçirmez başlık ile  
— = Standart ve ince filtreli  
- - - = 1x su geçirmez başlıklı dış çıkış filtresi  
— = 1x çıkış filtresi  
- - - = 2x çıkış filtresi

# Ortam havası ile soğutma sistemleri

## EC Teknolojili TopTherm fan-filtre üniteleri

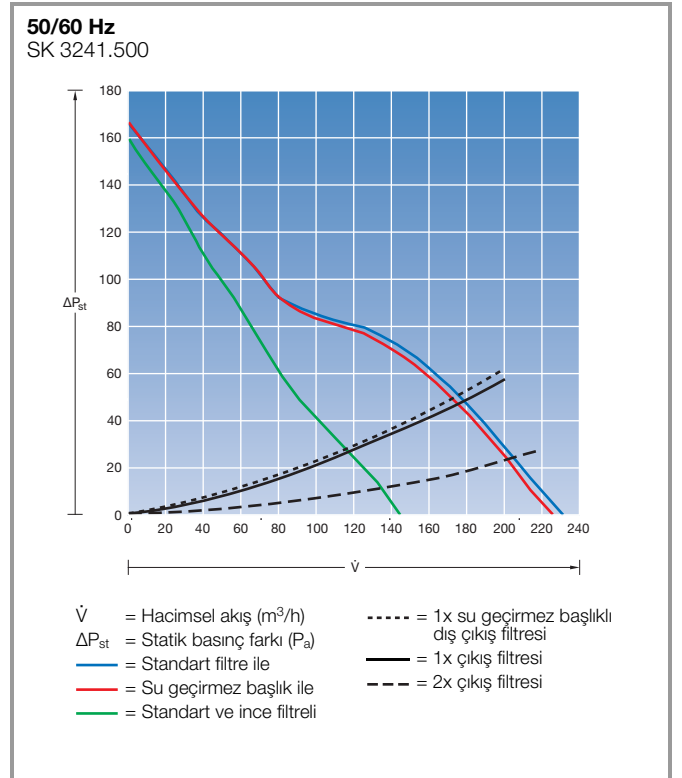
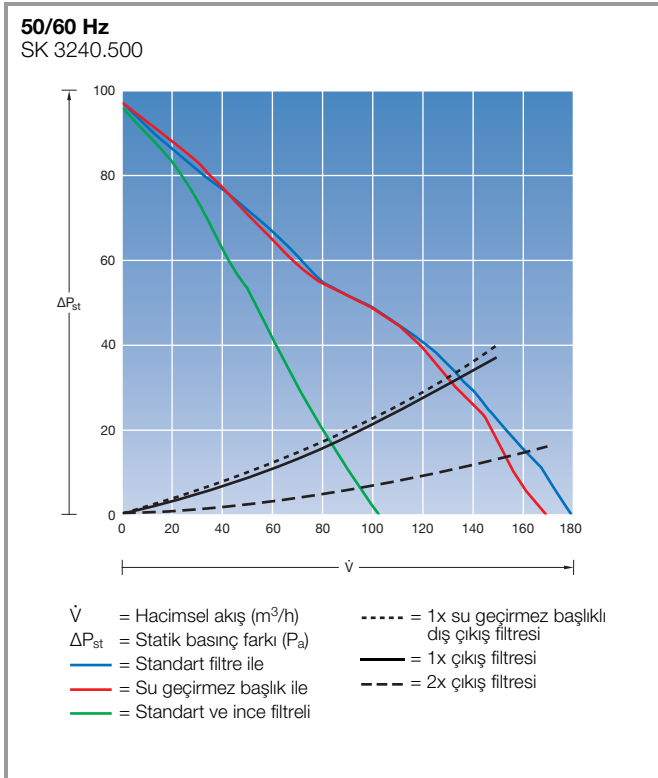
Hava debisi 55 m<sup>3</sup>/h

Hava debisi 105 m<sup>3</sup>/h



Hava debisi 180 m<sup>3</sup>/h

Hava debisi 230 m<sup>3</sup>/h



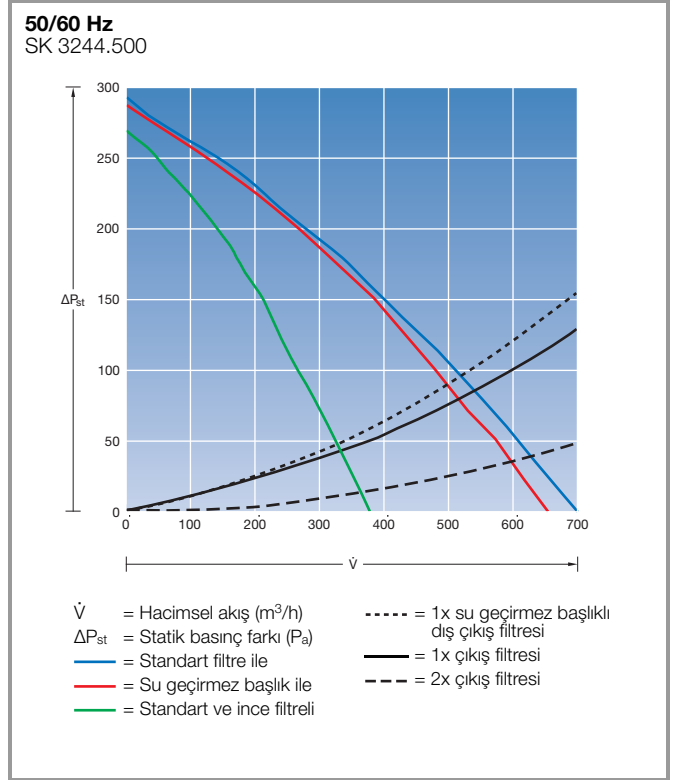
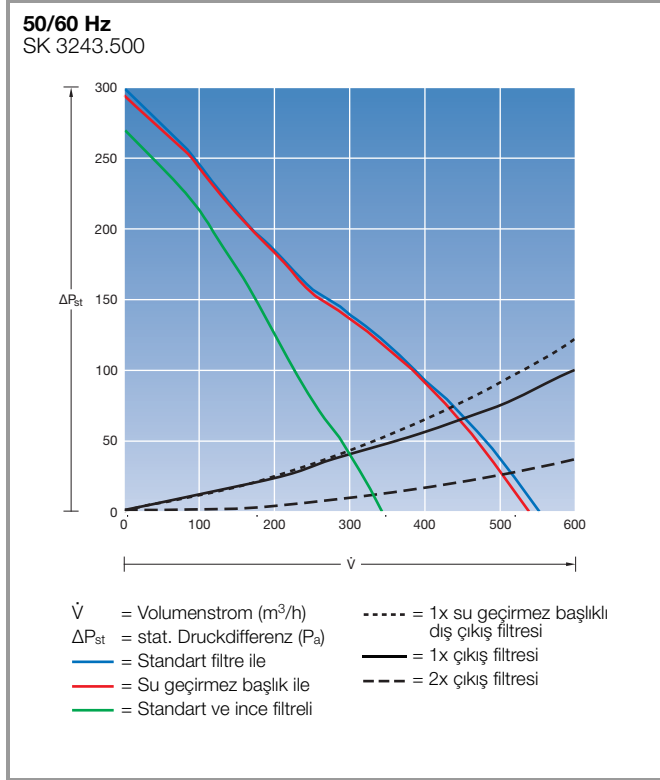


# Ortam havası ile soğutma sistemleri

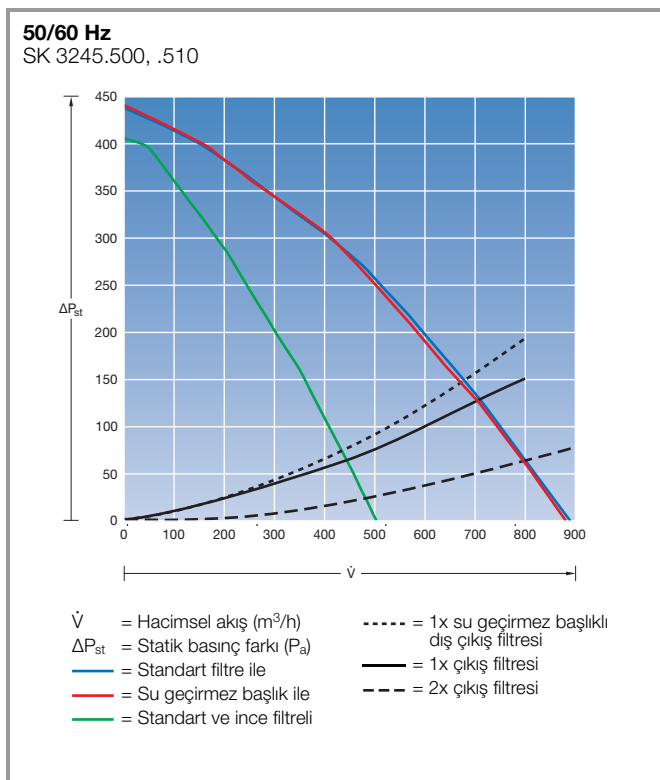
## EC Teknolojili TopTherm fan-filtre üniteleri

Hava debisi 550 m<sup>3</sup>/h

Hava debisi 700 m<sup>3</sup>/h



Hava debisi 900 m<sup>3</sup>/h



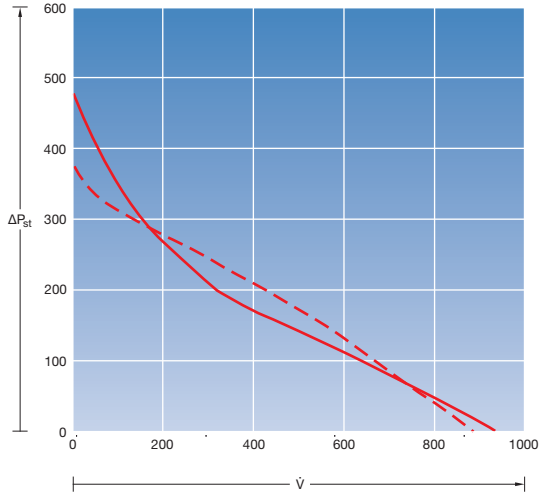
# Ortam havası ile soğutma sistemleri

## TopTherm tavana monte fanlar

Hava debisi 400 m<sup>3</sup>/h

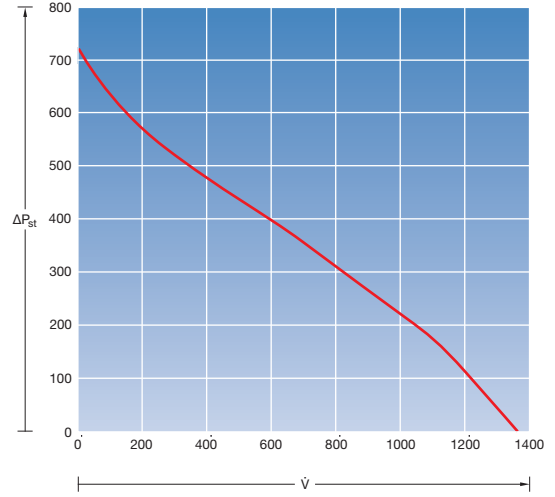
Hava debisi 800 m<sup>3</sup>/h

50/60 Hz  
SK 3149.410, .420, .440



V̇ = Hacimsel akış (m<sup>3</sup>/h)  
ΔP<sub>st</sub> = Statik basınç farkı (Pa)  
--- = 50 Hz  
— = 60 Hz

60 Hz  
SK 3149.810, .820, .840

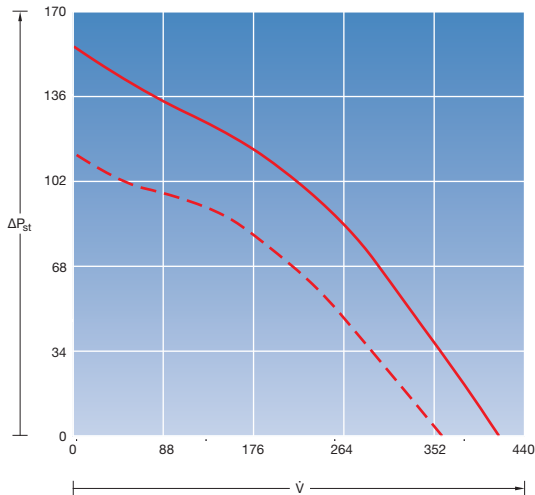


V̇ = Hacimsel akış (m<sup>3</sup>/h)  
ΔP<sub>st</sub> = Statik basınç farkı (Pa)  
— = 60 Hz

## Tavana monte fan, tavan havalandırması

Hava debisi 360 m<sup>3</sup>/h

50/60 Hz  
SK 3149.007, 3169.007



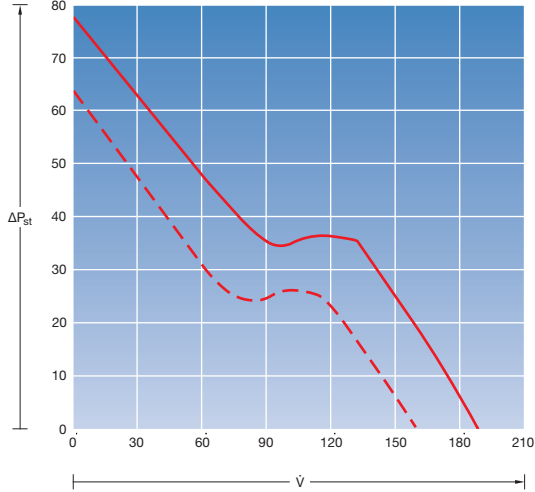
V̇ = Hacimsel akış (m<sup>3</sup>/h)  
ΔP<sub>st</sub> = Statik basınç farkı (Pa)  
--- = 50 Hz  
— = 60 Hz

## Rack fanları/19" monteli (482,6 mm)

Hava debisi 320/480 m<sup>3</sup>/h

50/60 Hz

SK 3340.230, 3350.230, 3341.115, .230, 3342.024, .230, .500,  
3351.230, 3352.230, .500



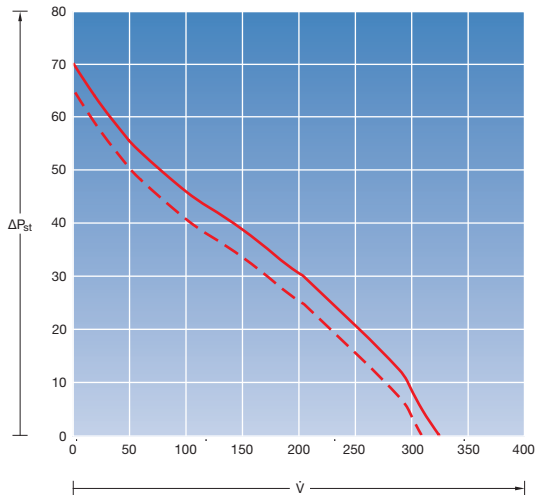
V̇ = Hacimsel akış (m<sup>3</sup>/h)  
ΔP<sub>st</sub> = Statik basınç farkı (Pa)  
--- = 50 Hz  
— = 60 Hz

## 19" (482,6 mm) yatay monteli fanlar

Hava debisi 320 m<sup>3</sup>/h

50/60 Hz

SK 3144.000, 3145.000



V̇ = Hacimsel akış (m<sup>3</sup>/h)  
ΔP<sub>st</sub> = Statik basınç farkı (Pa)  
--- = 50 Hz  
— = 60 Hz

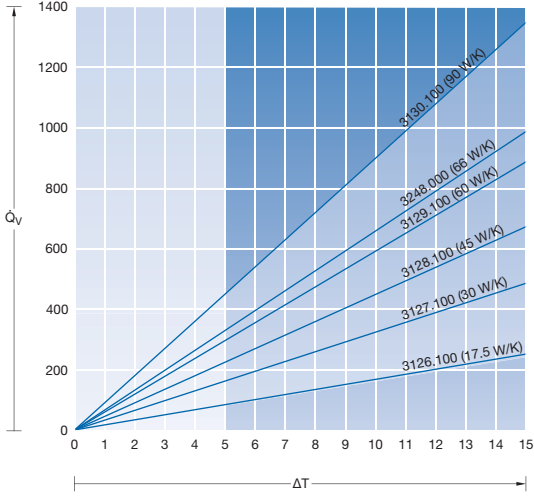
# Ortam havası ile soğutma sistemleri

## TopTherm Hava/hava ısı deęiřtiriciler

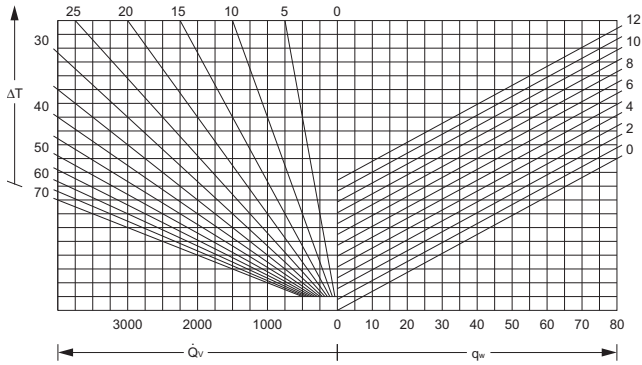
Özel ısı gücü 17,5 – 90 W/K duvara monte, kontrolörlü

50/60 Hz

SK 3126.100, 3127.100, 3128.100, 3129.100, 3130.100, 3248.000



### Seçim diyagramı



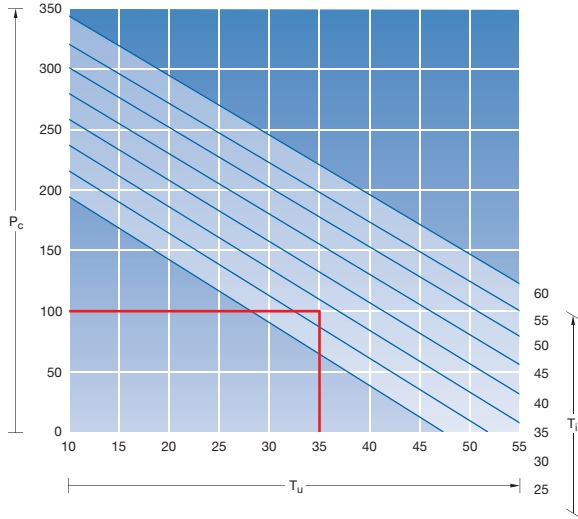
- $\Delta T$  = Sıcaklık farkı (K)  
 $\dot{Q}_V$  = Isı kaybı (max.)  
 $q_w$  = Özel ısı gücü (W/K)  
A = Pano yüzeyi IEC 890 (m<sup>2</sup>)  
k = Çelik sac için ısı transfer katsayısı (W/m<sup>2</sup> K)  
k = 5,5 W/m<sup>2</sup> K

## Termoelektrik soğutucular

Soğutma gücü

50/60 Hz

SK 3201.200, .300

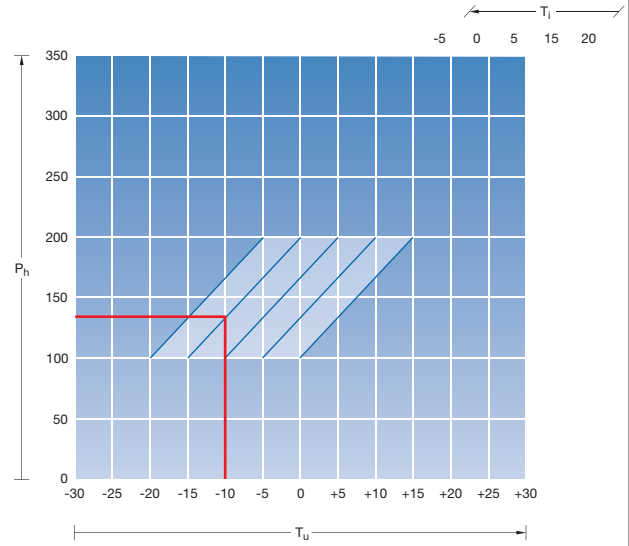


$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

Isıtma gücü

50/60 Hz

SK 3201.200, .300



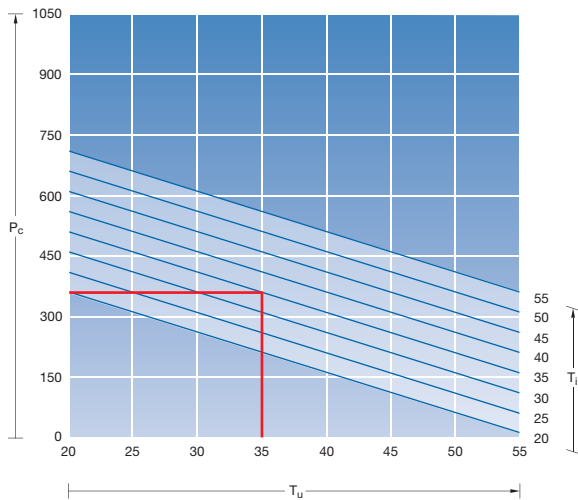
$T_u$  = Ortam sıcaklığı (°C)  
 $P_h$  = Isıtma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## TopTherm, duvara monte klimalar

Soğutma gücü 300 W (115/230 V, 1-)

50 Hz

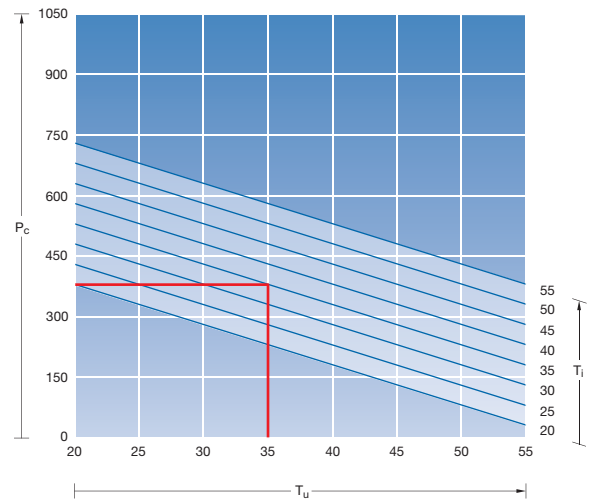
SK 3302.300, .310, .100, .110, .200



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

60 Hz

SK 3302.300, .310, .100, .110, .200



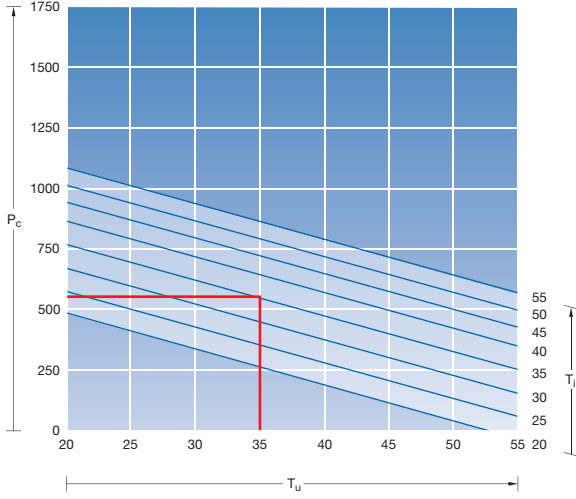
$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## TopTherm, duvara monte klimalar Blue-e

Soğutma gücü 500 W (115/230 V, 1~)

50 Hz

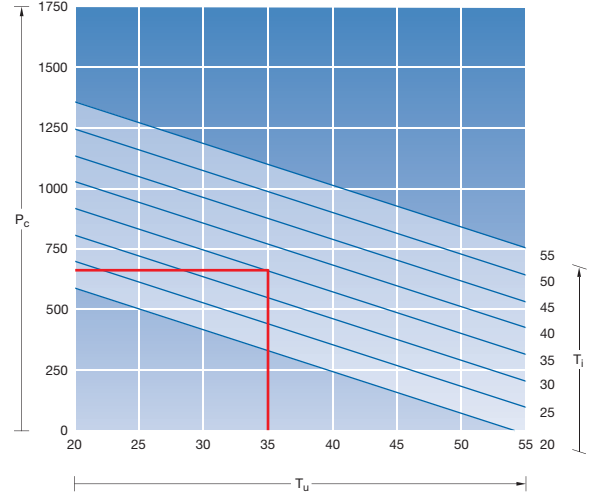
SK 3303.500, .510, .600, .504, .514



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

60 Hz

SK 3303.500, .510, .600, .504, .514

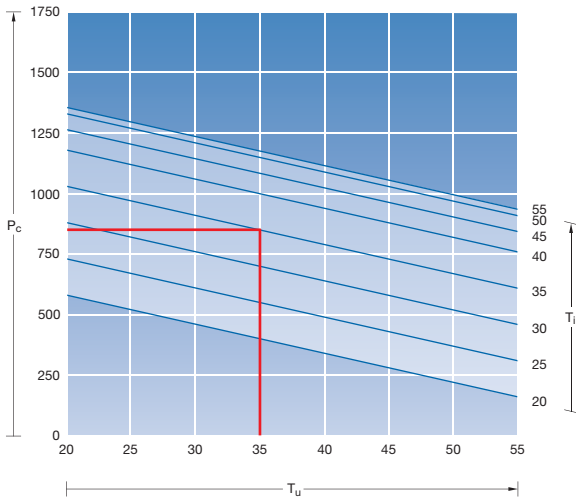


$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

Soğutma gücü 750 W (115/230 V, 1~, 400 V, 2~)

50 Hz

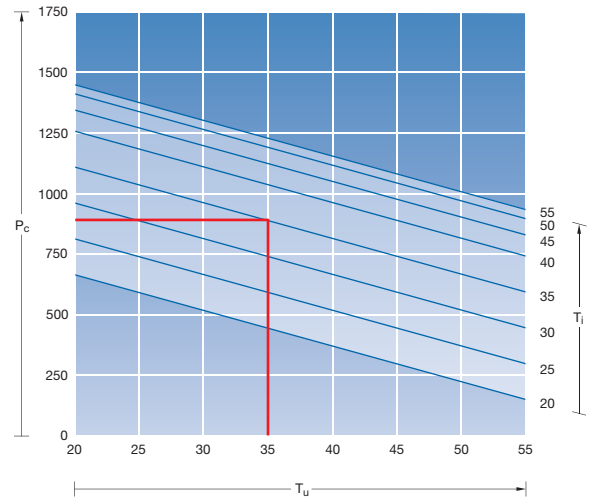
SK 3361.500, .510, .540, .600



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

60 Hz

SK 3361.500, .510, .540, .600



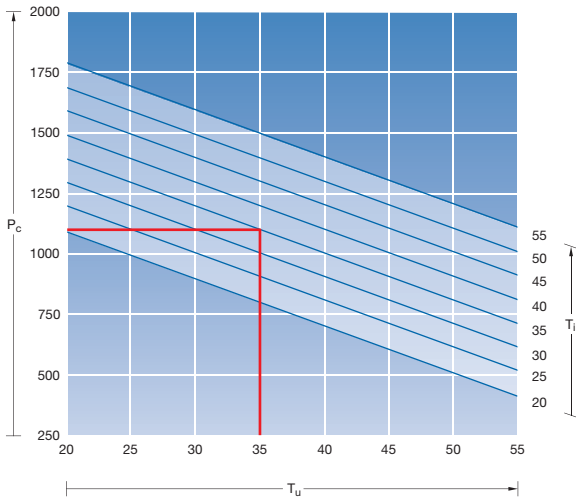
$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## TopTherm, duvara monte klimalar Blue-e

Soğutma gücü 1000 W (115/230 V, 1~)

**50 Hz**

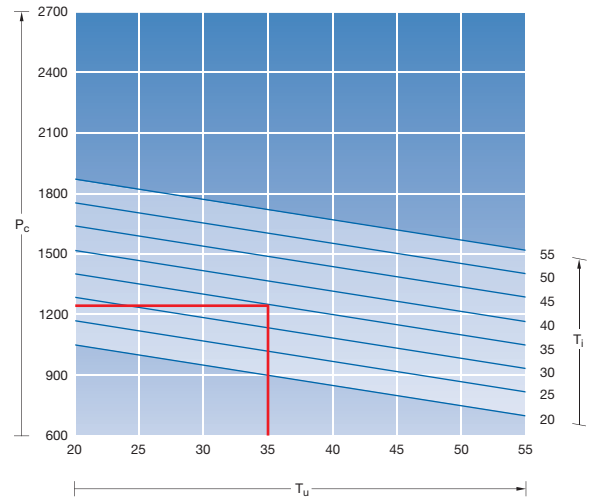
SK 3304.500, .510, .600, .504



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**60 Hz**

SK 3304.500, .510, .600, .504

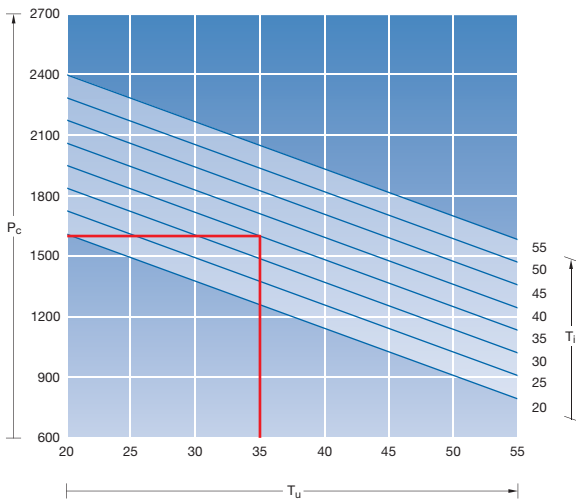


$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

Soğutma gücü 1500 W (115/230 V, 1~)

**50 Hz**

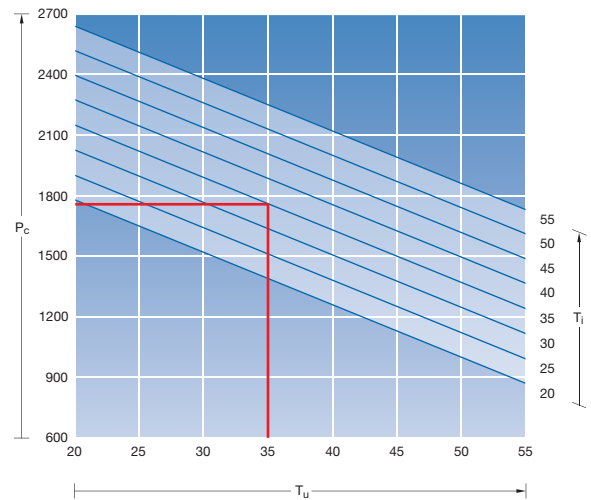
SK 3305.500, .510, .600, .504



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**60 Hz**

SK 3305.500, .510, .600, .504



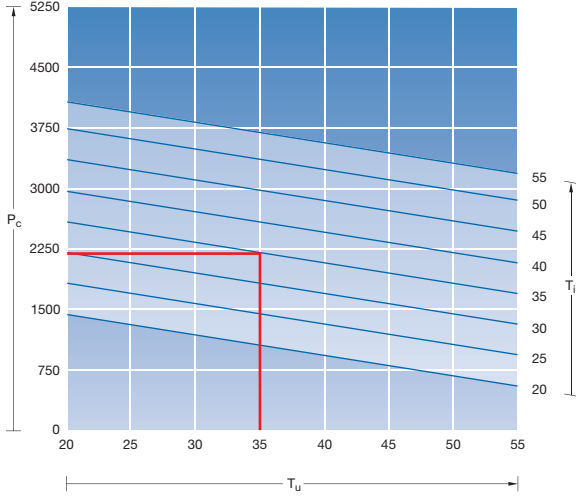
$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## TopTherm, duvara monte klimalar Blue-e

Soğutma gücü 2000 W (115/230 V, 1~)

50 Hz

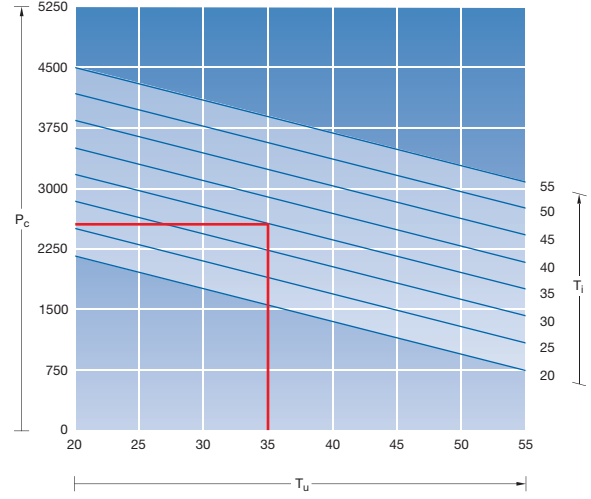
SK 3328.500, .510, .600, .504



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

60 Hz

SK 3328.500, .510, .600, .504

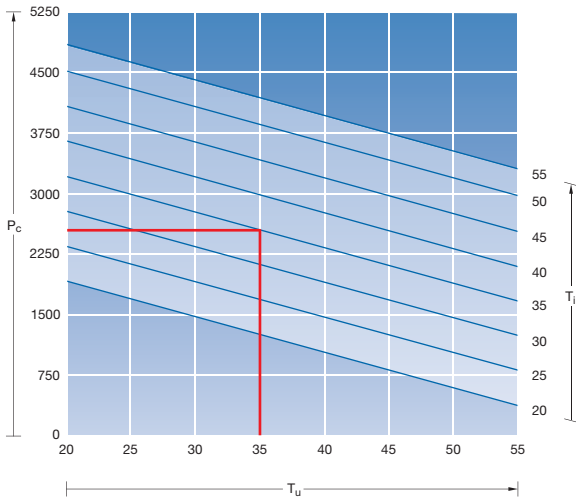


$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

Soğutma gücü 2500 W (115/230 V, 1~)

50 Hz

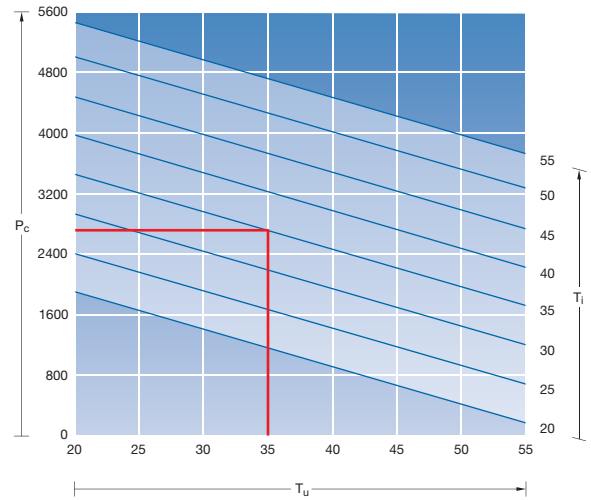
SK 3329.500, .510, .600, .504



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

60 Hz

SK 3329.500, .510, .600, .504

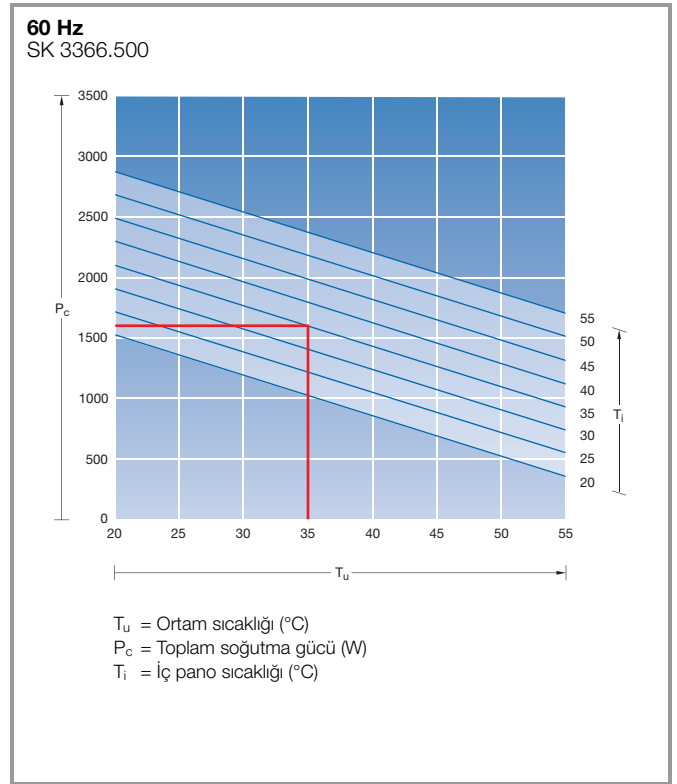
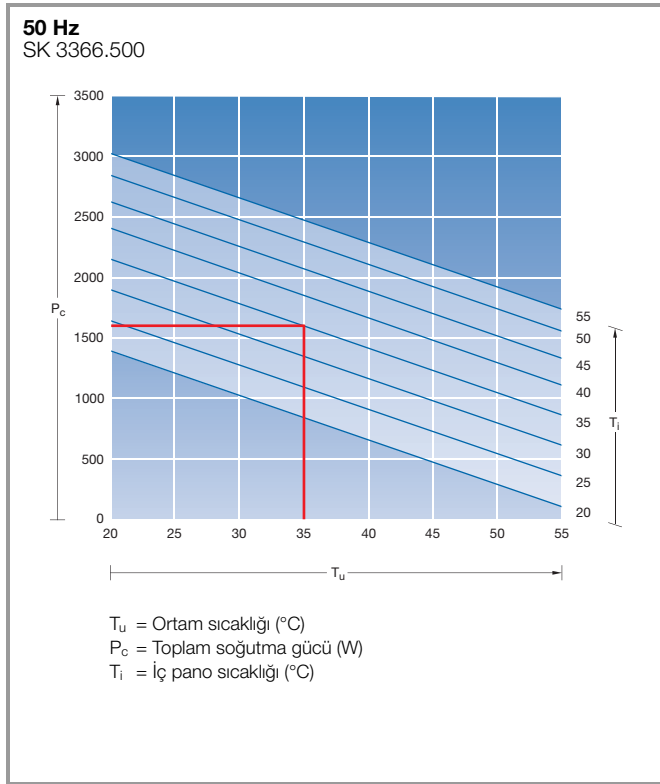


$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

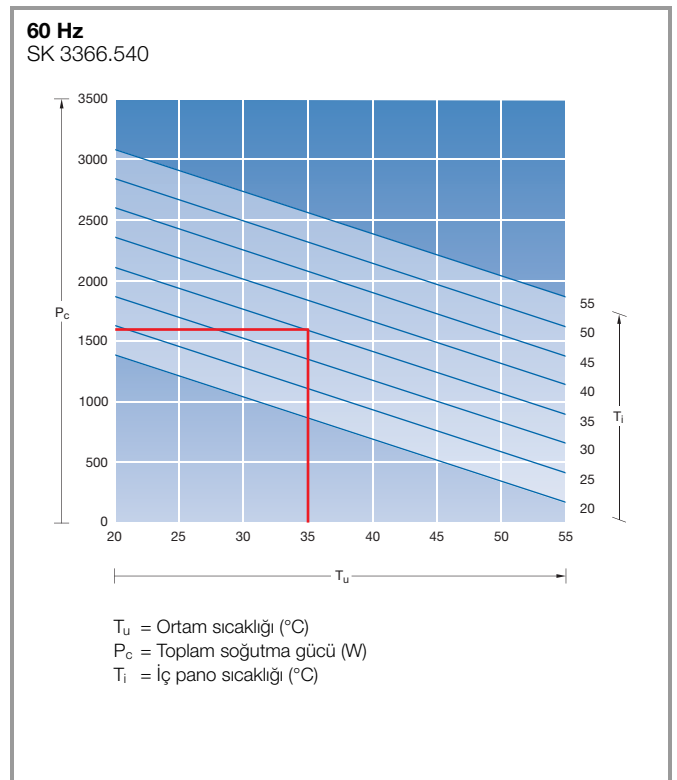
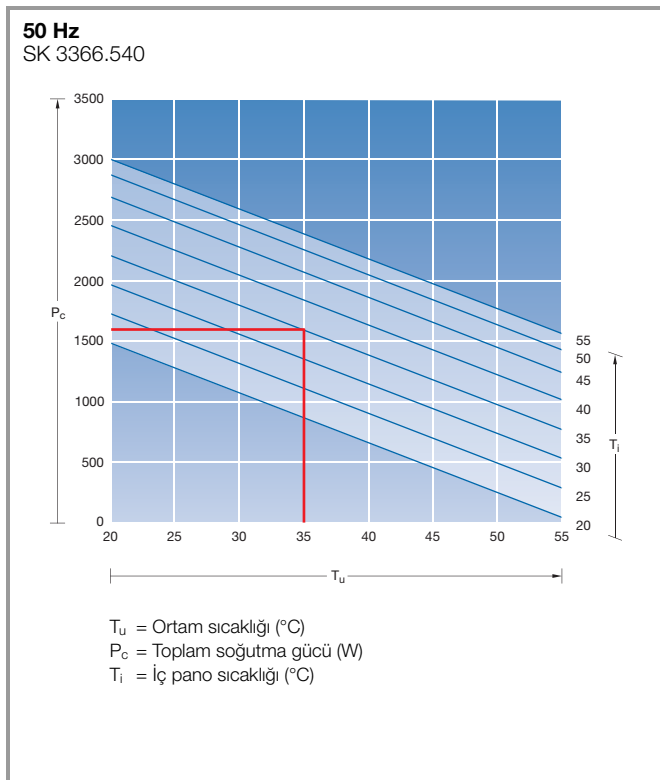


## TopTherm, duvara monte klimalar Blue-e, Slimline

Soğutma gücü 1500 W (230 V, 1~)



Soğutma gücü 1500 W (400/460 V, 3~)

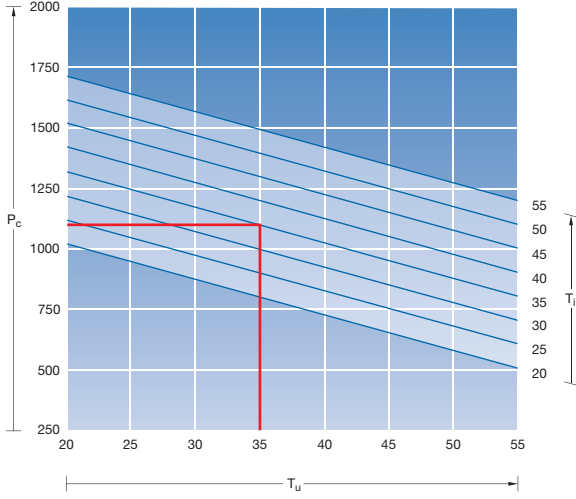


## TopTherm, duvara monte klimalar Blue-e

Soğutma gücü 1000 W (400/460 V, 3~)

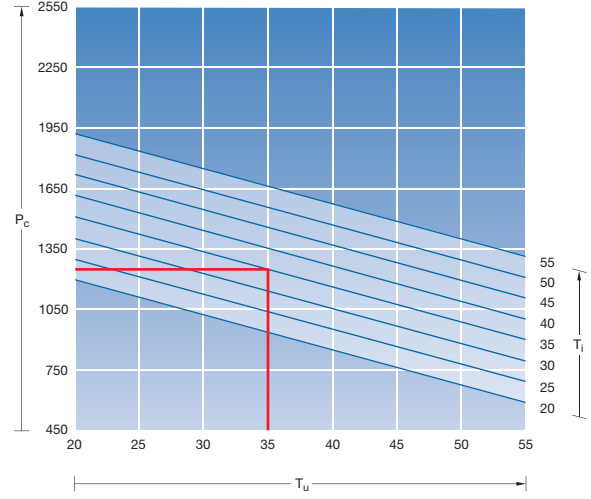
50 Hz

SK 3304.540, .640, .544



60 Hz

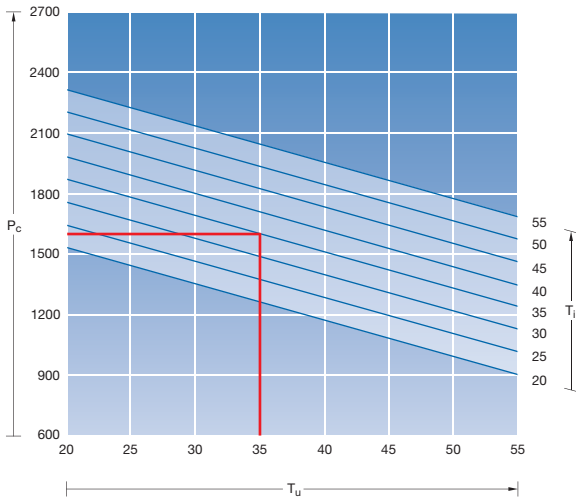
SK 3304.540, .640, .544



Soğutma gücü 1500 W (400/460 V, 3~)

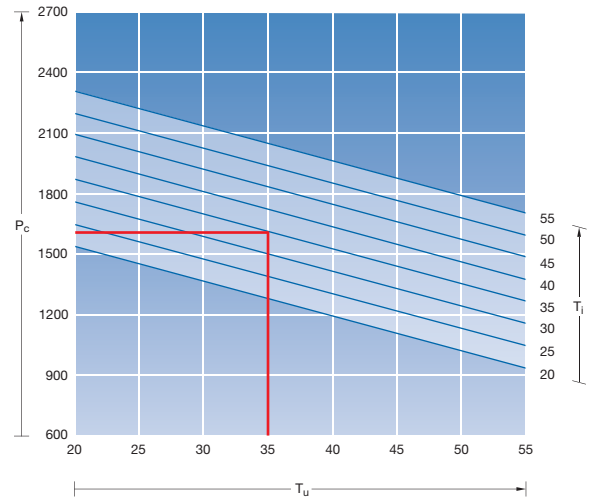
50 Hz

SK 3305.540, .640, .544



60 Hz

SK 3305.540, .640, .544

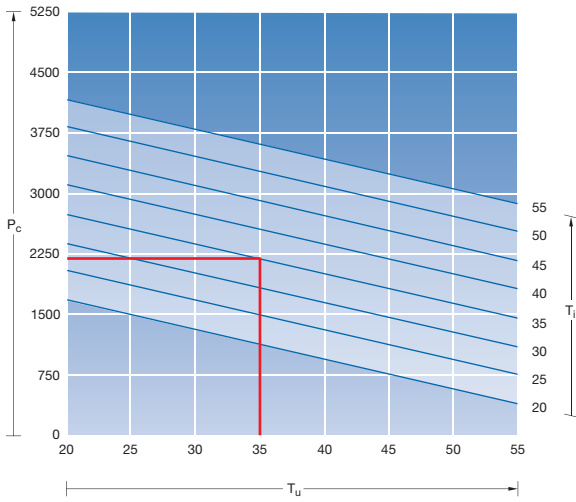


## TopTherm, duvara monte klimalar Blue-e

Soğutma gücü 2000 W (400/460 V, 3~)

**50 Hz**

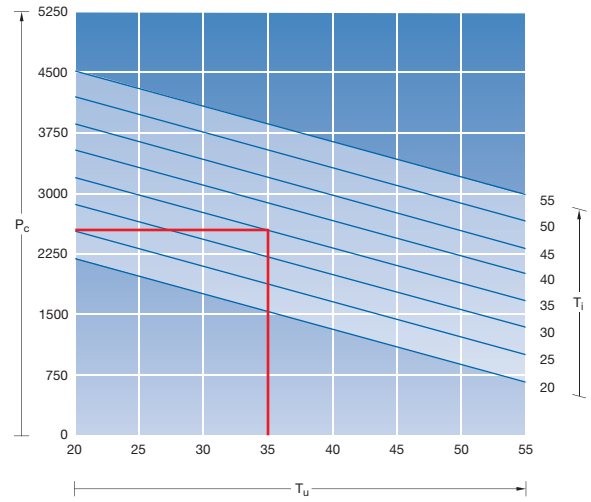
SK 3328.540, .640, .544



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**60 Hz**

SK 3328.540, .640, .544

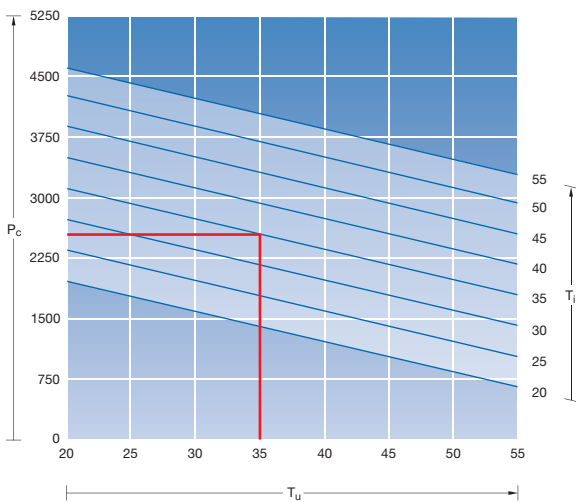


$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

Soğutma gücü 2500 W (400/460 V, 3~)

**50 Hz**

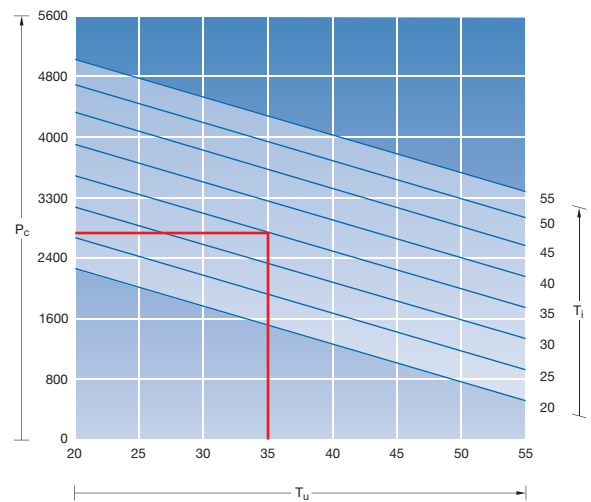
SK 3329.540, .640, .544



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**60 Hz**

SK 3329.540, .640, .544



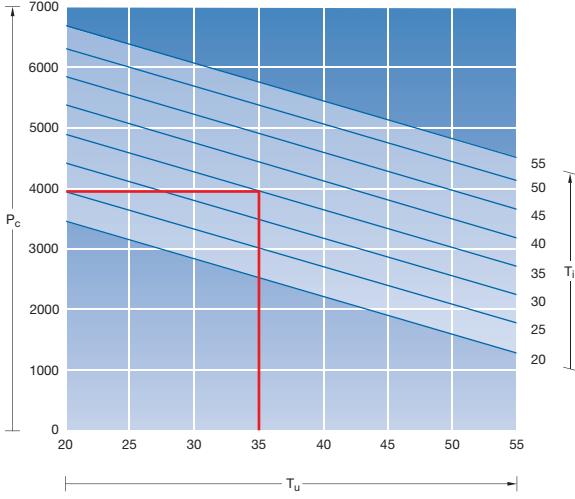
$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## TopTherm, duvara monte klimalar Blue-e

Soğutma gücü 4000 W (400/460 V, 3~)

**50 Hz**

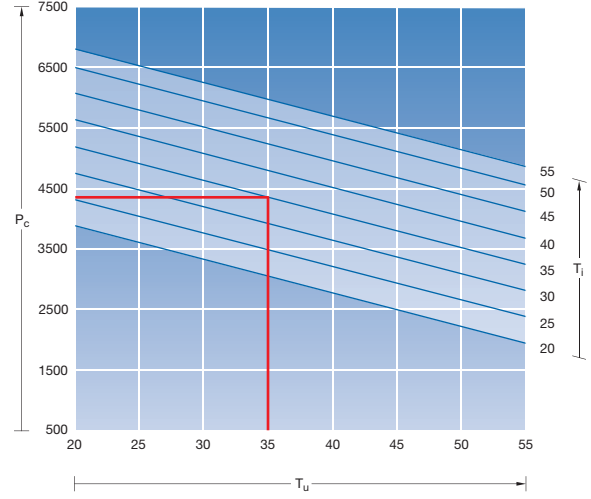
SK 3332.540, .640



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**60 Hz**

SK 3332.540, .640



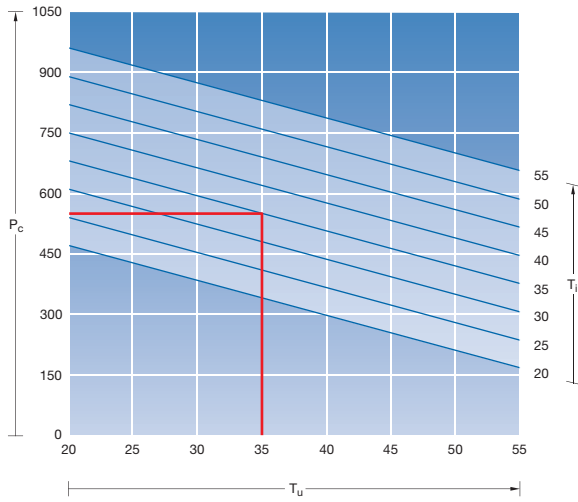
$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## TopTherm, tavan monteli klimalar Blue-e

Soğutma gücü 500 W (115/230 V, 1~)

**50 Hz**

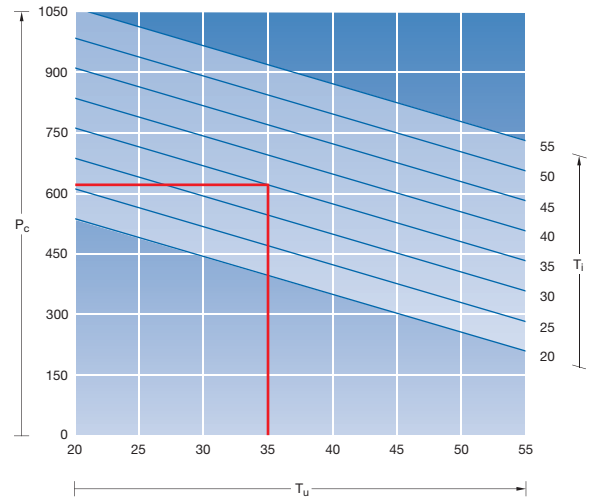
SK 3382.500, .510, .600



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**60 Hz**

SK 3382.500, .510, .600

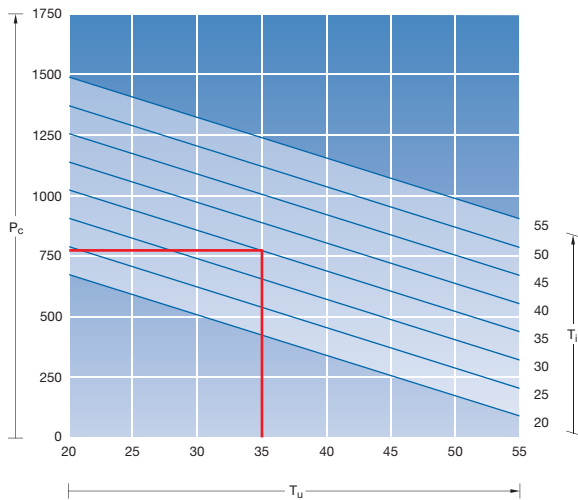


$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

Soğutma gücü 750 W (115/230 V, 1~, 400 V, 2~)

**50 Hz**

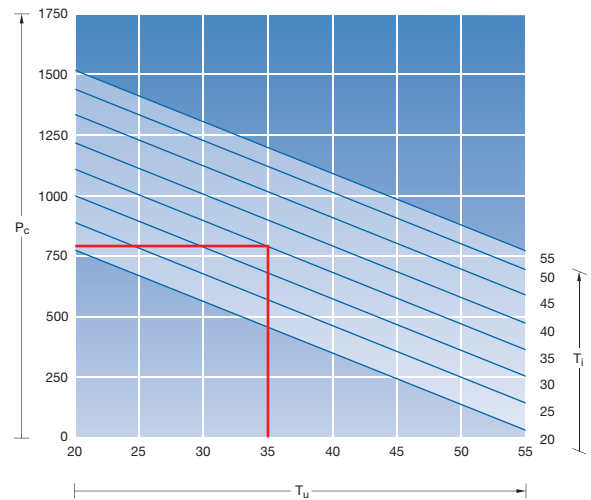
SK 3359.500, .510, .540, .600



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**60 Hz**

SK 3359.500, .510, .540, .600



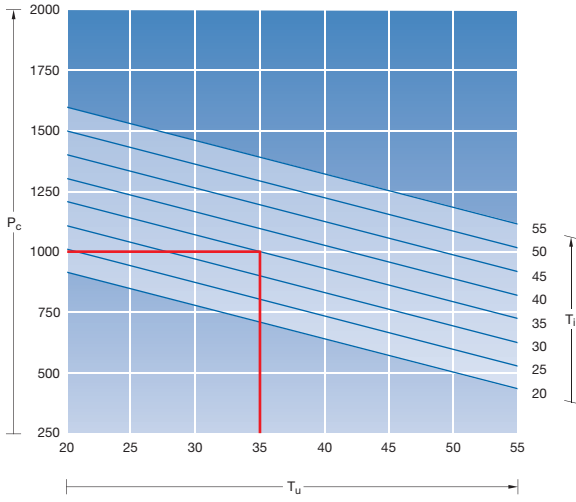
$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## TopTherm, tavan monteli klimalar Blue-e

Soğutma gücü 1000 W (115/230 V, 1~, 400 V, 2~)

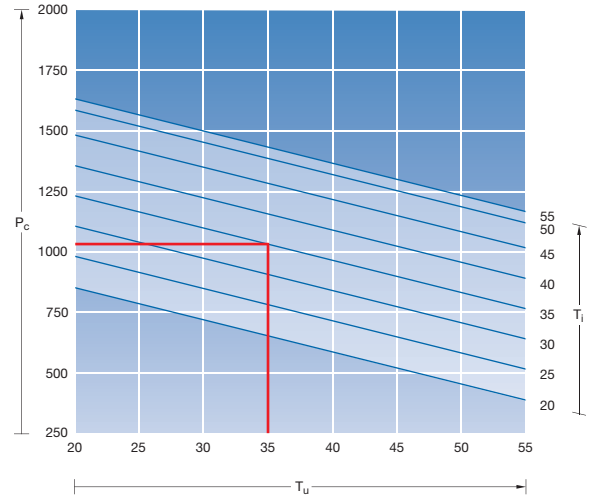
50 Hz

SK 3383.500, .510, .540, .600



60 Hz

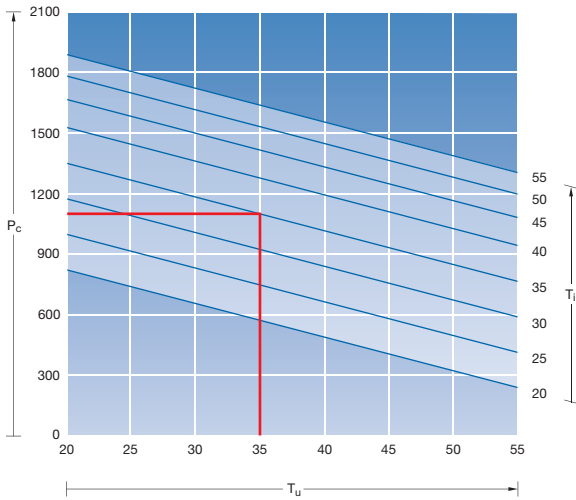
SK 3383.500, .510, .540, .600



Soğutma gücü 1100 W (115/230 V, 1~)

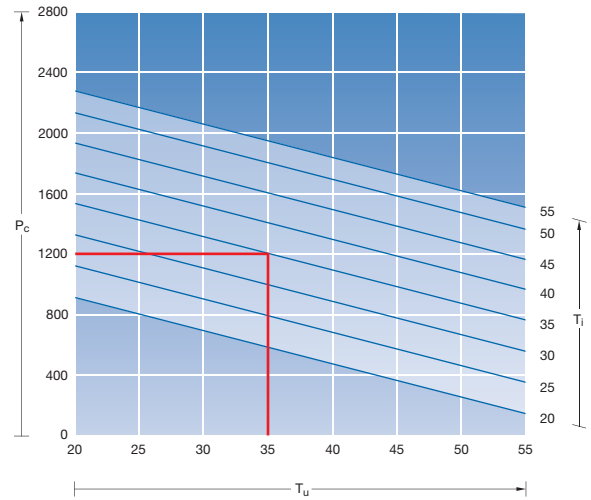
50 Hz

SK 3273.500, .515



60 Hz

SK 3273.500, .515

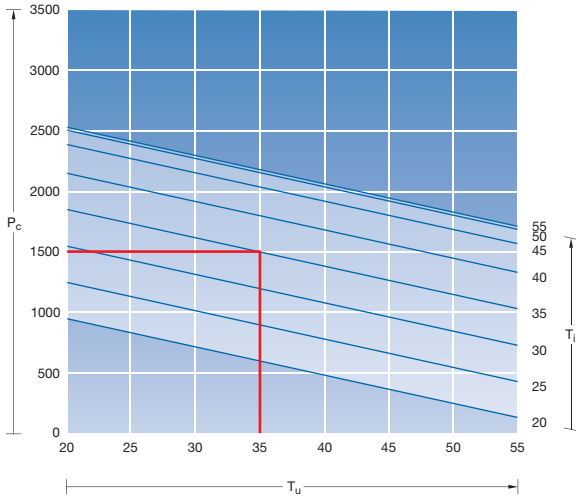


## TopTherm, tavan monteli klimalar Blue-e

Soğutma gücü 1500 W (115/230 V, 1~, 400 V, 2~)

**50 Hz**

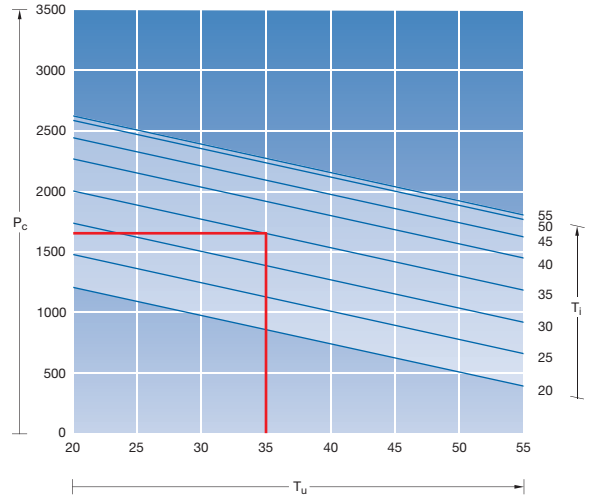
SK 3384.500, .510, .540, .600



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**60 Hz**

SK 3384.500, .510, .540, .600

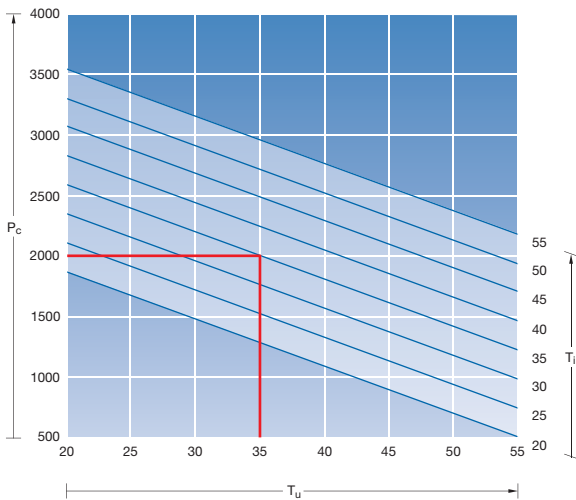


$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

Soğutma gücü 2000 W (115/230 V, 1~, 400 V, 2~)

**50 Hz**

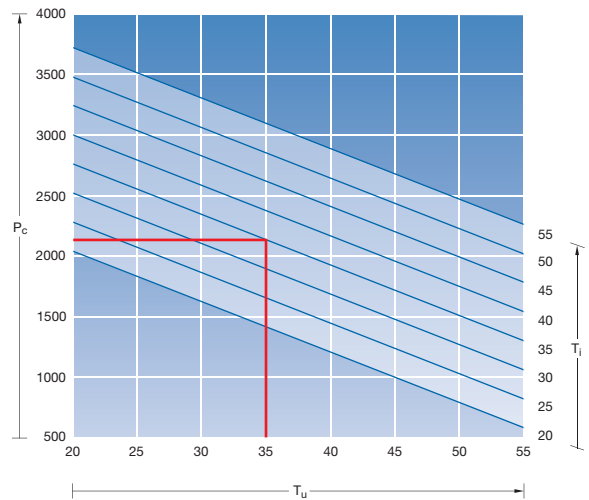
SK 3385.500, .510, .540, .600, .640



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**60 Hz**

SK 3385.500, .510, .540, .600, .640



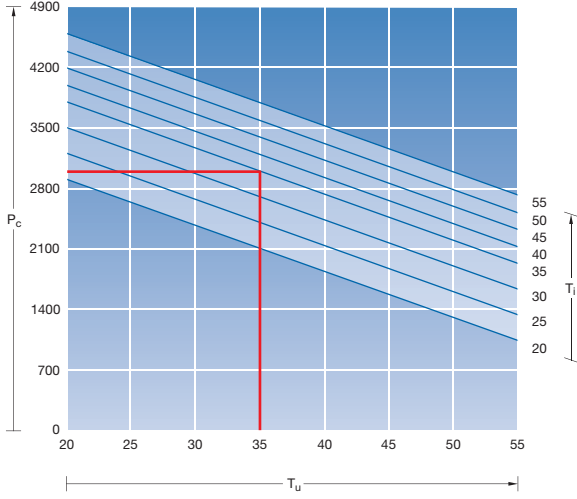
$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## TopTherm, tavan monteli klimalar Blue-e

Soğutma gücü 3000 W (400/460 V, 3~)

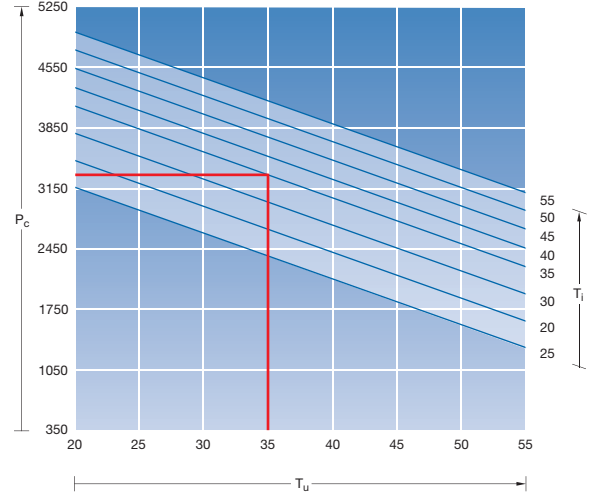
50 Hz

SK 3386.540, .640



60 Hz

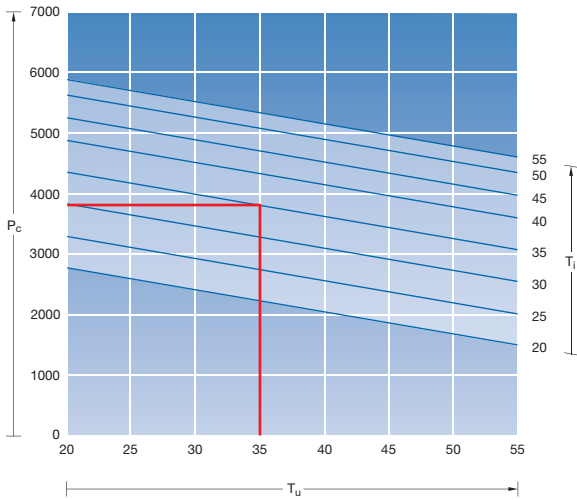
SK 3386.540, .640



Soğutma gücü 4000 W (400/460 V, 3~)

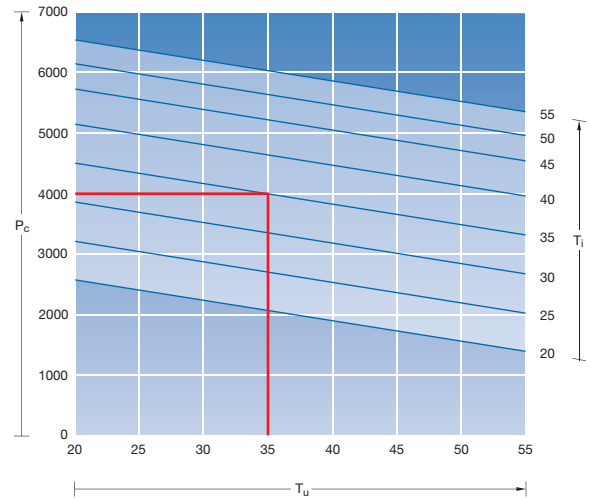
50 Hz

SK 3387.540, .640



60 Hz

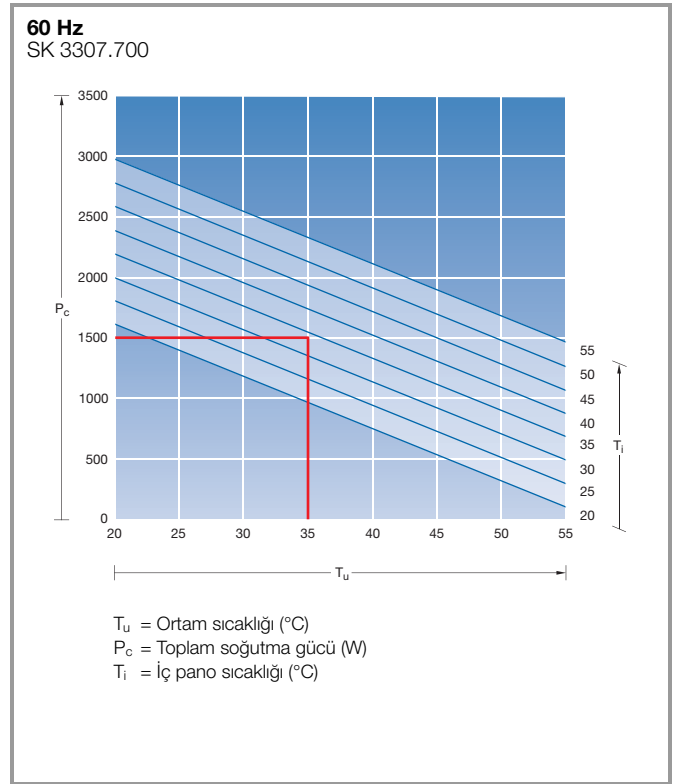
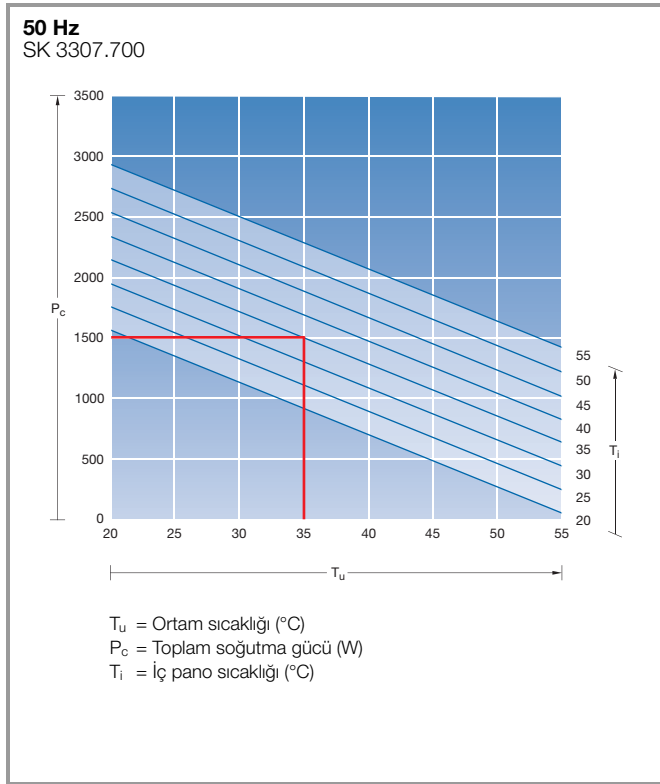
SK 3387.540, .640



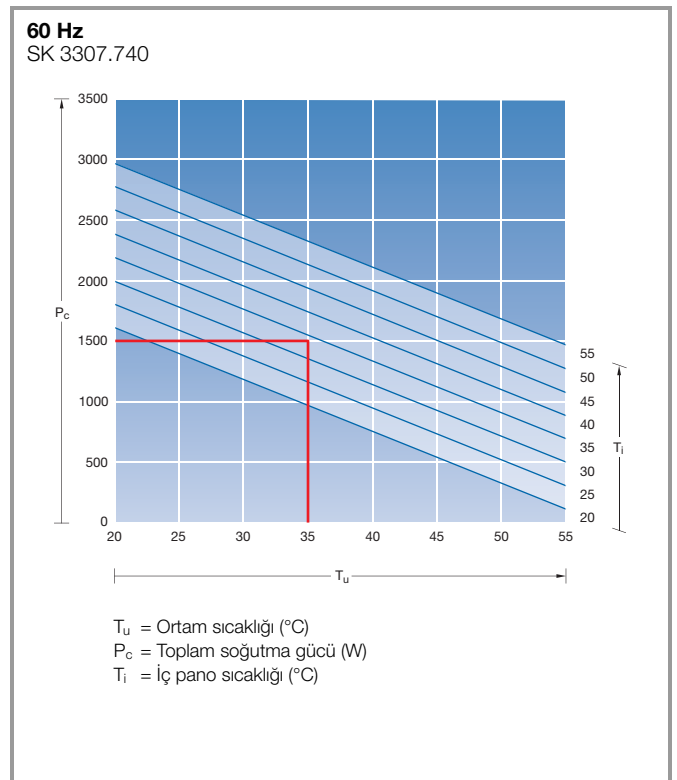
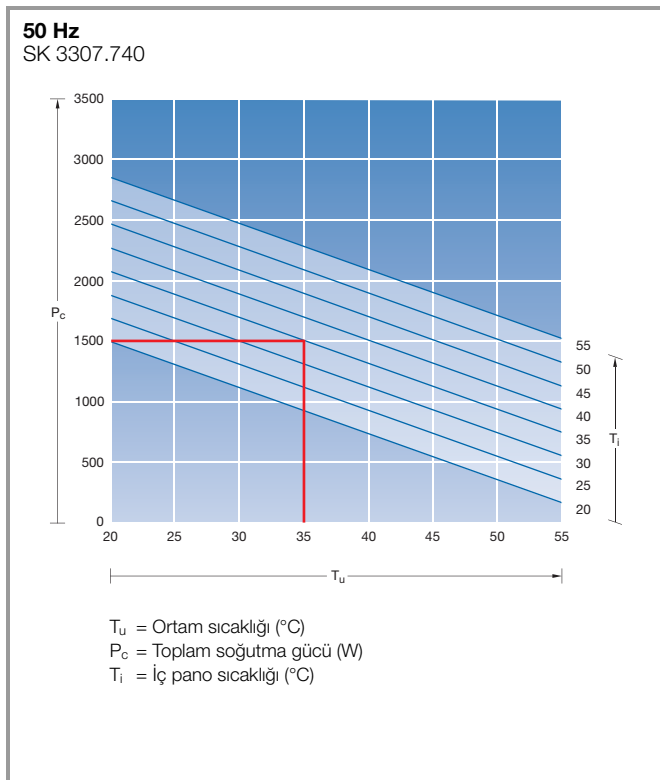


## Kapı modüllü klimalar Blue-e

Soğutma gücü 1500 W (230 V, 1~)



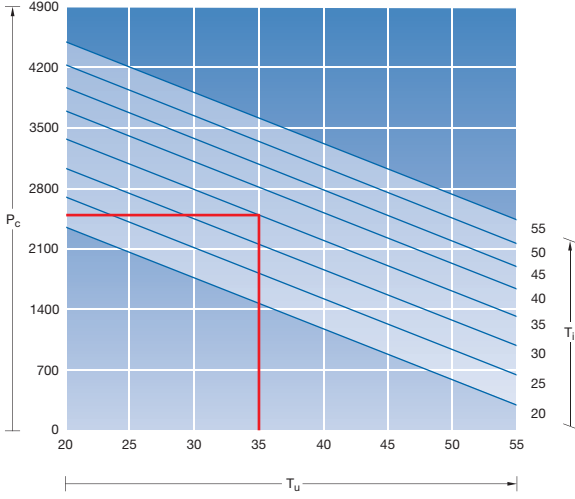
Soğutma gücü 1500 W (400/460 V, 3~)



## Kapı modüllü klimalar Blue-e

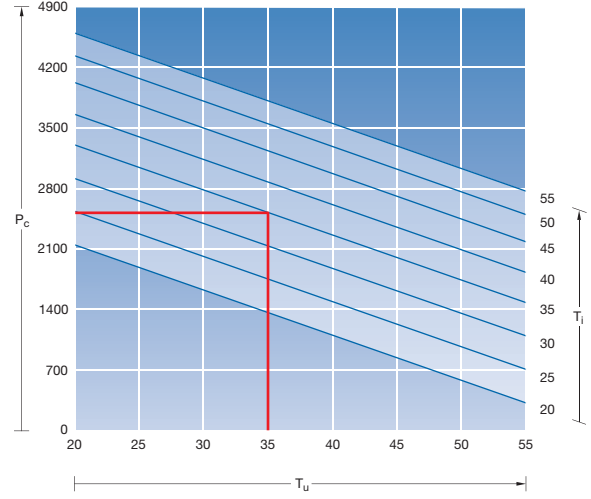
Soğutma gücü 2500 W (230 V, 1~)

50 Hz  
SK 3310.700



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

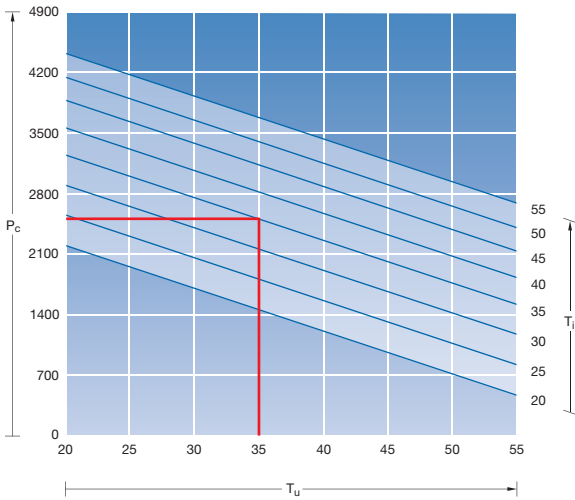
60 Hz  
SK 3310.700



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

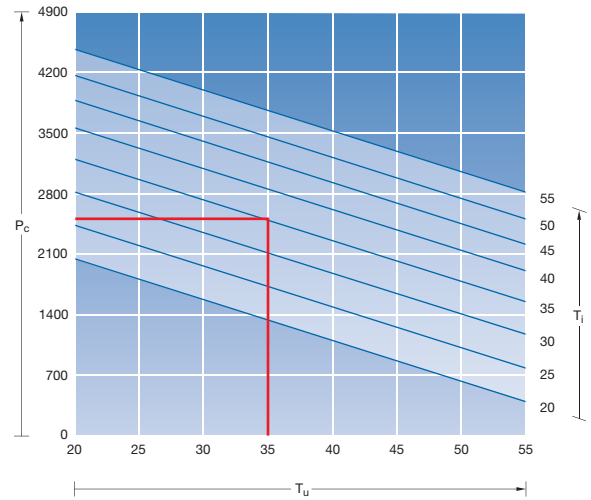
Soğutma gücü 2500 W (400/460 V, 3~)

50 Hz  
SK 3310.740



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

60 Hz  
SK 3310.740



$T_u$  = Ortam sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

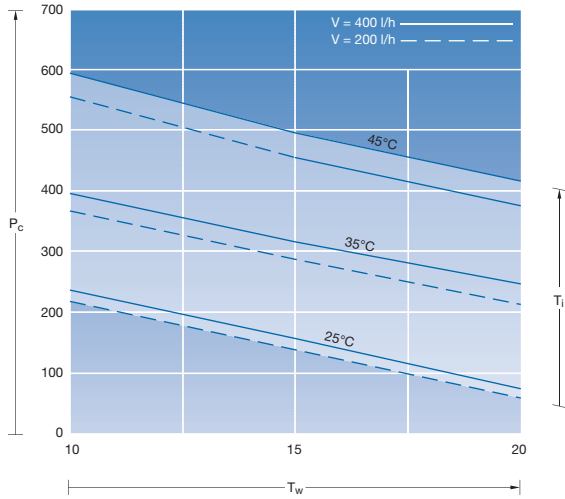
## Hava/su ısı değıştirciler, duvara monte

Soğutma gücü 300 W

Suyun geçtiği bölümler: Bakır/pirinç (Cu/CuZn)

50/60 Hz

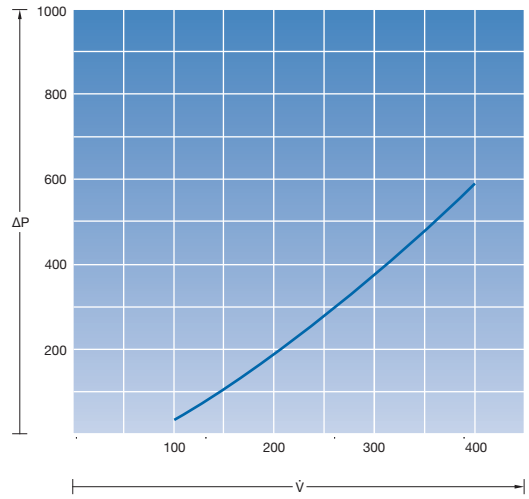
SK 3212.024, .115, .230



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

Su direnci diyagramı

SK 3212.024, .115, .230



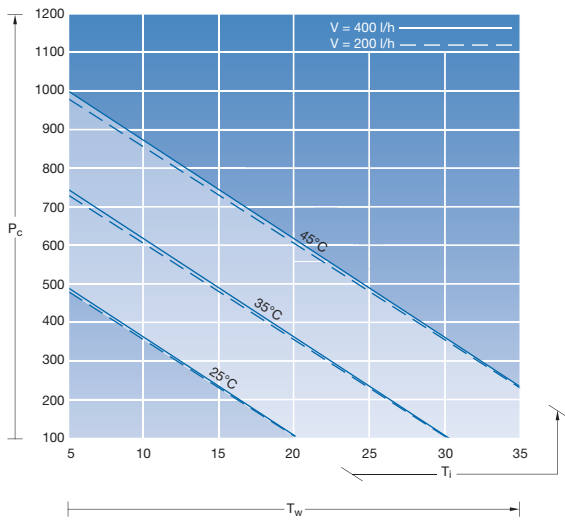
$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)

Soğutma gücü 600 W

Suyun geçtiği bölümler: Bakır/pirinç (Cu/CuZn)

50/60 Hz

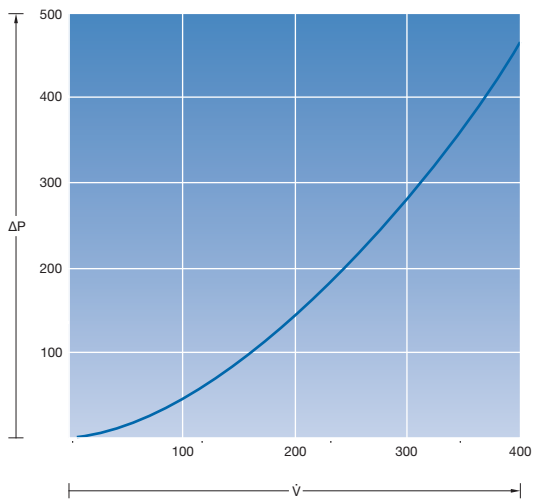
SK 3214.100



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

Su direnci diyagramı

SK 3214.100



$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)

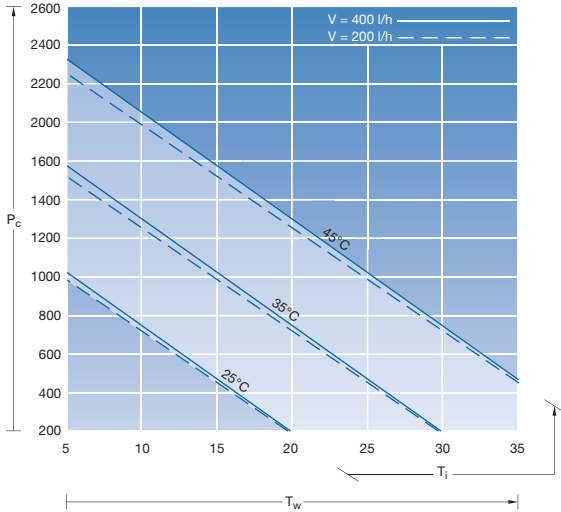
# Su ile soğutma sistemleri

## Hava/su ısı deęiřtirciler, duvara monte

Soğutma gücü 1250 W

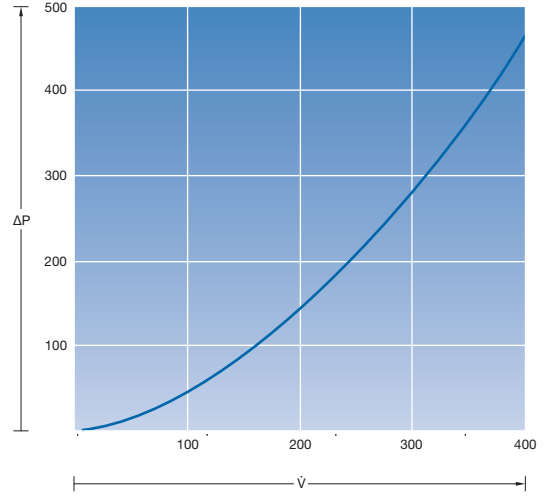
Suyun geçtięi bölümler: Bakır/pirinç (Cu/CuZn)

50/60 Hz  
SK 3215.100



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

Su direnci diyagramı  
SK 3215.100

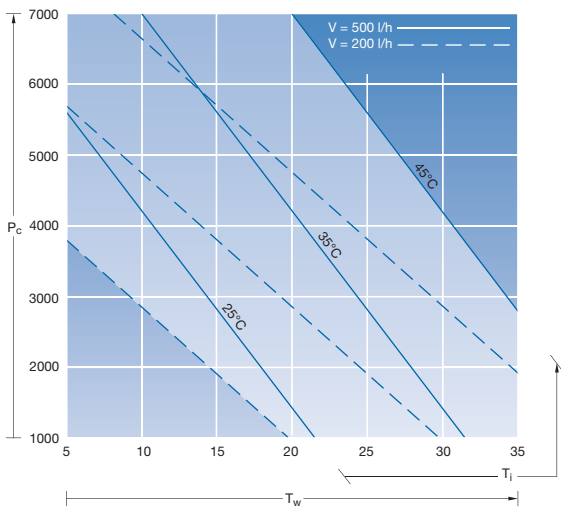


$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)

Soğutma gücü 7000 W

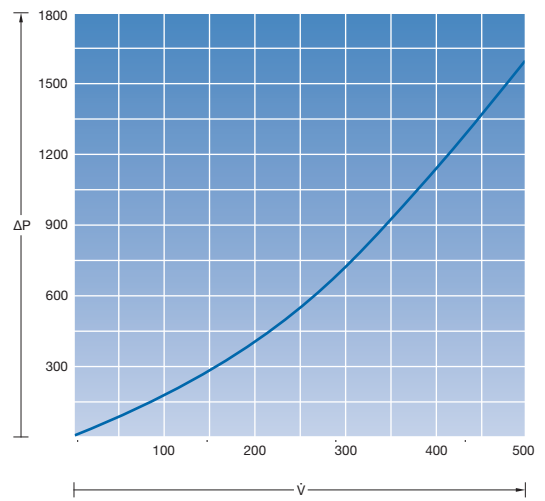
Suyun geçtięi bölümler: Bakır/pirinç (Cu/CuZn)

50/60 Hz  
SK 3216.480



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

Su direnci diyagramı  
SK 3216.480



$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)

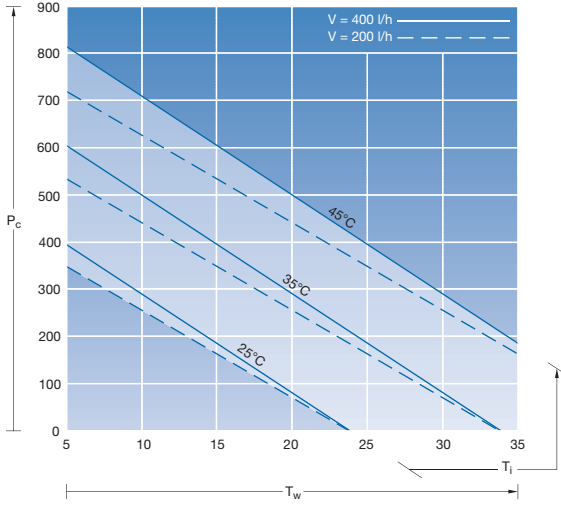
## Hava/su ısı deęiřtiriciler, duvara monte

Soğutma gücü 500 W

Suyun geçtięi bölümler: Bakır/pirinç (Cu/CuZn)

50 Hz

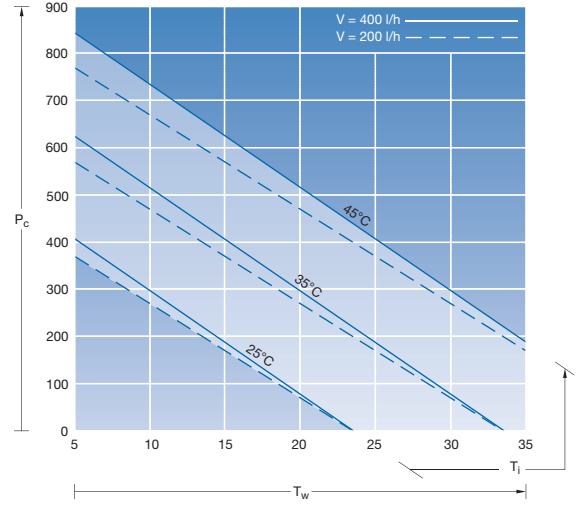
SK 3363.100, .500



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

60 Hz

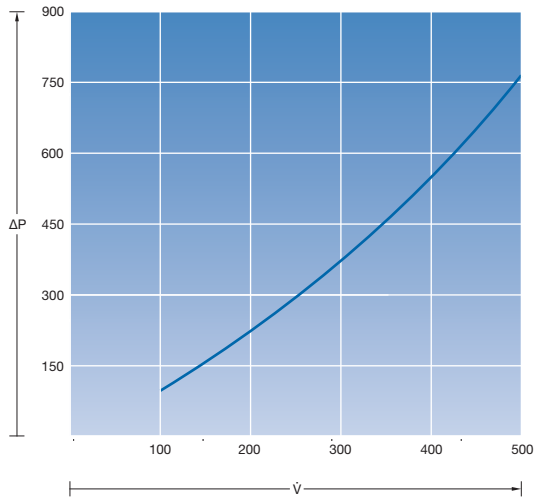
SK 3363.100, .500



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## Su direnci diyagramı

SK 3363.100, .500



$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)

# Su ile soğutma sistemleri

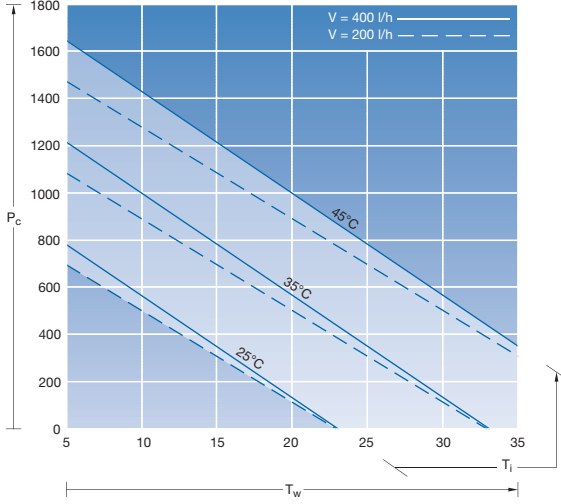
## Hava/su ısı deęiřtirciler, duvara monte

Soğutma gücü 1000 W

Suyun geçtięi bölümler: Bakır/pirinç (Cu/CuZn)

50 Hz

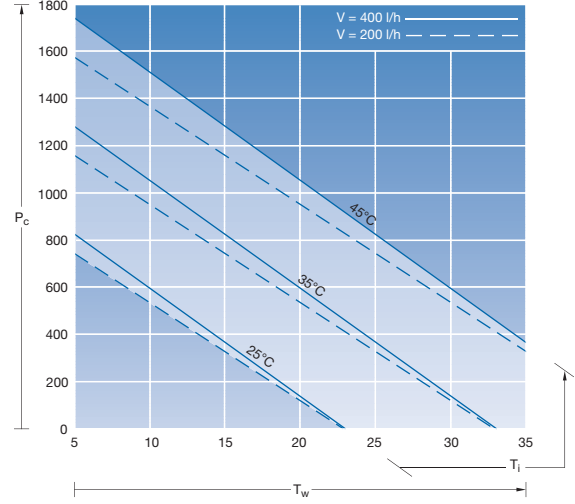
SK 3364.100, .500



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

60 Hz

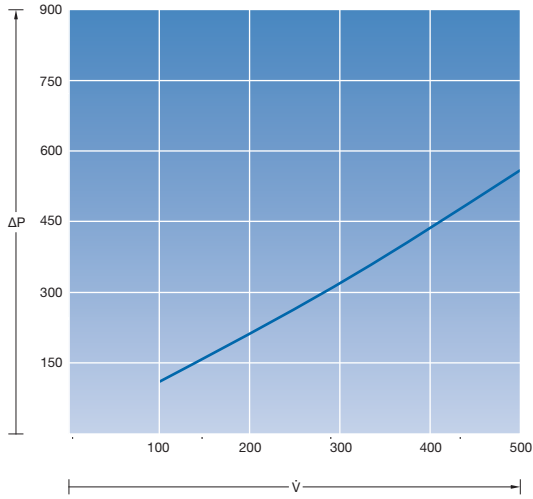
SK 3364.100, .500



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## Su direnci diyagramı

SK 3364.100, .500



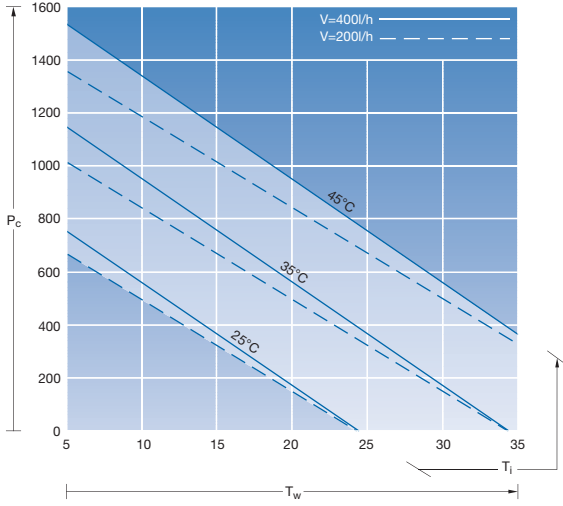
$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)

## Hava/su ısı deęiřtiriciler, duvara monte

Soğutma gücü 1000 W

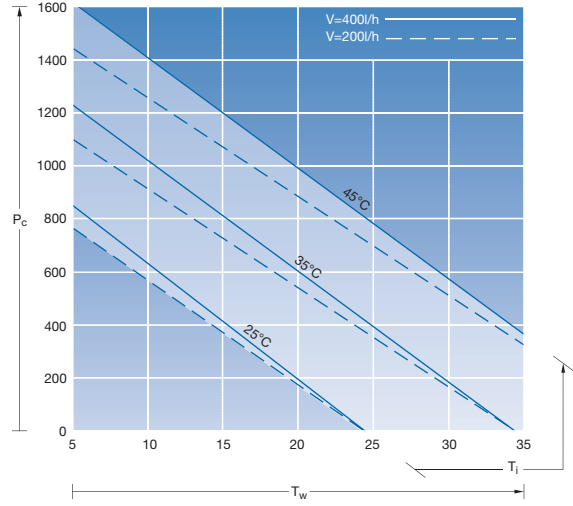
Suyun geçtięi bölümler: Paslanmaz çelik (1.4571)

**50 Hz**  
SK 3364.504



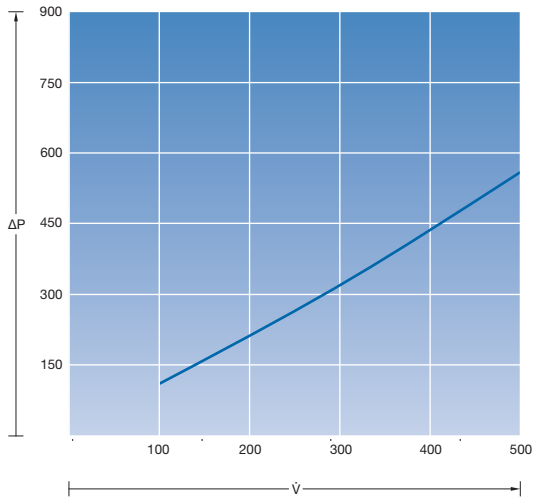
$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**60 Hz**  
SK 3364.504



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**Su direnci diyagramı**  
SK 3364.504



$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)

# Su ile soğutma sistemleri

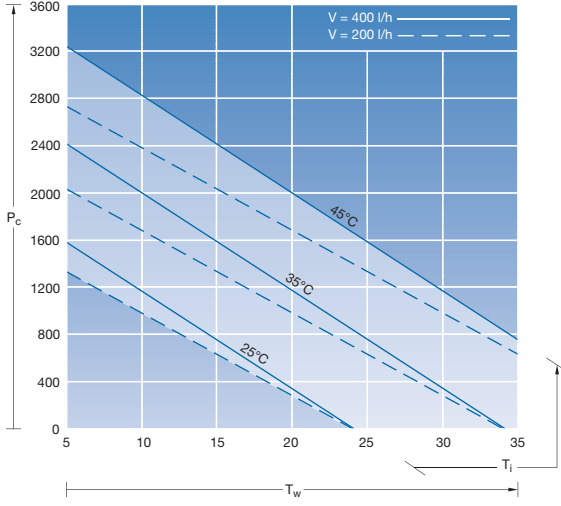
## Hava/su ısı deęiřtiriciler, duvara monte

Soğutma gücü 2000 W

Suyun geçtięi bölümler: Bakır/pirinç (Cu/CuZn)

50 Hz

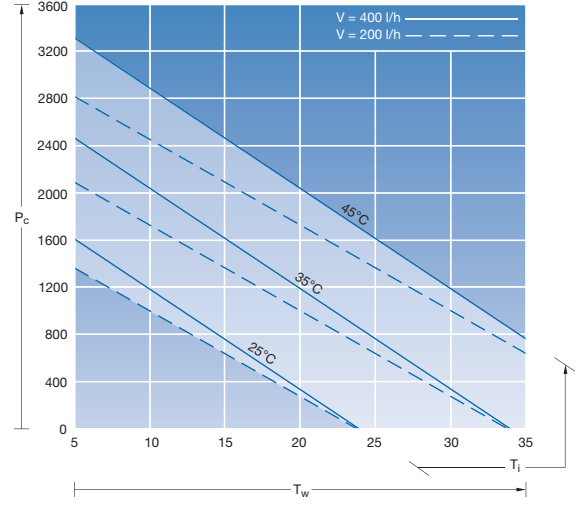
SK 3373.100, .500



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

60 Hz

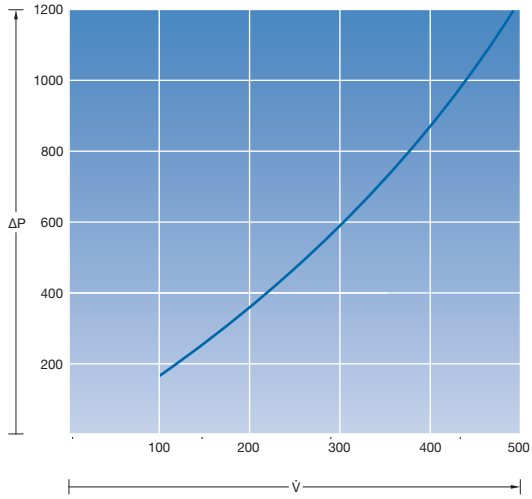
SK 3373.100, .500



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## Su direnci diyagramı

SK 3373.100, .500



$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)



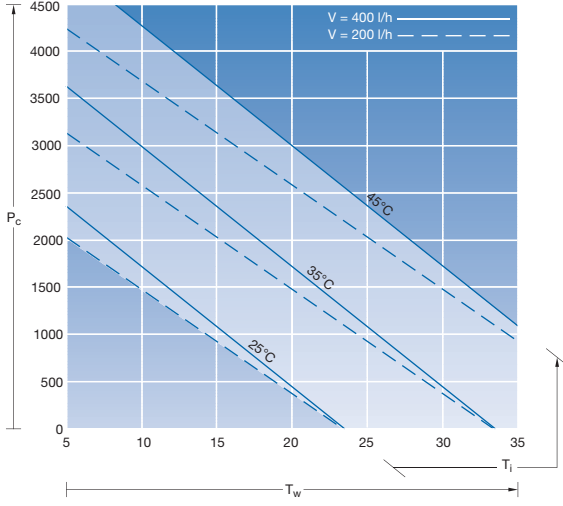
## Hava/su ısı deęiřtiriciler, duvara monte

Soğutma gücü 3000 W

Suyun geđtięi bölümler: Bakır/pirinç (Cu/CuZn)

**50 Hz**

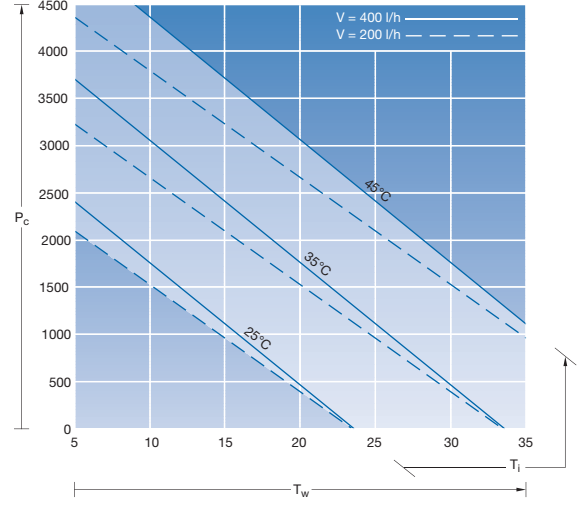
SK 3374.100, .500



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**60 Hz**

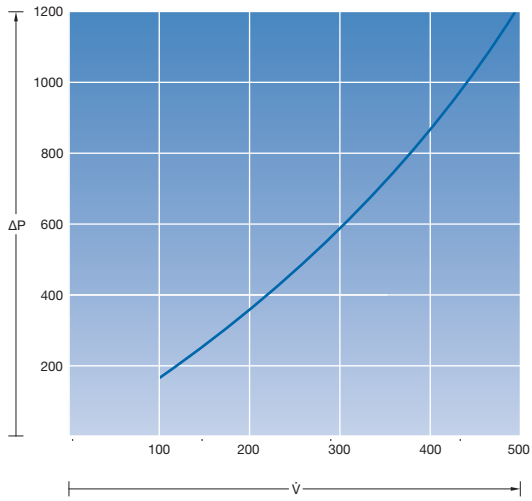
SK 3374.100, .500



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## Su direnci diyagramı

SK 3374.100, .500



$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)

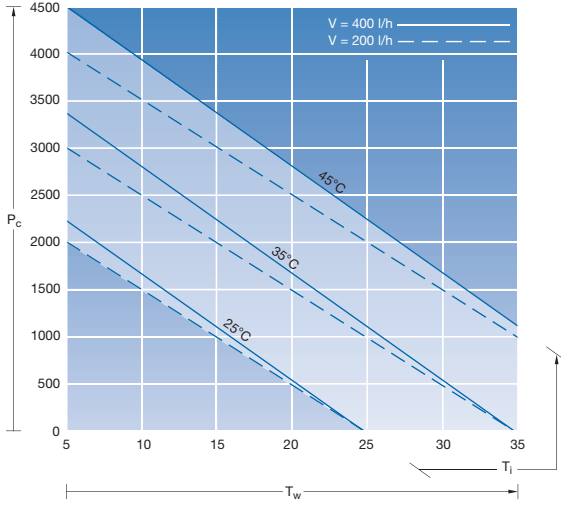
# Su ile soğutma sistemleri

## Hava/su ısı deęiřtiriciler, duvara monte

Soğutma gücü 2500 W

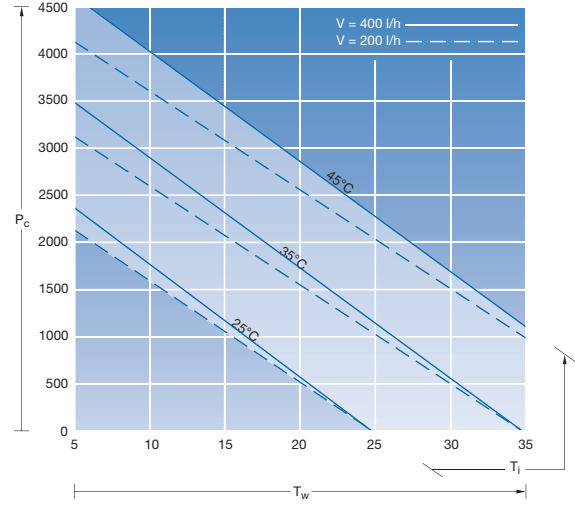
Suyun geçtięi bölümler: Paslanmaz çelik (1.4571)

50 Hz  
SK 3374.504



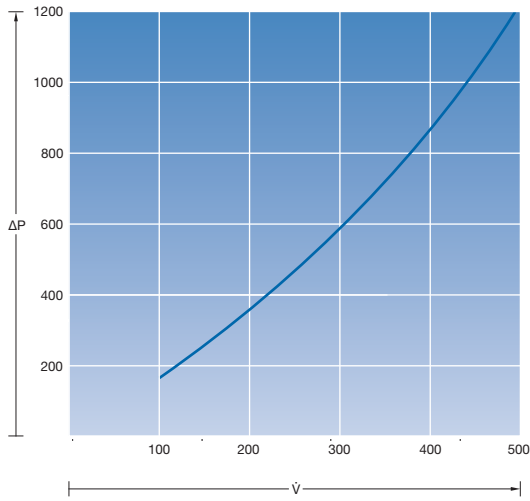
$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

60 Hz  
SK 3374.504



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

Su direnci diyagramı  
SK 3374.504



$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)

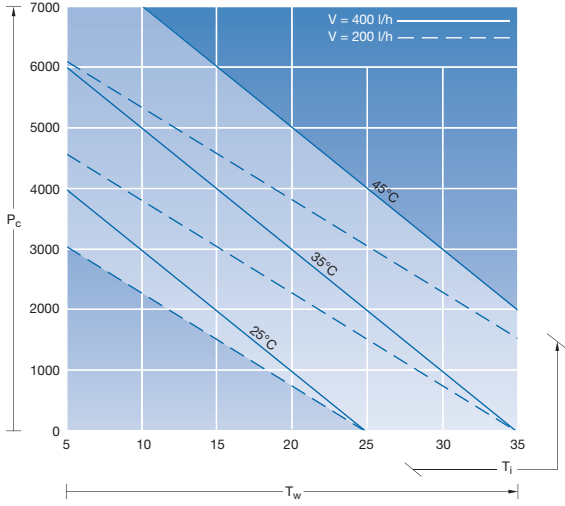
## Hava/su ısı deęiřtiriciler, duvara monte

Soğutma gücü 5000 W

Suyun geçtięi bölümler: Bakır/pirinç (Cu/CuZn)

**50 Hz**

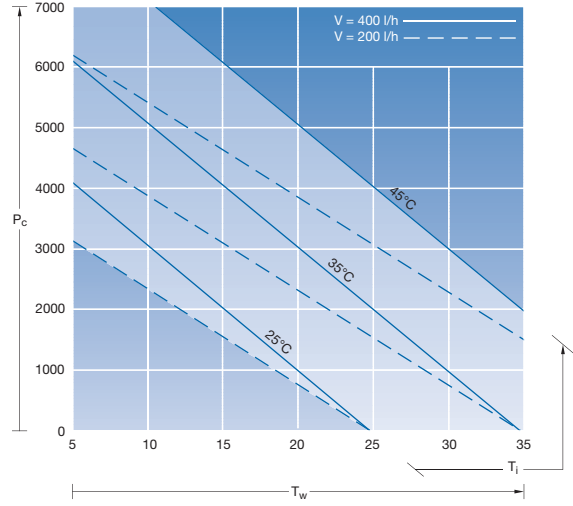
SK 3375.100, .500



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**60 Hz**

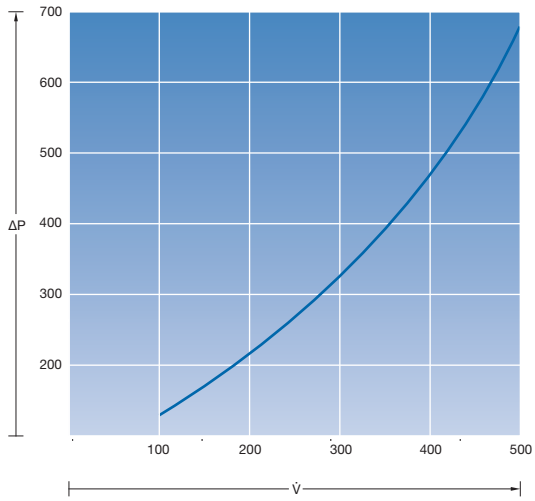
SK 3375.100, .500



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## Su direnci diyagramı

SK 3375.100, .500



$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)

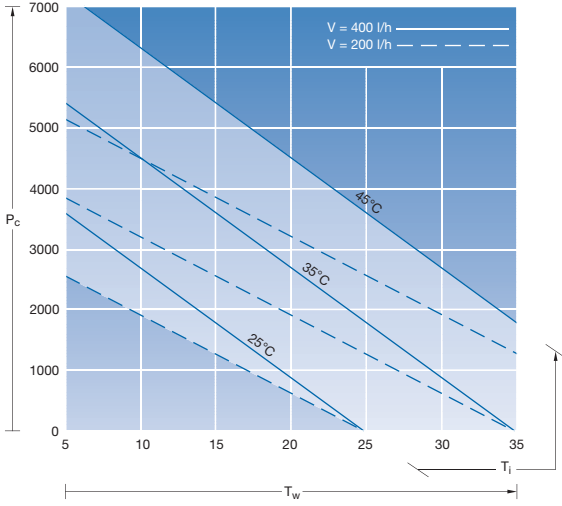
# Su ile soğutma sistemleri

## Hava/su ısı deęiřtiriciler, duvara monte

Soğutma gücü 4000 W

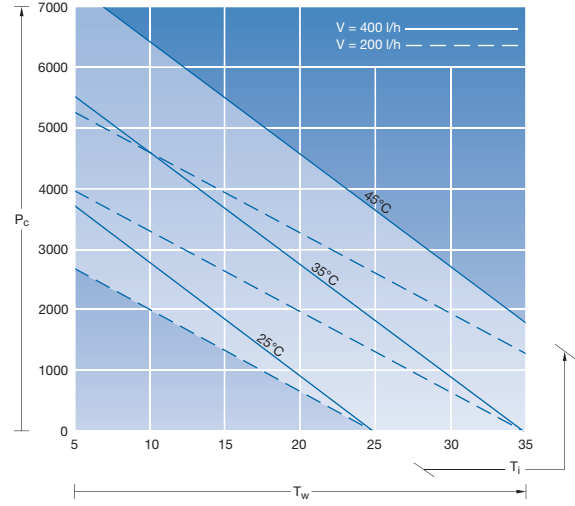
Suyun geçtięi bölümler: Paslanmaz çelik (1.4571)

50 Hz  
SK 3375.504



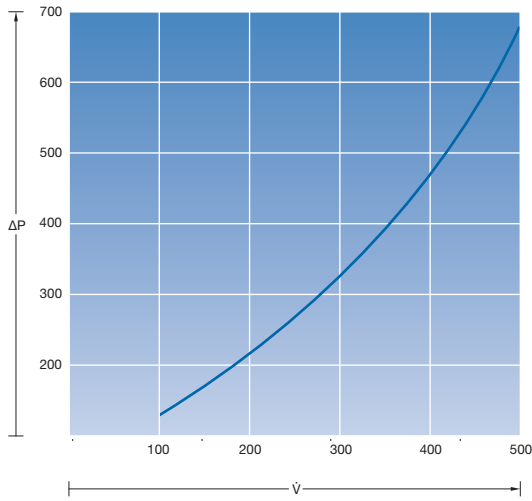
$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

60 Hz  
SK 3375.504



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

Su direnci diyagramı  
SK 3375.504



$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)

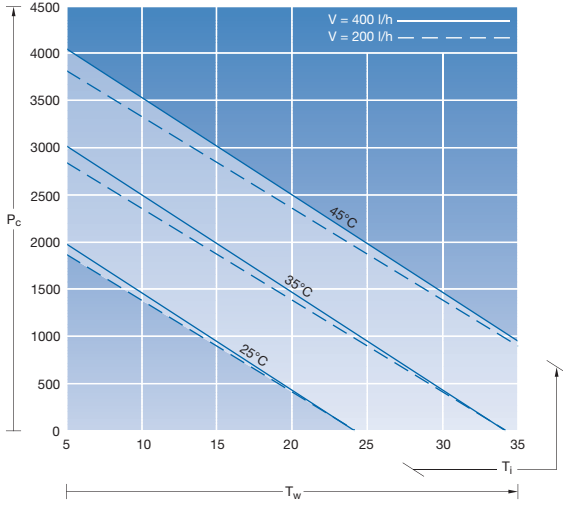
## Hava/su ısı deęiřtiriciler, tavana monte

Soğutma gücü 2500 W

Suyun geçtięi bölümler: Bakır/pirinç (Cu/CuZn)

**50 Hz**

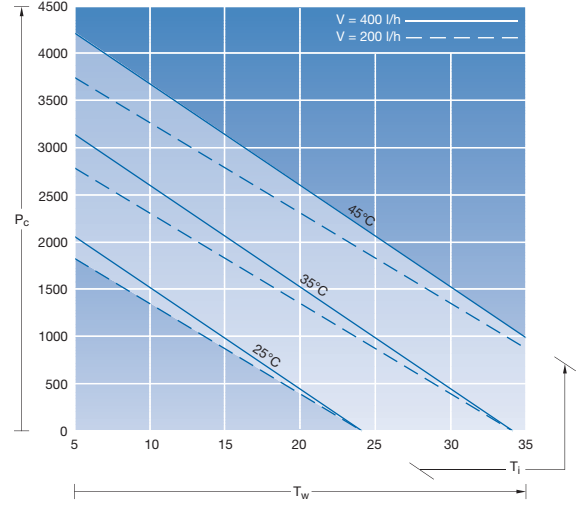
SK 3209.100, .500



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**60 Hz**

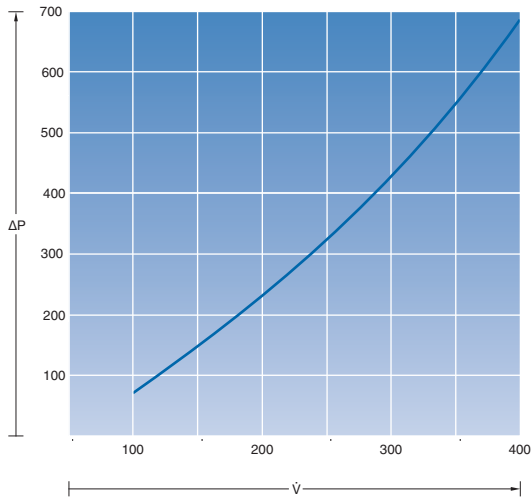
SK 3209.100, .500



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## Su direnci diyagramı

SK 3209.100, .500



$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)

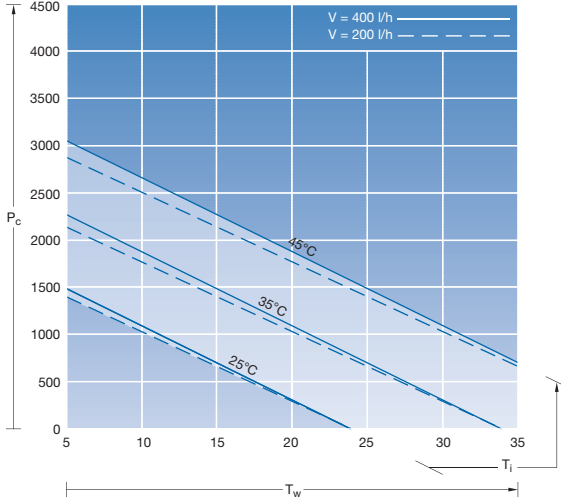
# Su ile soğutma sistemleri

## Hava/su ısı deęiřtiriciler, tavana monte

Soğutma gücü 1875 W

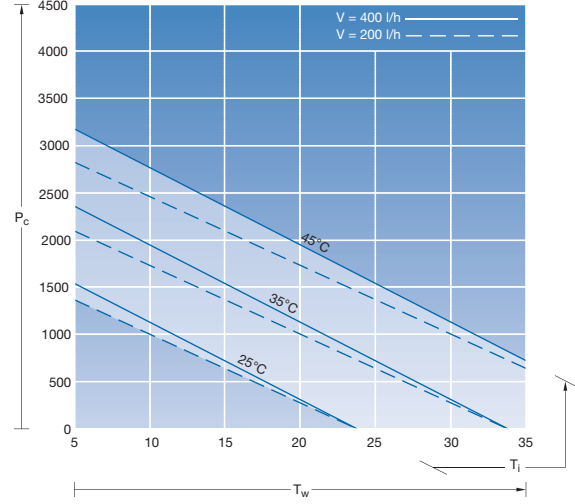
Suyun geçtięi bölümler: Paslanmaz çelik (1.4571)

**50 Hz**  
SK 3209.504



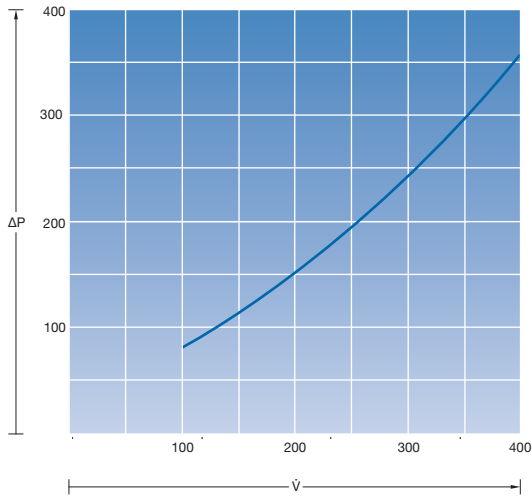
$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**60 Hz**  
SK 3209.504



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**Su direnci diyagramı**  
SK 3209.504



$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)

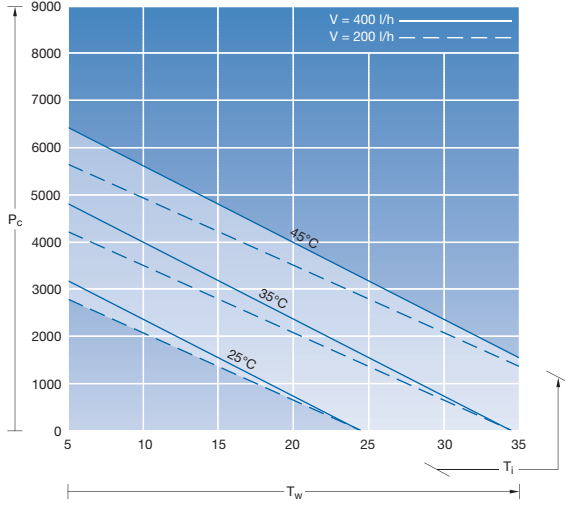
## Hava/su ısı deęiřtiriciler, tavana monte

Soğutma gücü 4000 W

Suyun geçtięi bölümler: Bakır/pirinç (Cu/CuZn)

**50 Hz**

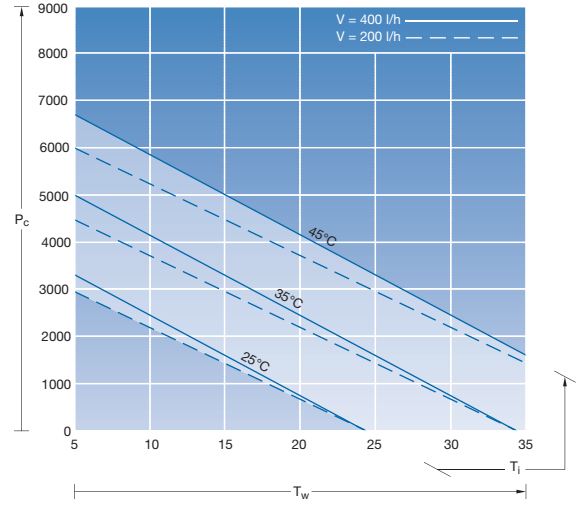
SK 3210.100, .500



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

**60 Hz**

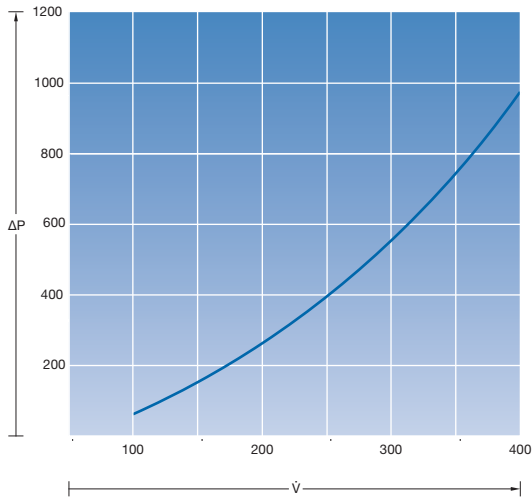
SK 3210.100, .500



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## Su direnci diyagramı

SK 3210.100, .500



$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)

# Su ile soğutma sistemleri

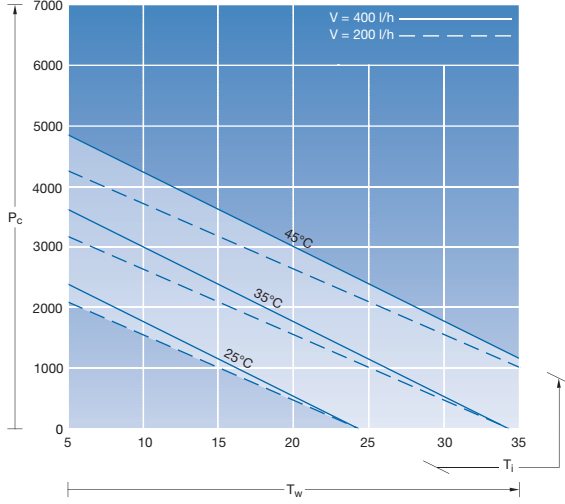
## Hava/su ısı deęiřtiriciler, tavana monte

Soğutma gücü 3000 W

Suyun geçtięi bölümler: Paslanmaz çelik (1.4571)

50 Hz

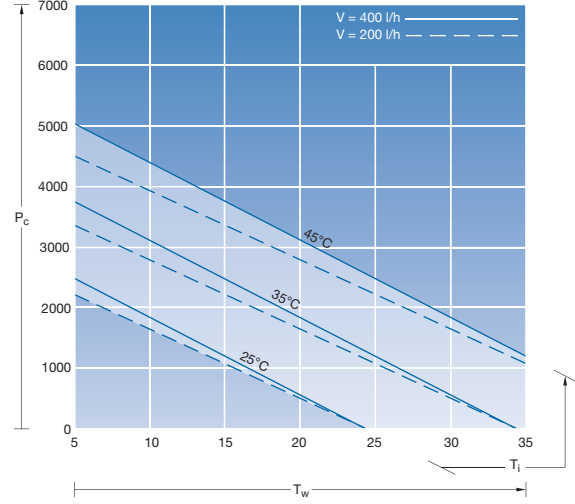
SK 3210.504



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

60 Hz

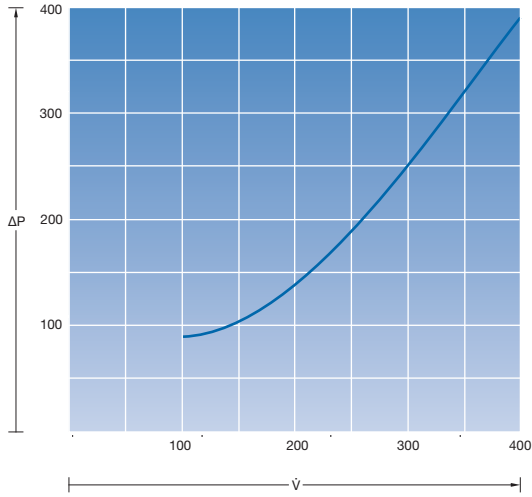
SK 3210.504



$T_w$  = Su giriş sıcaklığı (°C)  
 $P_c$  = Toplam soğutma gücü (W)  
 $T_i$  = İç pano sıcaklığı (°C)

## Su direnci diyagramı

SK 3210.504



$\dot{V}$  = Hacimsel akış (l/h)  
 $\Delta P$  = Su direnci (mbar)

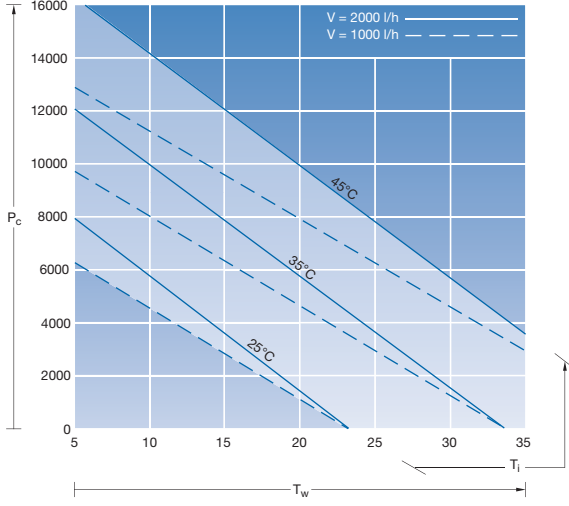


## LCP – Sıvılı soğutma paketi

Soğutma gücü 10 kW, LCP endüstriyel rack  
Suyun geçtiği bölümler: Bakır/pirinç (Cu/CuZn)

50/60 Hz

SK 3378.100, .180



$T_w$  = Su giriş sıcaklığı (°C)

$P_c$  = Toplam soğutma gücü (W)

$T_i$  = İç pano sıcaklığı (°C)

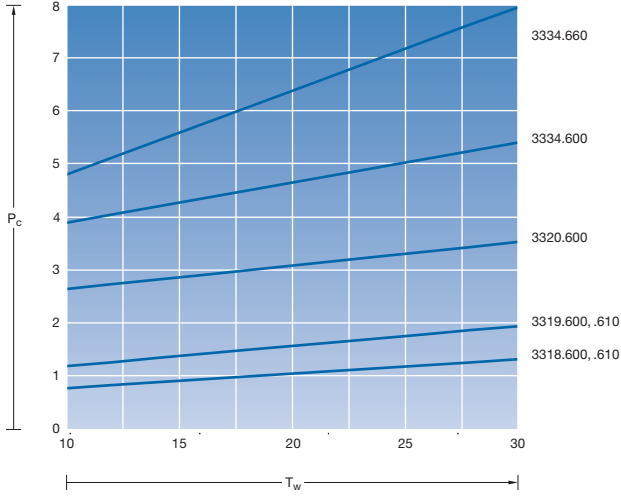
# Su ile soğutma sistemleri

## TopTherm Çiller

Soğutma gücü 1 – 6 kW

50 Hz için  $T_u = 32^\circ\text{C}$  (ortam sıcaklığı)

SK 3318.600, .610, 3319.600, .610, 3320.600, 3334.600, .660



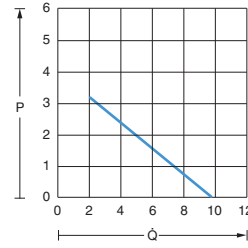
$T_w$  = Su giriş sıcaklığı (°C)

$P_c$  = Toplam soğutma gücü (kW)

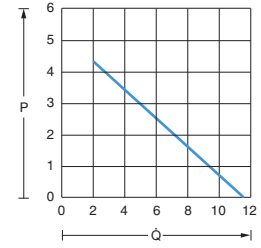
Pompa karakteristikleri

SK 3318.600/SK 3318.610/SK 3319.600/SK 3319.610

50 Hz

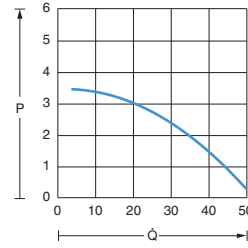


60 Hz

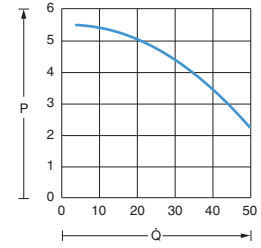


SK 3320.600/SK 3334.600/SK 3334.660

50 Hz



60 Hz



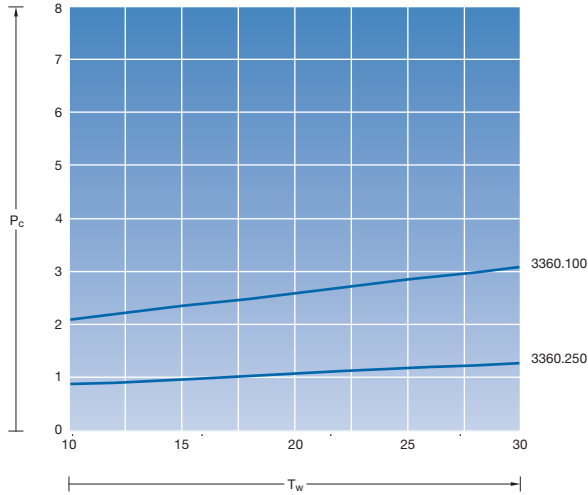
P = Harici statik basınç [bar]

Q = Debi Q [l/dk]

Soğutma gücü 1 – 2,5 kW, duvara monte

50 Hz için  $T_u = 32^\circ\text{C}$  (ortam sıcaklığı)

SK 3360.100, .250



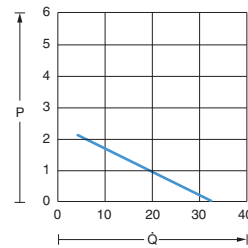
$T_w$  = Su giriş sıcaklığı (°C)

$P_c$  = Toplam soğutma gücü (kW)

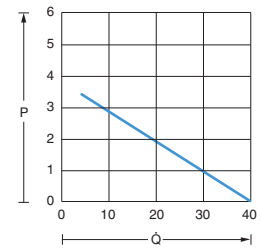
Pompa karakteristikleri

SK 3360.100/SK 3360.250

50 Hz



60 Hz



P = Harici statik basınç [bar]

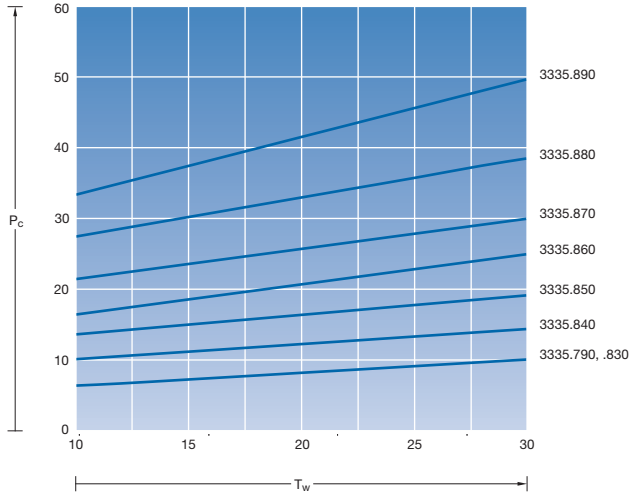
Q = Debi Q [l/dk]

## TopTherm Çiller

Soğutma gücü 8 – 40 kW

50 Hz için  $T_u = 32^\circ\text{C}$  (ortam sıcaklığı)

SK 3335.790, .830, .840, .850, .860, .870, .880, .890



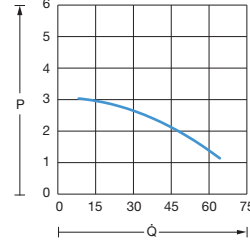
$T_w$  = Su giriş sıcaklığı ( $^\circ\text{C}$ )

$P_c$  = Toplam soğutma gücü (kW)

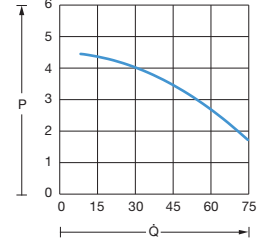
Pompa karakteristikleri

SK 3335.850

50 Hz

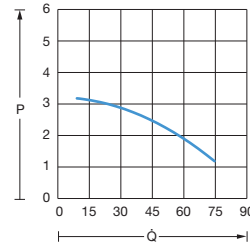


60 Hz

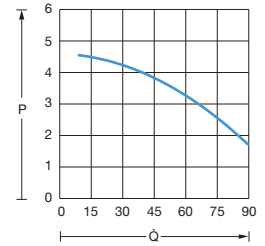


SK 3335.860

50 Hz

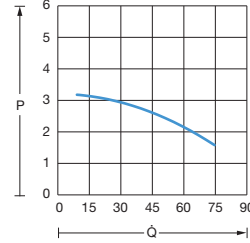


60 Hz

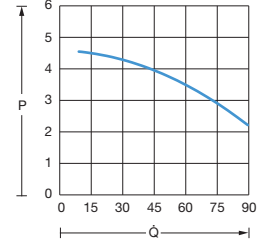


SK 3335.870

50 Hz

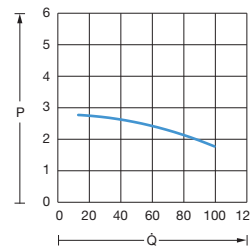


60 Hz

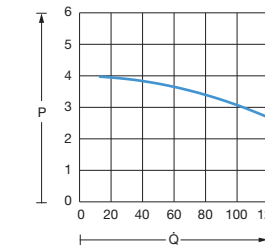


SK 3335.880

50 Hz

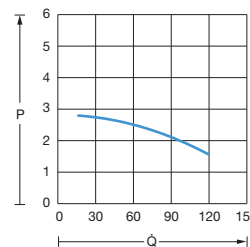


60 Hz

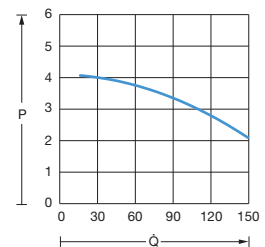


SK 3335.890

50 Hz



60 Hz

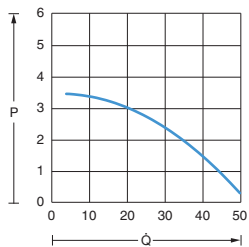


P = Harici statik basınç [bar]  
Q-dot = Debi Q [l/dk]

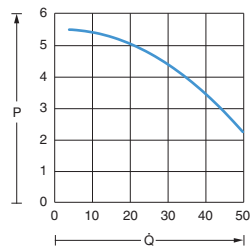
Pompa karakteristikleri

SK 3335.790/SK 3335.830

50 Hz

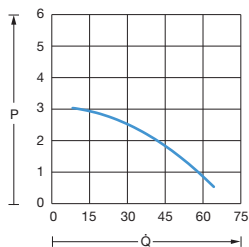


60 Hz

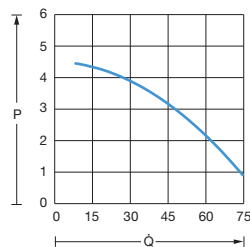


SK 3335.840

50 Hz



60 Hz

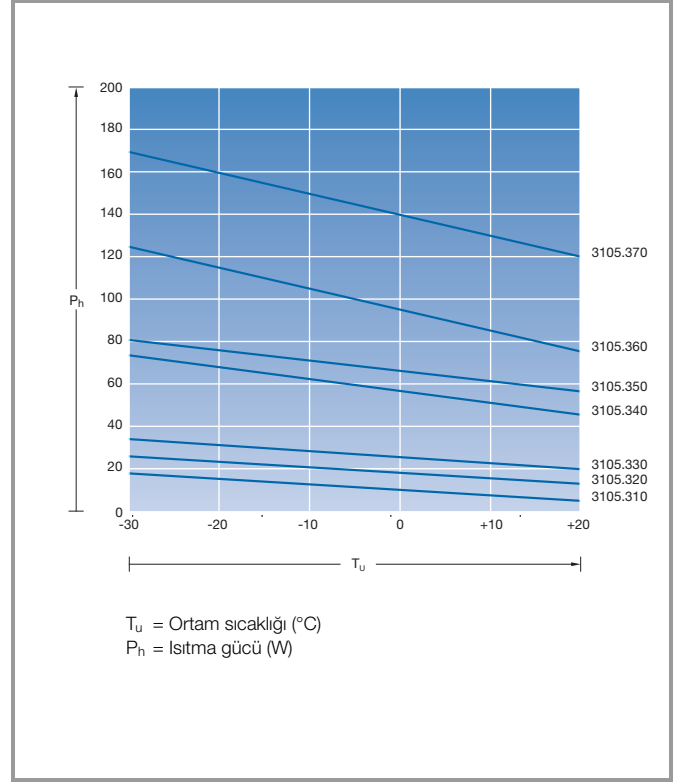
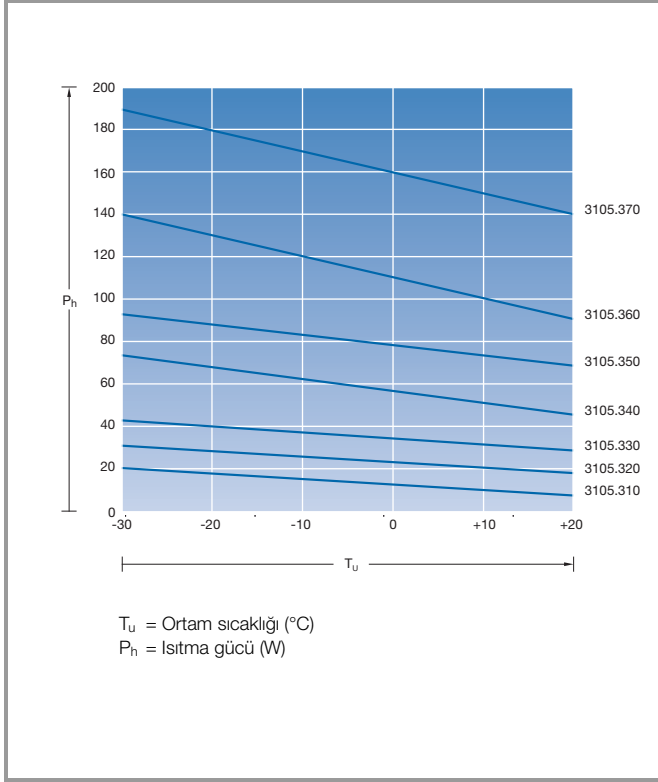


# Pano ısıtıcıları

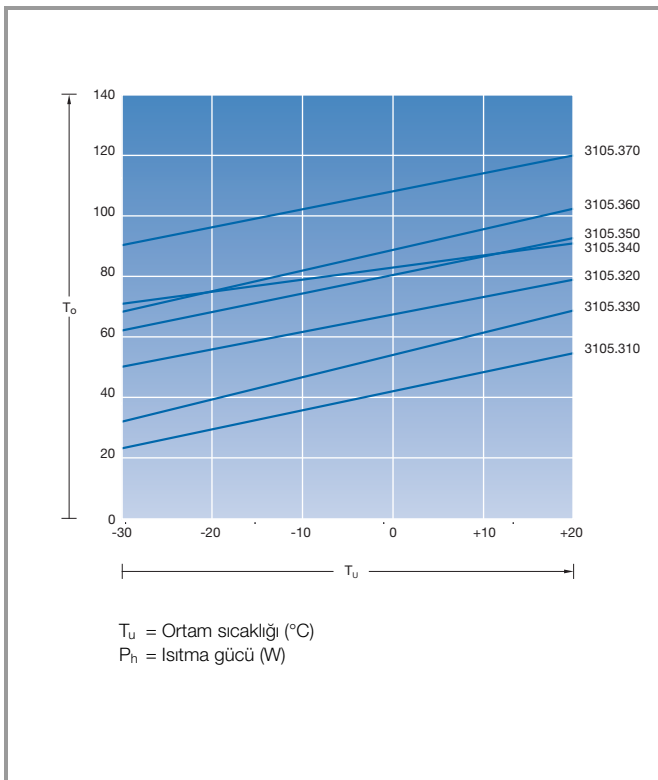
## Fansız kumanda panosu ısıtıcıları

Isıtma gücü 230 V

Isıtma gücü 110 V



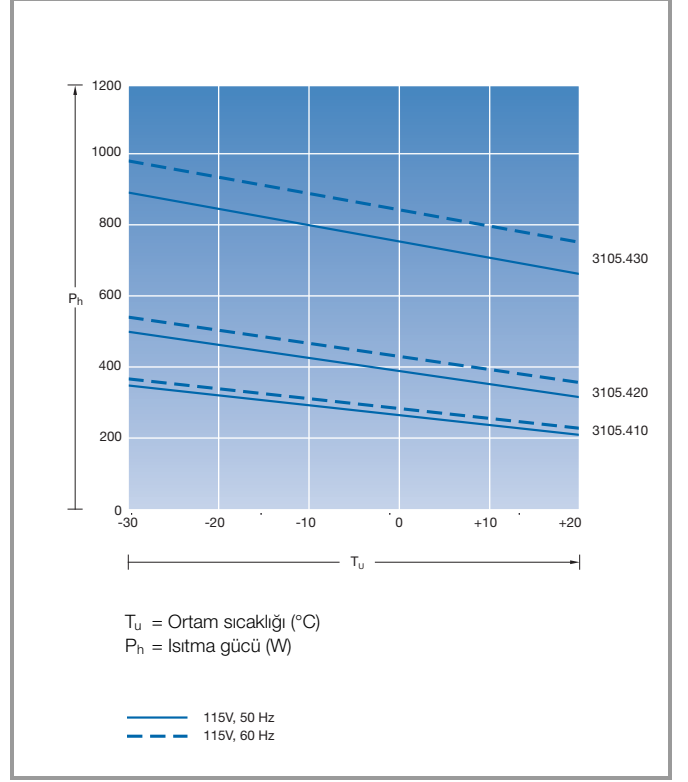
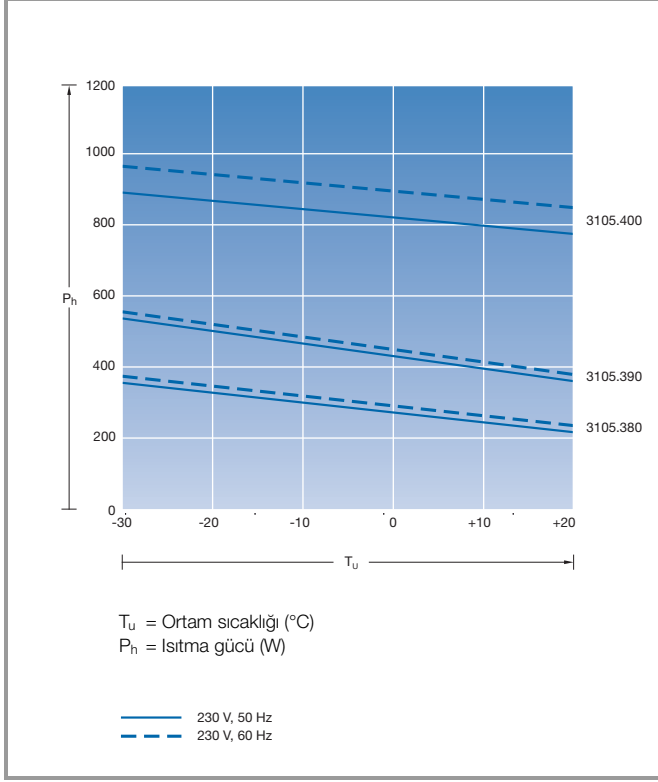
## Maksimum yüzey sıcaklığı



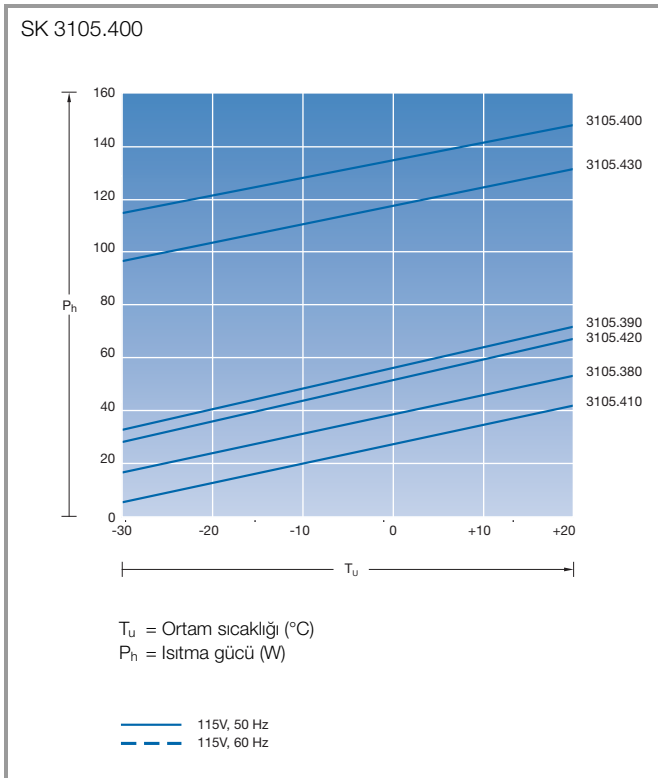
## Fanlı Kumanda Panosu Isıtıcıları

Isıtma gücü 230 V, 50/60 Hz

Isıtma gücü 115 V, 50/60 Hz



## Maksimum yüzey sıcaklığı







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