

flowPIM® 1, 1200V (trench)
Output inverter application

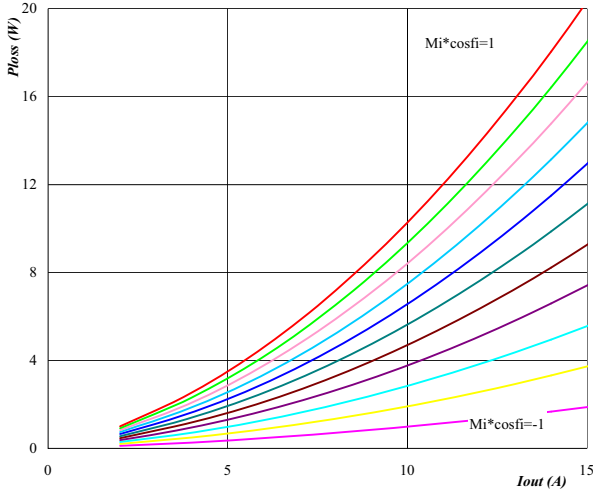
 General conditions: 3 phase SPWM, $V_{geon}= 15\text{ V}$ $V_{geoff}=0\text{V}$ $R_{gon}= 61\text{ ohms}$ $R_{goff}= 30,5\text{ ohms}$
Figure 1. Typical average static loss as a function of output current
 IGBT $P_{loss}=f(I_{out})$

 Conditions: $T_j=125^\circ\text{C}$
 Modulation index * $\cos\phi$ parameter $M_i*\cos\phi$ from -1,00 to 1,00 in 0,20 steps

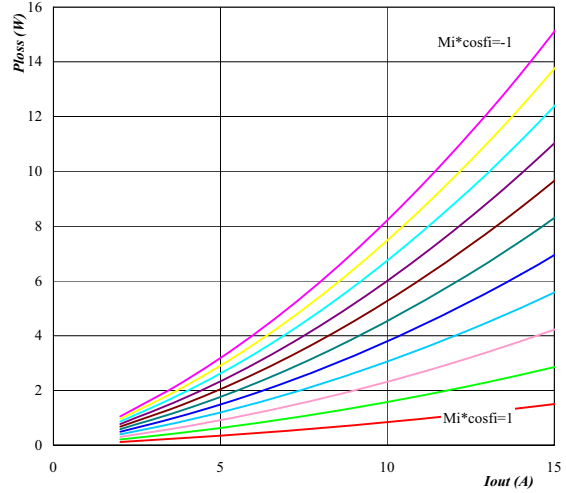
Figure 2. Typical average static loss as a function of output current
 FRED $P_{loss}=f(I_{out})$

 Conditions: $T_j=125^\circ\text{C}$
 Modulation index * $\cos\phi$ parameter $M_i*\cos\phi$ from -1,00 to 1,00 in 0,20 steps

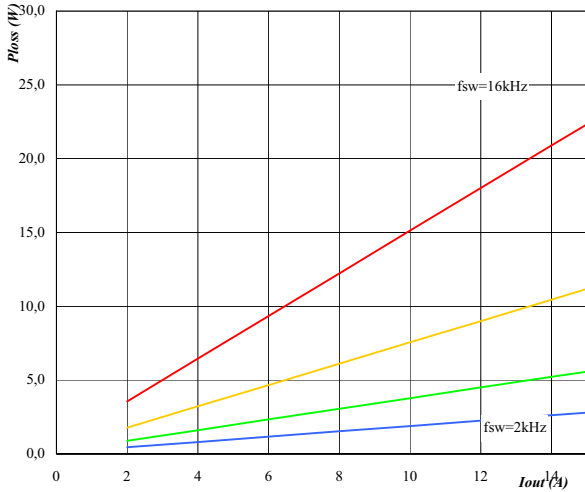
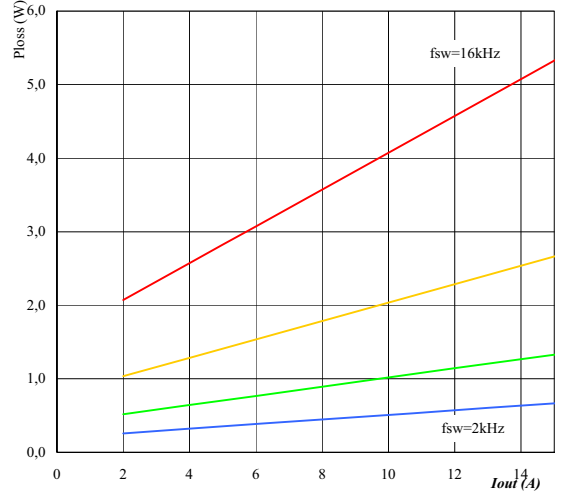
Figure 3. Typical average switching loss as a function of output current
 IGBT $P_{loss}=f(I_{out})$

 Conditions: $T_j=125^\circ\text{C}$
 DC link= 600 V
 Switching freq. parameter f_{sw} from 2 kHz to 16 kHz in * 2 steps

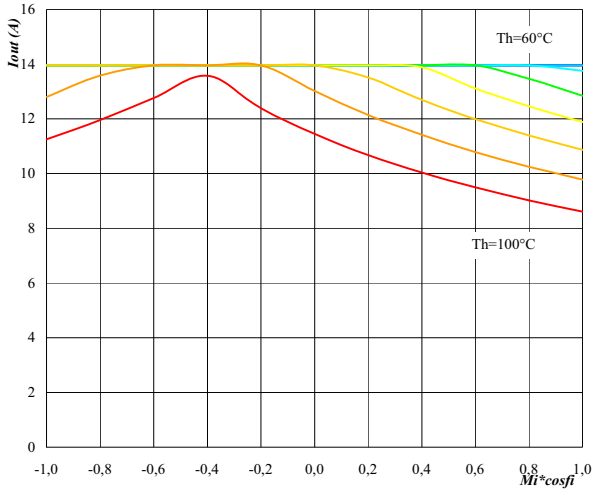
Figure 4. Typical average switching loss as a function of output current
 FRED $P_{loss}=f(I_{out})$

 Conditions: $T_j=125^\circ\text{C}$
 DC link= 600 V
 Switching freq. parameter f_{sw} from 2 kHz to 16 kHz in * 2 steps

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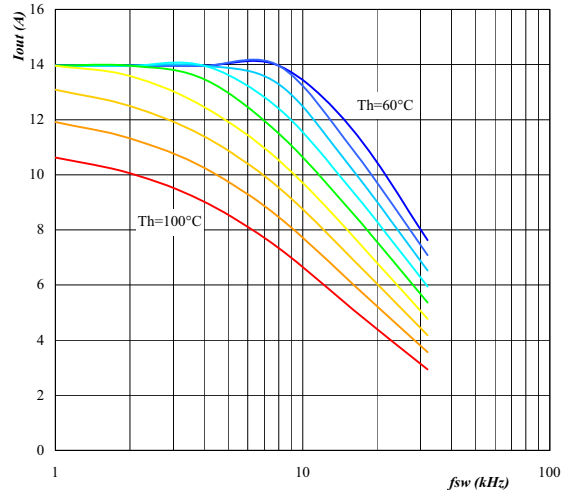
General conditions: 3 phase SPWM, $V_{geon}= 15\text{ V}$ $V_{geoff}=0\text{V}$ $R_{gon}= 61\text{ ohms}$ $R_{goff}= 30,5\text{ ohms}$

Figure 5. Typical available 50Hz output current as a function of $M_i \cdot \cos\phi_i$
Phase $I_{out}=f(M_i \cdot \cos\phi_i)$



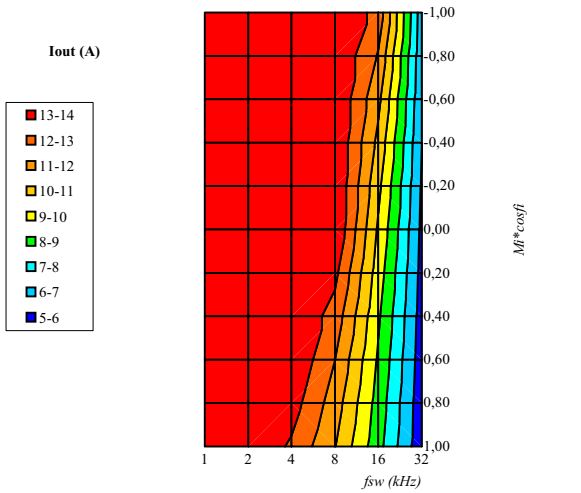
Conditions: $T_j=125\text{C}$
DC link= 600 V
fsw= 4 kHz
Heatsink temp. T_h from 60 °C to 100 °C
parameter in 5 °C steps

Figure 6. Typical available 50Hz output current as a function of switching frequency
Phase $I_{out}=f(f_{sw})$



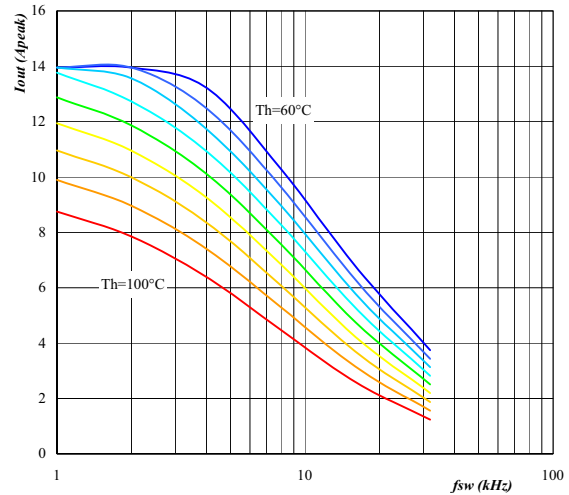
Conditions: $T_j=125\text{C}$
DC link= 600 V
 $M_i \cdot \cos\phi_i = 0,8$
Heatsink temp. T_h from 60 °C to 100 °C
parameter in 5 °C steps

Figure 7. Typical available 50Hz output current as a function of $M_i \cdot \cos\phi_i$ and fsw
Phase $I_{out}=f(f_{sw}, M_i \cdot \cos\phi_i)$



Conditions: $T_j=125\text{C}$
DC link= 600 V
 $T_h = 80\text{ °C}$

Figure 8. Typical available 0Hz output current as a function of switching frequency
Phase $I_{outpeak}=f(f_{sw})$



Conditions: $T_j=125\text{C}$
DC link= 600 V
Heatsink temp. T_h from 60 °C to 100 °C
parameter in 5 °C steps

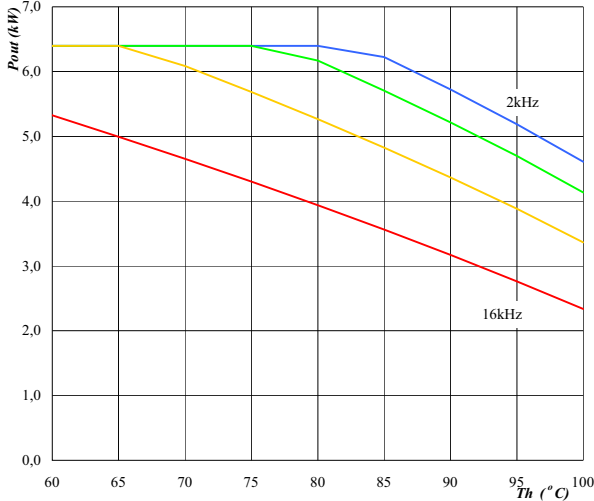
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Figure 9. Typical available electric peak output power as a function of heatsink temperature

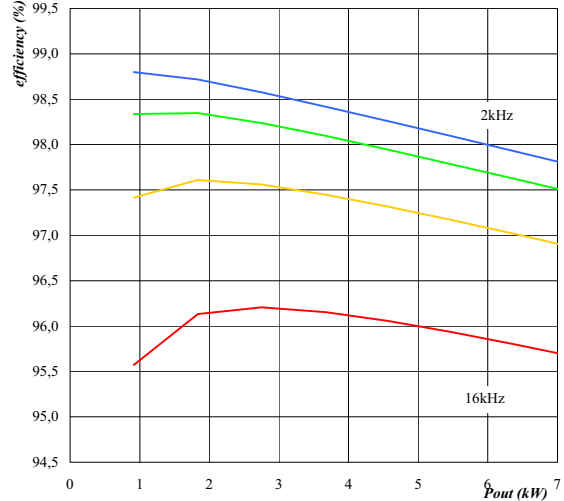
Inverter $P_{out}=f(T_h)$



Conditions: $T_j=125\text{C}$
 DC link= 600 V
 Modulation index $M_i= 1$
 $\cos\phi_i= 0,80$
 Switching freq. parameter fsw from 2 kHz to 16 kHz in * 2 steps

Figure 10. Typical efficiency as a function of output power

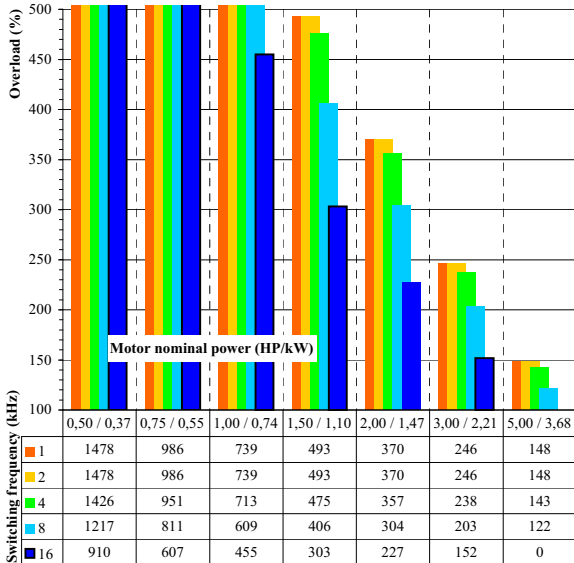
Inverter $\text{efficiency}=f(P_{out})$



Conditions: $T_j=125\text{C}$
 DC link= 600 V
 Modulation index $M_i= 1$
 $\cos\phi_i= 0,80$
 Switching freq. parameter fsw from 2 kHz to 16 kHz in * 2 steps

Figure 11. Typical available overload factor as a function of motor power and switching frequency

Inverter $P_{peak}/P_{nom}=f(P_{nom},fsw)$



Conditions: $T_j=125\text{C}$
 DC link= 600 V
 Modulation index $M_i= 1$
 $\cos\phi_i= 0,8$
 Switching freq. parameter fsw from 1 kHz to 16 kHz in * 2 steps
 Heatsink temperature= 80 °C
 Motor efficiency= 0,85