Raschig Super-Pak®

Product Bulletin 501

A new packing structure with innovative advantages

Superior performance by design™

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Raschig Super-Pak®

The new Raschig Super-Pak® is a novel development in mass transfer technology because of its optimized surface design. It enables, to an extent never known before, great separation efficiency and high loading capacity while keeping the pressure drop extremely small.

Raschig Super-Pak® structured packing is fundamentally different to the standard and high capacity corrugated sheet metal structured packings existing since years on the market. A common feature of these standard and high capacity structured packings is that both have discreet crimped channels that force vapourliquid traffic along preferred flow paths. Additionally the vapour-liquid traffic is forced into sharp directional changes at the packing layer interface when packing elements are vertically stacked. The net result is that the enforced vapour-liquid flow patterns within the ‘closed’ structure of a common packing element do not necessarily utilize all of the available surface area for mass transfer and impose restrictive forces that reduce capacity and increase pressure drop.

Raschig adopted a different approach in developing Raschig Super-Pak®. It is a more open structure such that vapour-liquid traffic can flow freely within a packing element and no sharp directional changes are existing at the layer interface.

The rows of sinusoidal waves within vertical packing sheets are surface enhanced to encourage greater turbulent radial spread of thin liquid film flows on the front and back of the waves on each sheet within an element.

The open structure resulted in excellent hydraulic and mass transfer efficiency characteristics.

The following figures are describing the advantages.

Structured Packings
Process Data

Raschig Super-Pak®

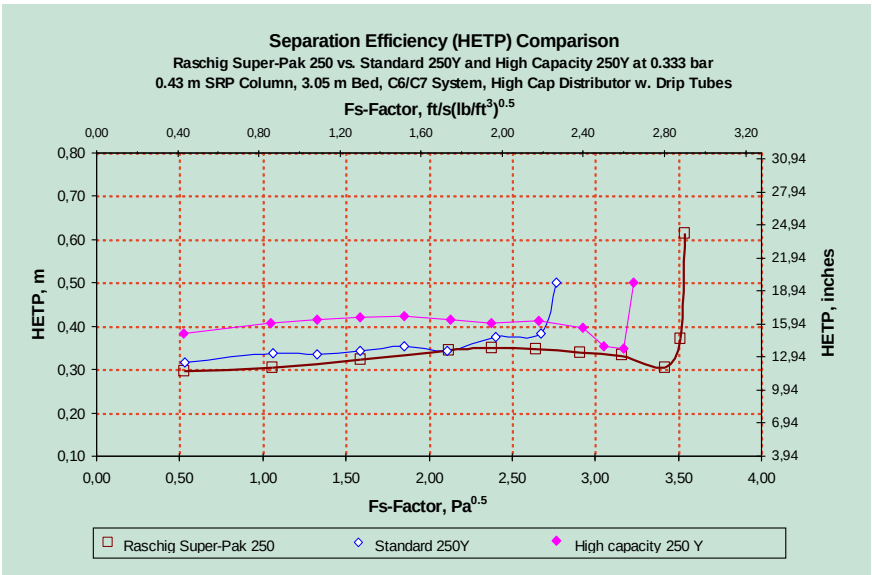
Size	Style		Surface m^2/m^3	Free Vol. %
150		Y	150	98
200	X	Y	200	98
250	X	Y	250	98
300		Y	300	98
350	X	Y	350	97
400		Y	400	97
500		Y	500	96
750		Y	750	96

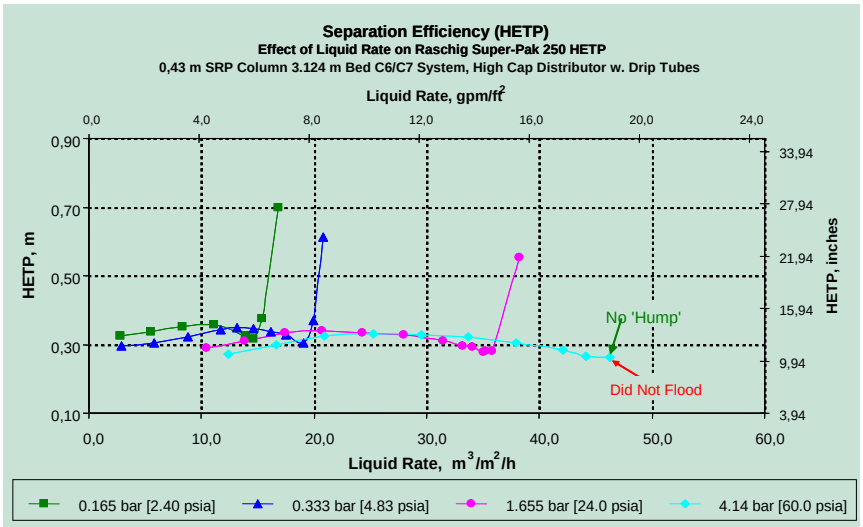
Raschig-Pak

Size	Style			Surface m^2/m^3	Free Vol. %
125	X	Y	-	125	98
200	X	Y	-	200	98
250	X	Y	HC	250	98
300	X	Y	-	300	98
350	X	Y	HC	350	97
500 Gauge	X	-	-	500	95

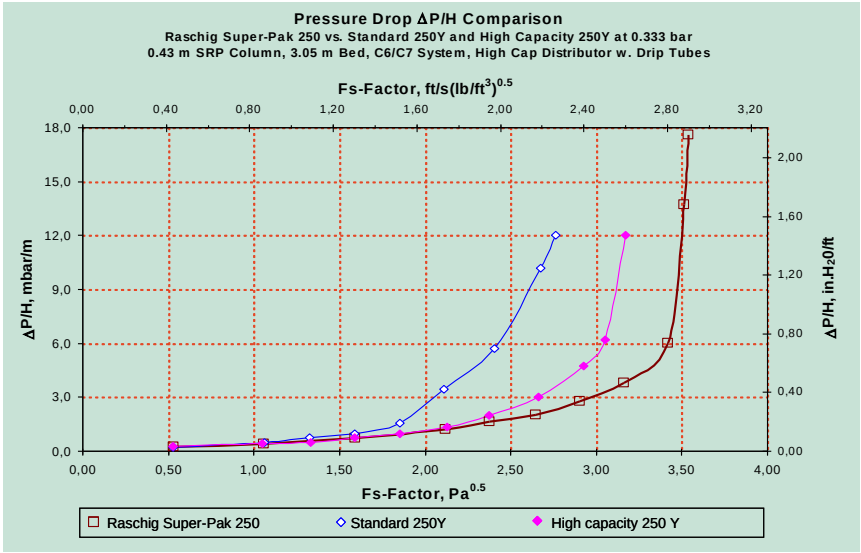
HC = High capacity

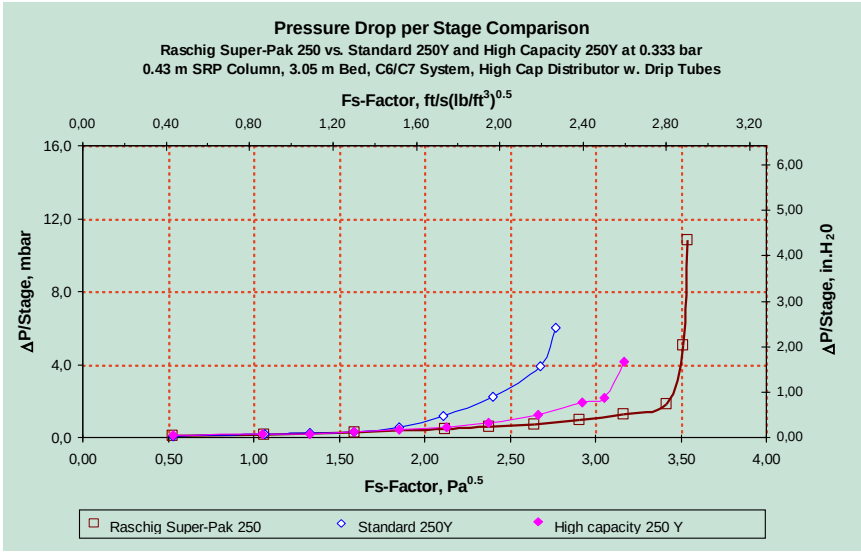
Raschig Super-Pak® 250Y



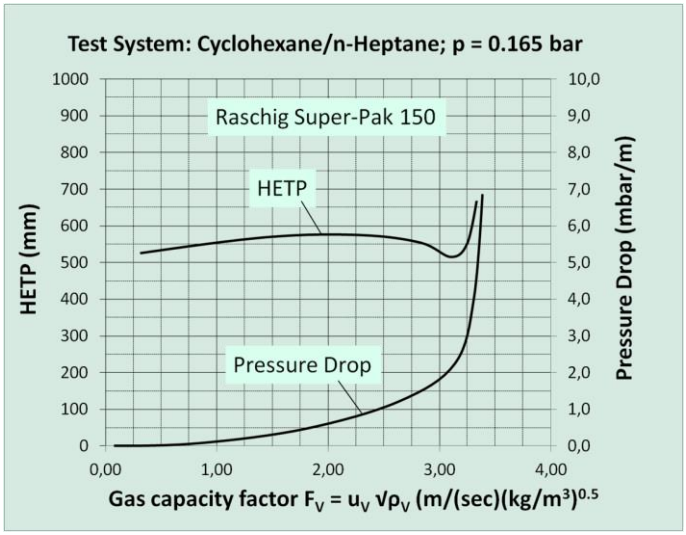


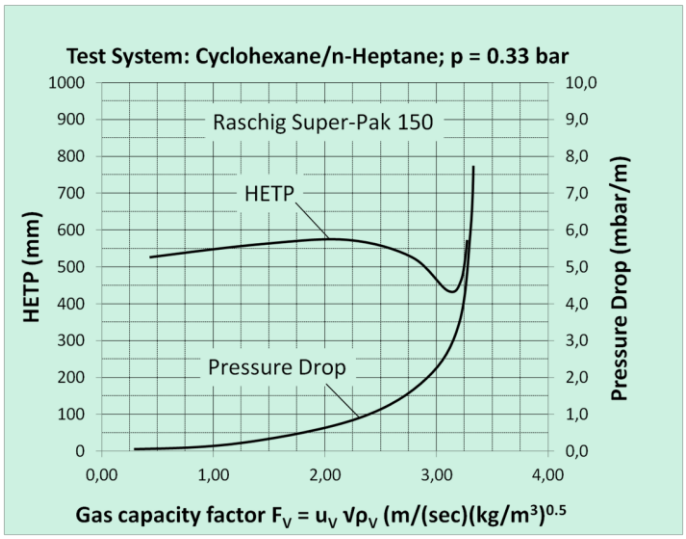
Raschig Super-Pak® 250Y





Raschig Super-Pak® 150Y





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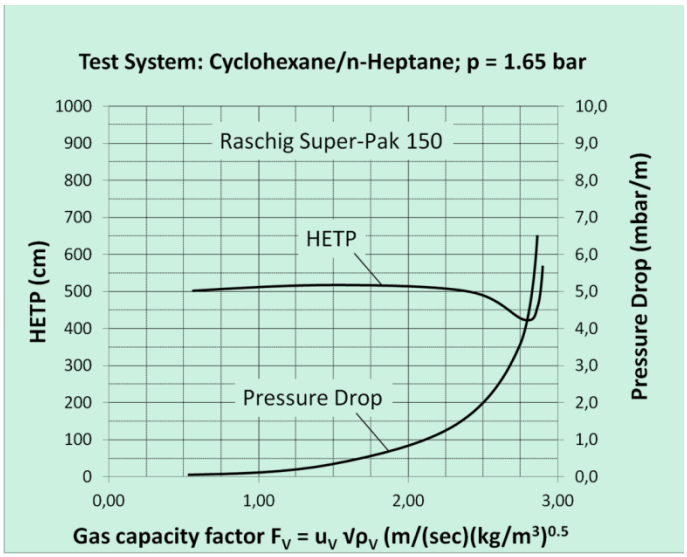

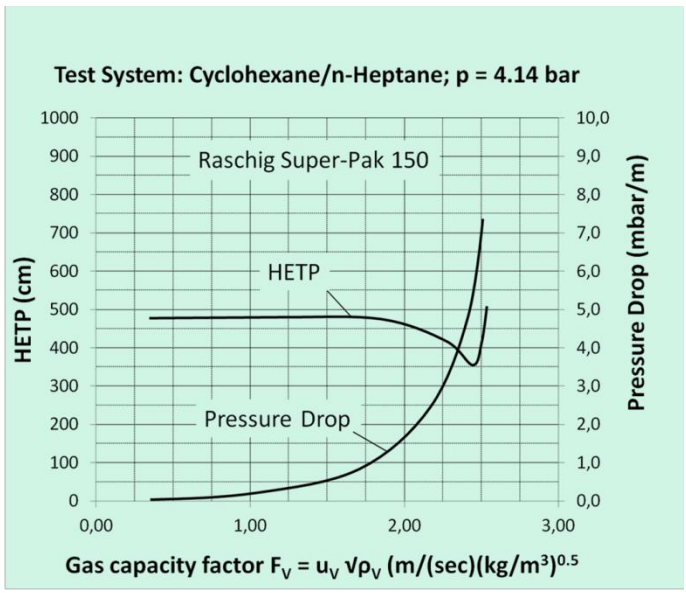

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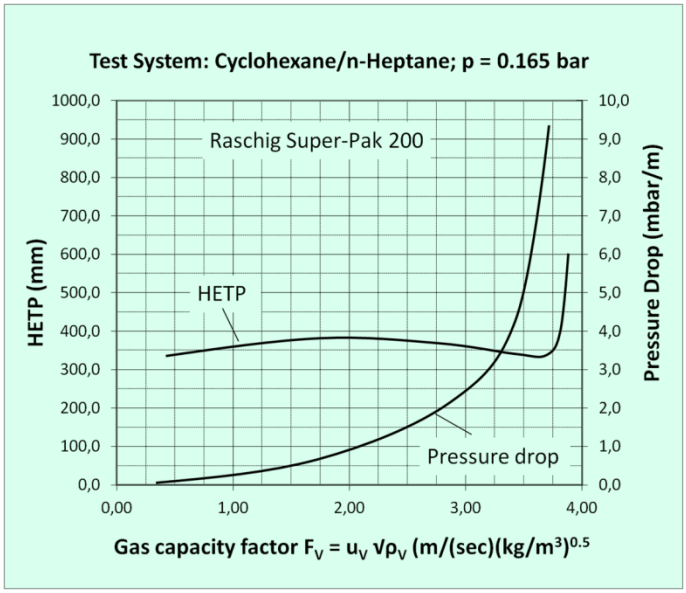

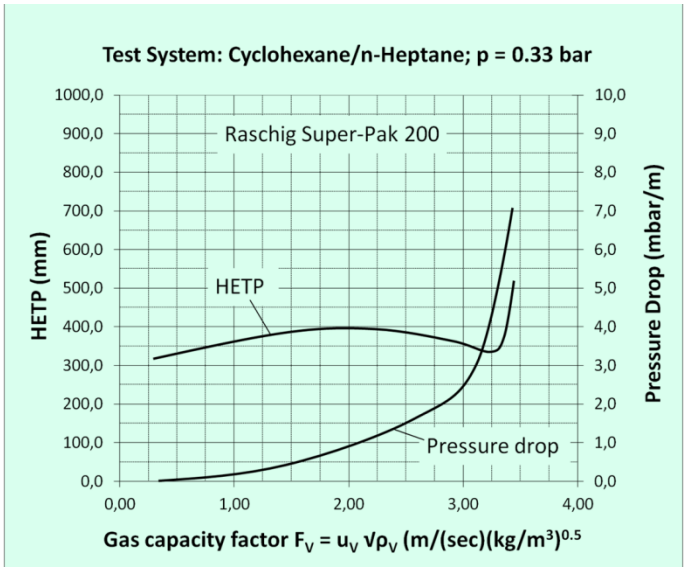

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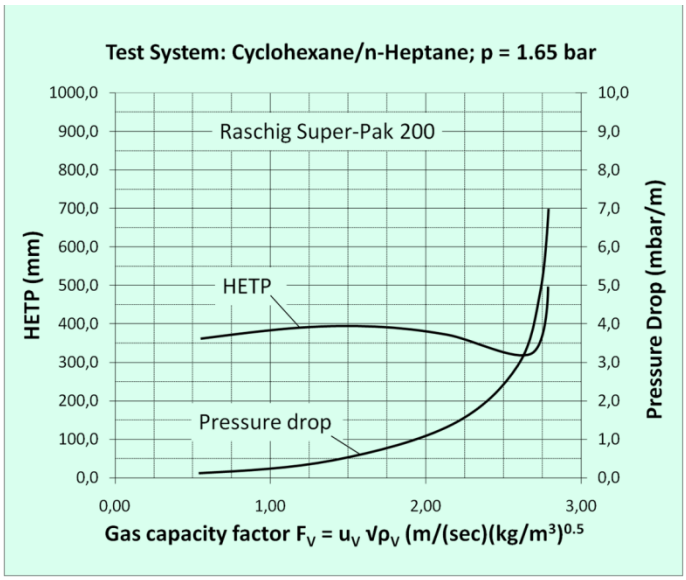

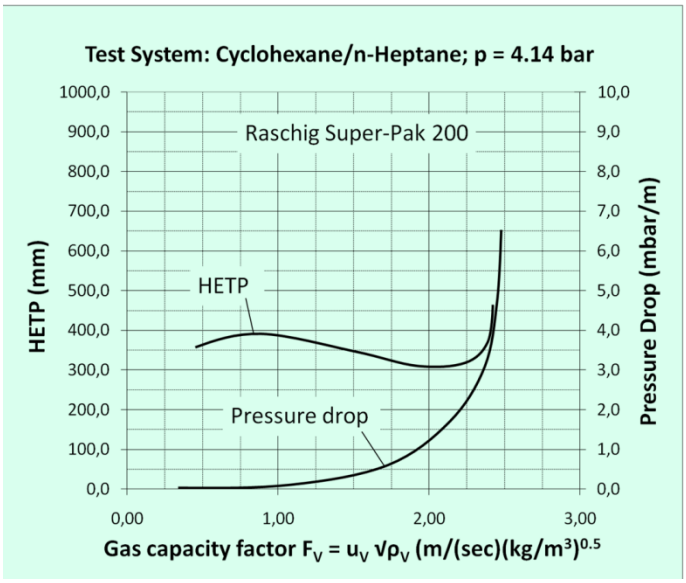

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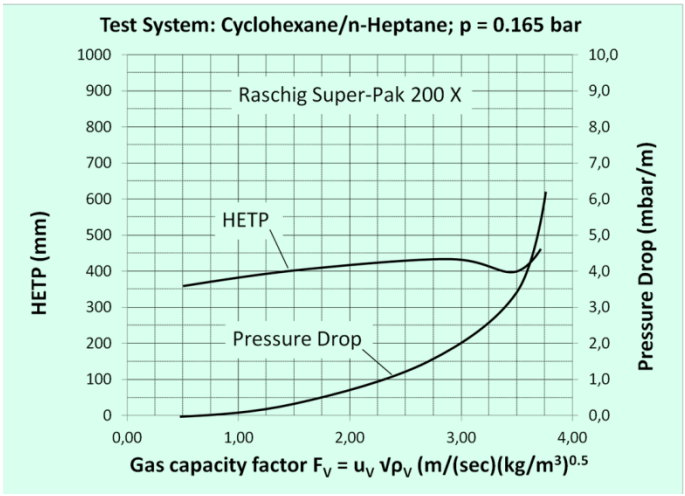

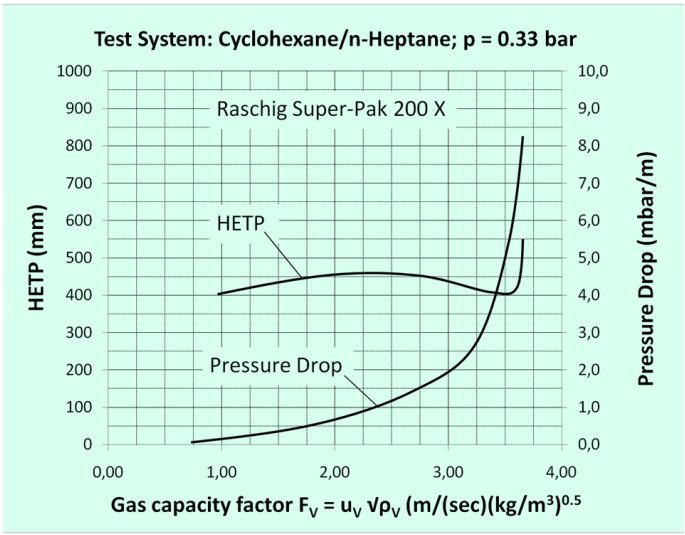

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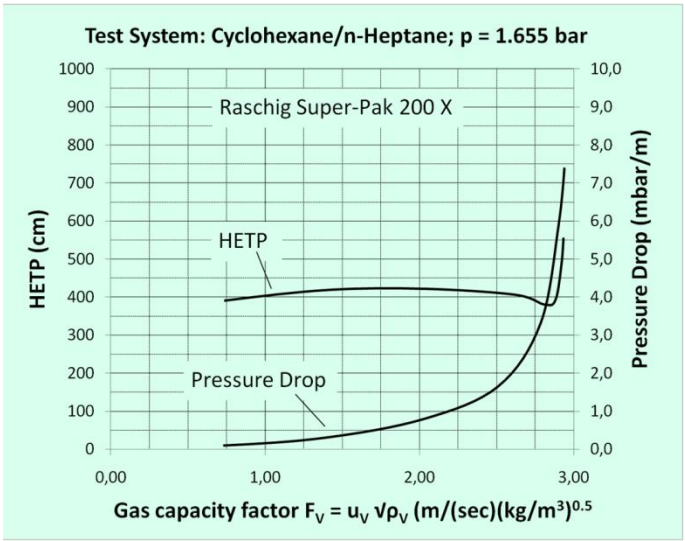

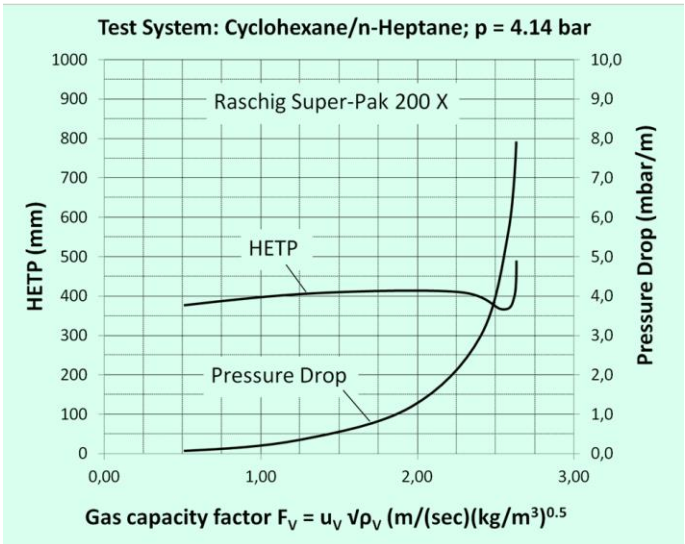

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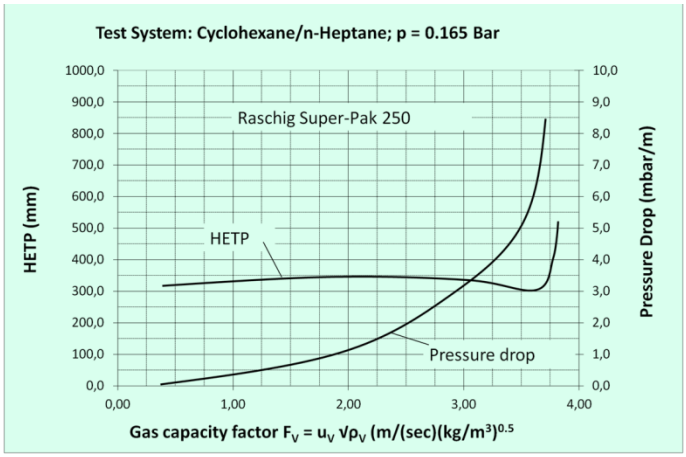

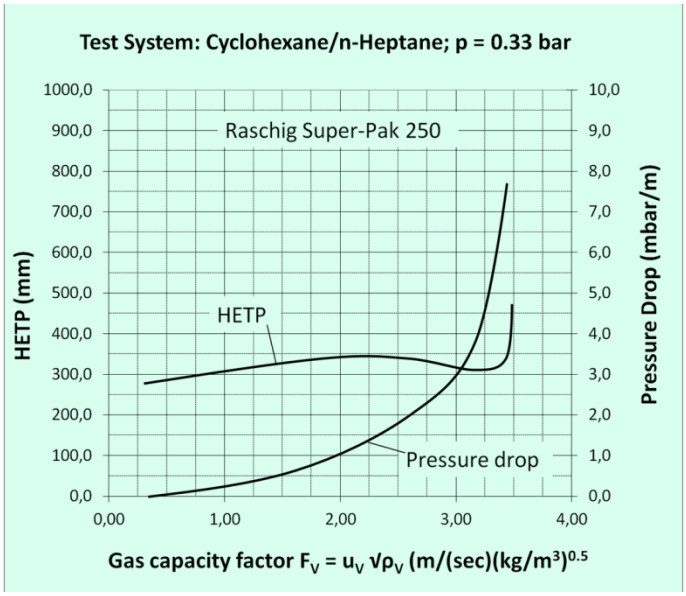

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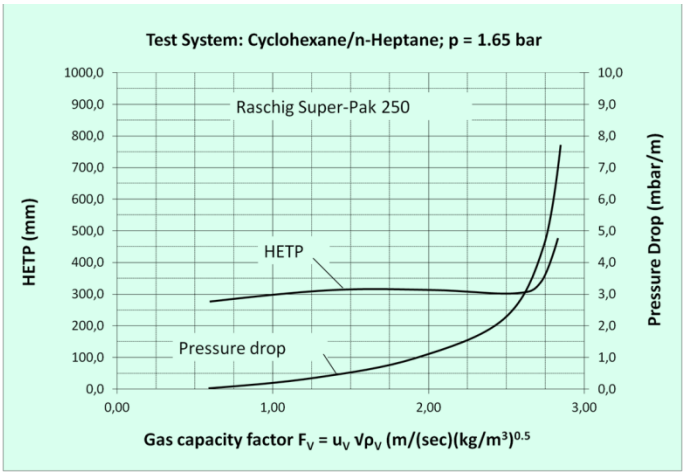

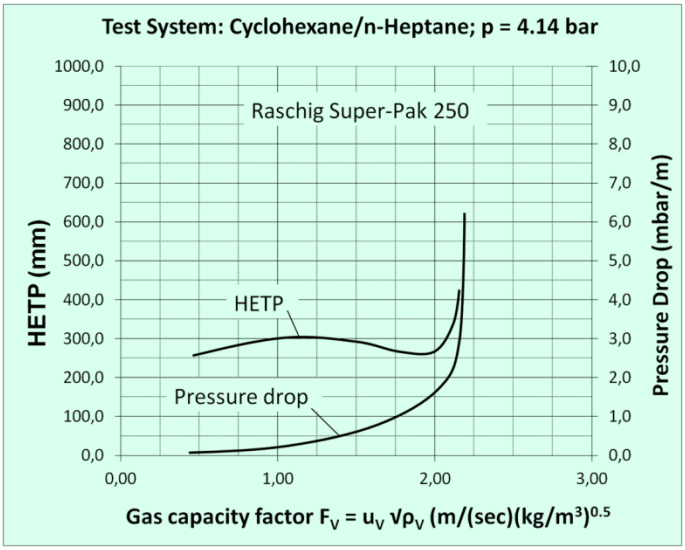

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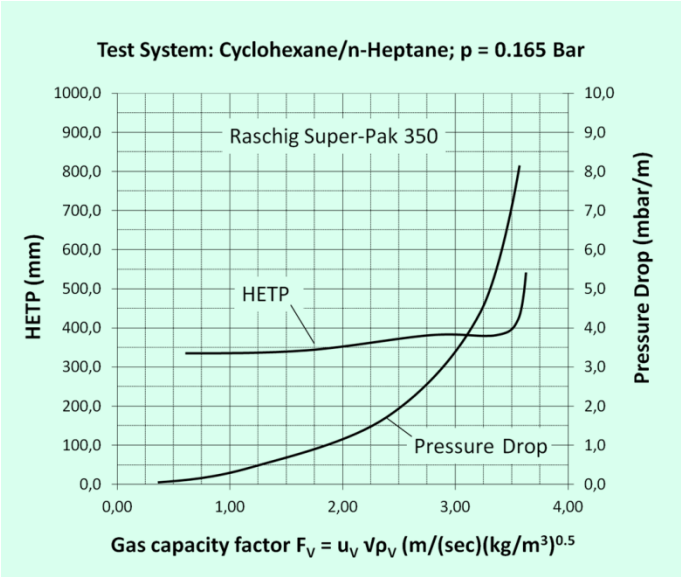

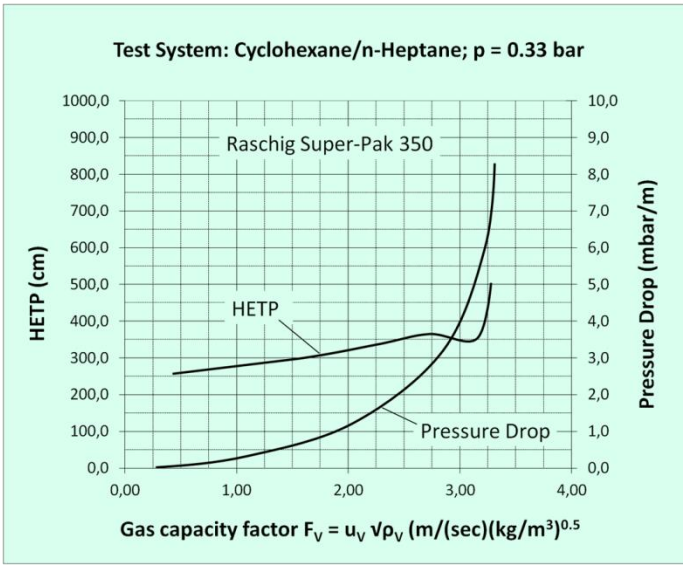

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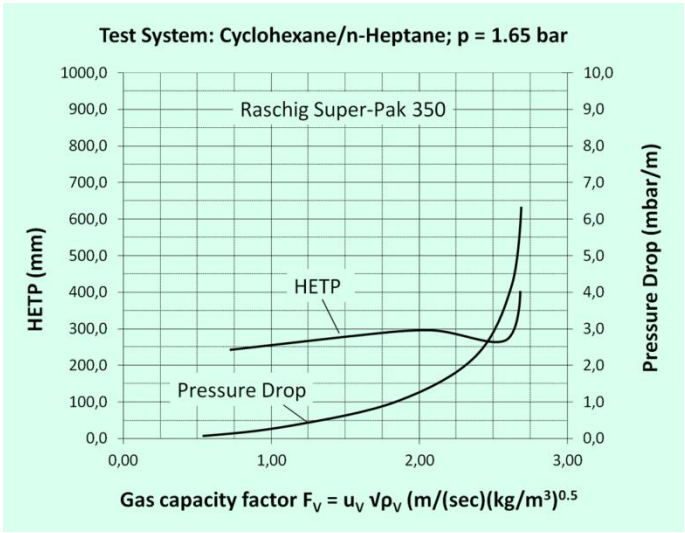
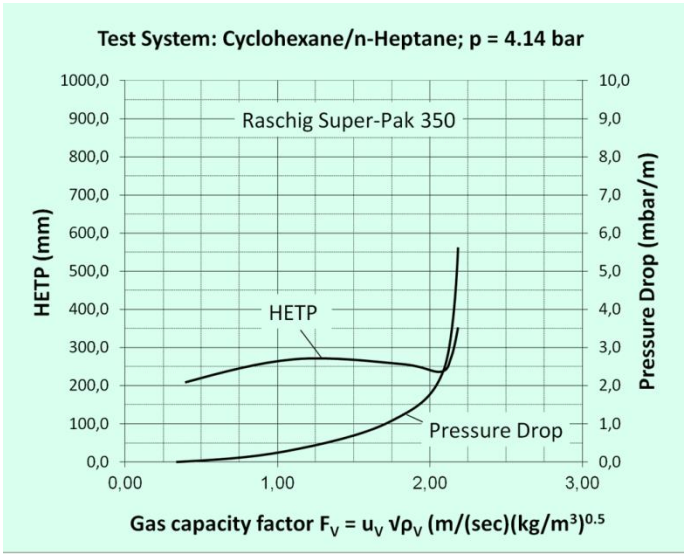
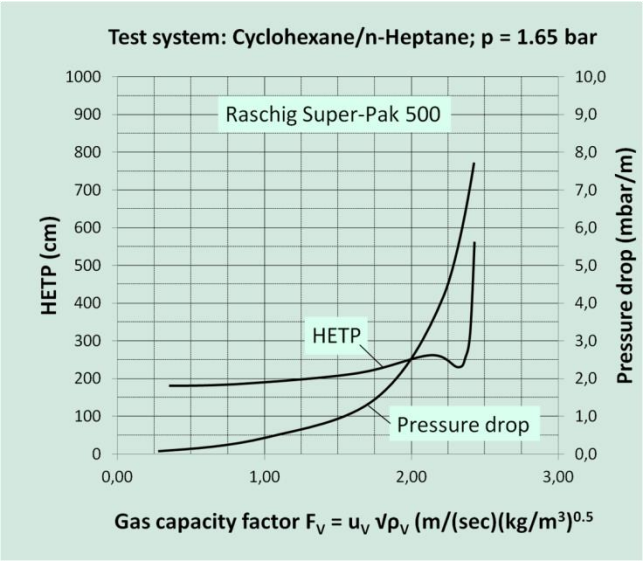
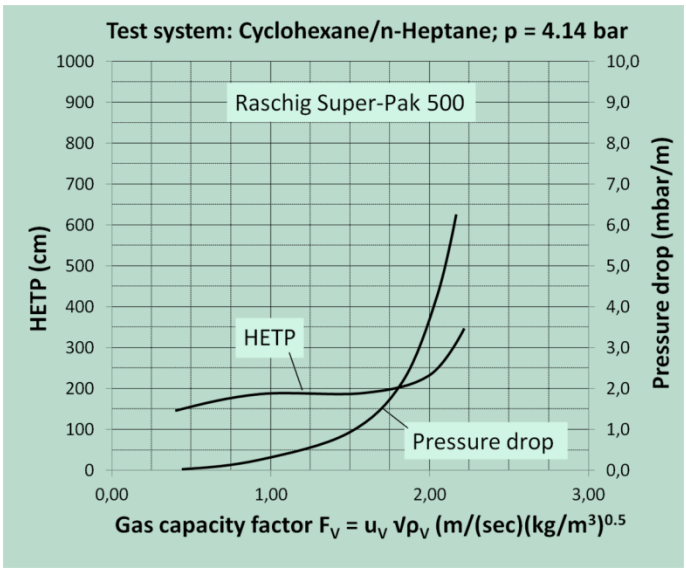




Raschig Super-Pak® 500Y





Nomenclature

Latin symbols

a	m^2/m^3	specific surface area of packing
a_{Ph}	m^2/m^3	specific effective surface area of packing
C_S	m/s	$= u_V (\rho_V /(\rho_L - \rho_V))^{1/2}$ capacity factor
D_S, d_S	m	column diameter
F_V, F_G	m/s $(kg/m^3)^{1/2}$	$= u_V (\rho_V)^{1/2}$ gas capacity factor
F	-	Packing factor
g	m/s^2	$= 9.81\ m/s^2$, acceleration
H	m	section height
HETP	m	height equivalent to a theoretical plate
HTU_{OV}	m	overall gas side height of a transfer unit
$k_G a_{Ph}$	1/s	volumetric mass transfer coefficient in gas phase
$k_L a_{Ph}$	1/s	volumetric mass transfer coefficient in liquid phase
L	kg/h	Liquid mass flow rate
h_L	m^3/m^3	superficial liquid hold-up
n_{th}	-	number of theoretical stages
p	bar	pressure
u_L	m^3/m^2h	superficial liquid velocity
u_V	m/s	superficial gas velocity
V, G	kg/h	Vapor mass flow rate

Greek symbols

$\beta_V a_{Ph}$	1/s	volumetric mass transfer coefficient in gas phase
$\beta_L a_{Ph}$	1/s	volumetric mass transfer coefficient in liquid phase
ρ_L	kg/m^3	liquid density
ρ_V	kg/m^3	gas density
$\Delta p/H$	mbar/m	specific pressure drop
η	Pas, kg/(ms)	dynamic viscosity

Subscripts

Fl	flooding condition
L	liquid phase
V	vapour phase