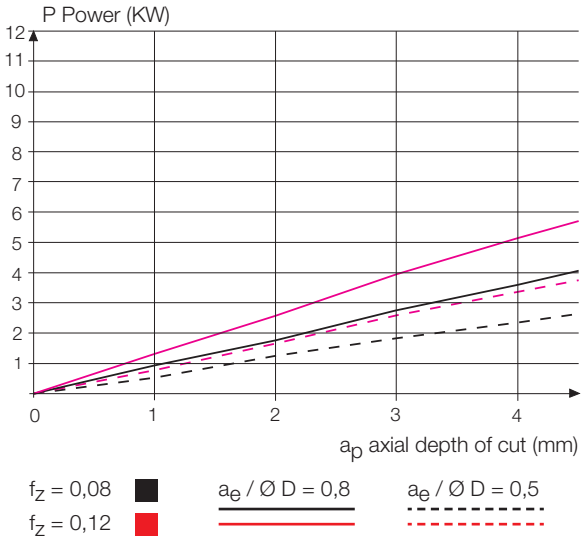
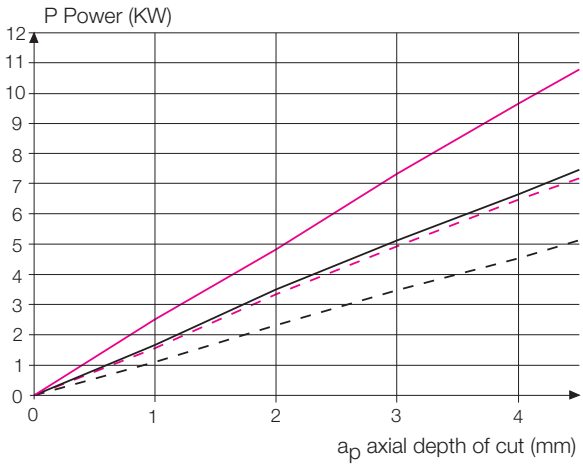
Power consumption for face milling cutters

Guide values in order to determine the necessary power for Hollfelder-Gühring face milling cutters

Steel, low-alloyed and tempereed
Ø D = 63 z = 8 v_c = 80



Steel, low-alloyed and tempereed
Ø D = 125 z = 15 v_c = 80



General formula list

Formula and abbreviations			Calculation of:	
Ø D	Milling cutter	[mm]	Cutting speed	$v_c = \frac{Ø\,D \cdot \pi \cdot n}{1000}$
a_p	axial depth of cut	[mm]		
a_e	Width of cut	[mm]	Number of revolutions	$n = \frac{v_c \cdot 1000}{Ø\,D \cdot \pi}$
v_c	Cutting speed	[m/min]		
n	Numbers of revolutions - S	[min-1]	Feed rate	$v_f = f_z \cdot n \cdot z$
z	Number of teeth			
f_z	Feed rate per tooth	[mm]	Feed rate per tooth	$f_z = \frac{v_f}{n \cdot z}$
v_f	Feed rate	[mm/min]		
L_m	Machining length	[mm]	Processing time	$T_c = \frac{L_m}{v_f}$
T_c	Machining time	[min]		
Q	Rate of metal removal	[cm³/min]	Rate of metal removal	$Q = \frac{a_p \cdot a_e \cdot v_f}{1000}$
k_c	Specific cutting force	[N/mm²]		
P	Necessary power	[kW]	Required drive power	$P = \frac{a_p \cdot a_e \cdot v_f \cdot kc}{60 \cdot 10^6 \cdot \eta}$
η	Efficiency factor			