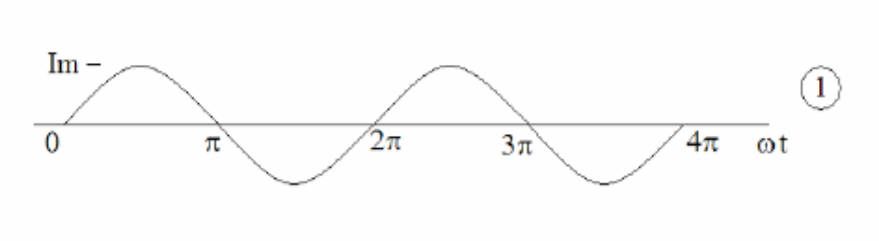
IZRAČUNAVANJE *SREDNJE* (AVG) i *EFEKTIVNE* (RMS) VREDNOSTI KARAKTERISTIČNIH TALASNIH OBLIKA U ENERGETSKIM PRETVARAČIMA

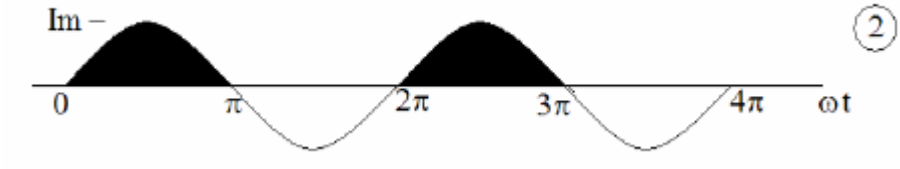
U_m, I_m- amplituda talasnog oblika opšte veličine (napona, struje,.... i sl.)

1-SINUSNI TALAS



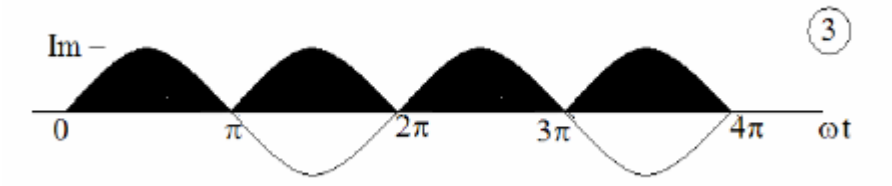
$$I_{AVG} = 0 \qquad I_{RMS} = \frac{I_m}{\sqrt{2}}$$

2-SINUSNI POLUTALAS (jednostrano ispravljanje)



$$I_{AVG} = \frac{I_m}{\pi} \qquad I_{RMS} = \frac{I_m}{2}$$

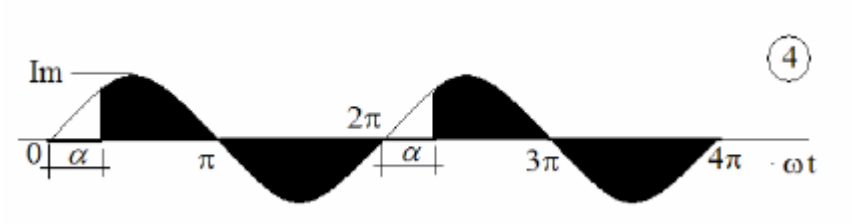
3-SINUSNI POLUTALAS (dvostrano ispravljanje)



$$I_{AVG} = \frac{2I_m}{\pi} \qquad I_{RMS} = \frac{I_m}{\sqrt{2}}$$

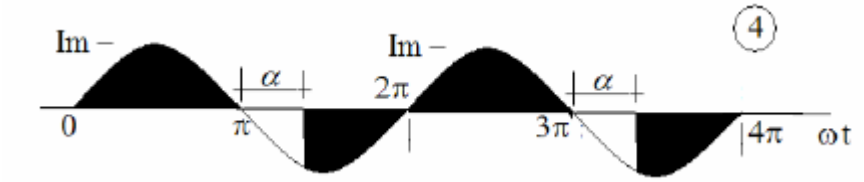
4-NAIZMENIČNI PODEŠAVAČ POLUPERIODE

Podešavanje (+) poluperiode



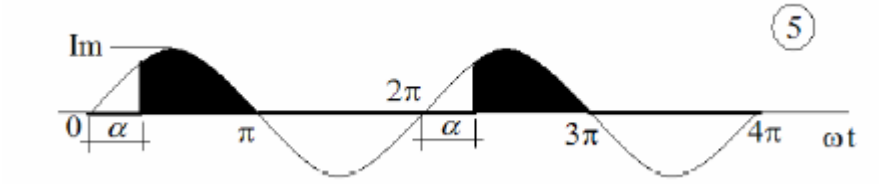
$$I_{AVG} = \frac{I_m}{2\pi} \cdot (\cos\alpha - 1) \qquad I_{RMS} = \frac{I_m}{\sqrt{2}} \cdot \sqrt{1 - \frac{\alpha}{2\pi} + \frac{\sin 2\alpha}{4\pi}}$$

Podešavanje (-) poluperiode



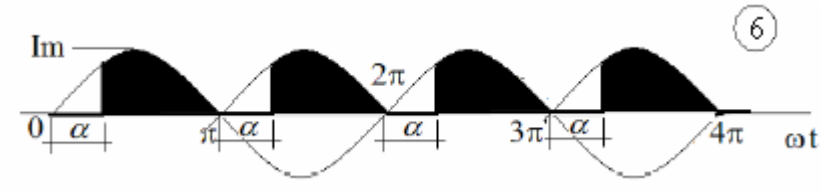
$$I_{AVG} = \frac{I_m}{2\pi} \cdot (1 - \cos\alpha) \qquad I_{RMS} = \frac{I_m}{\sqrt{2}} \cdot \sqrt{1 - \frac{\alpha}{2\pi} + \frac{\sin 2\alpha}{4\pi}}$$

5-REGULISANO POLUTALASNO ISPRAVLJANJE



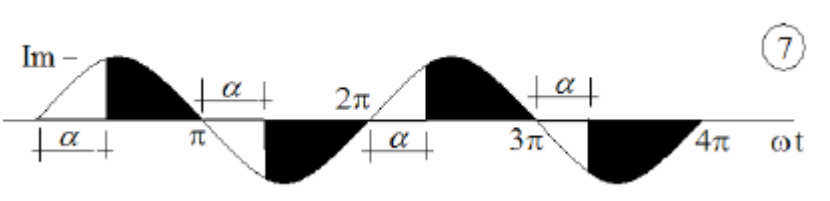
$$I_{AVG} = \frac{I_m}{2\pi} \cdot (1 + \cos\alpha) \qquad I_{RMS} = \frac{I_m}{2} \cdot \sqrt{1 - \frac{\alpha}{\pi} + \frac{\sin 2\alpha}{2\pi}}$$

6-REGULISANO PUNOTALASNO ISPRAVLJANJE



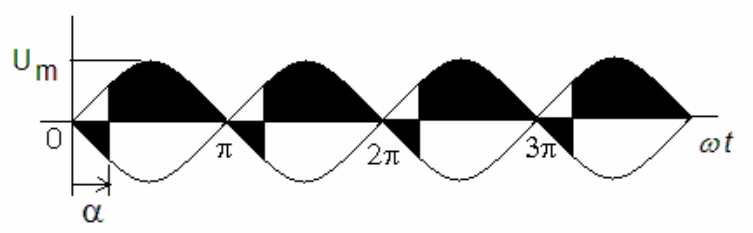
$$I_{AVG} = \frac{I_m}{\pi} \cdot (1 + \cos\alpha) \qquad I_{RMS} = \frac{I_m}{\sqrt{2}} \cdot \sqrt{1 - \frac{\alpha}{\pi} + \frac{\sin 2\alpha}{2\pi}}$$

7-NAIZMENIČNI PODEŠAVAČ OBE POLUPERIODE



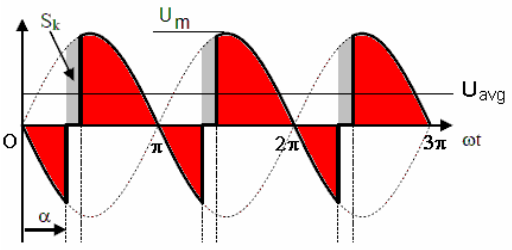
$$I_{AVG} = 0 \qquad I_{RMS} = \frac{I_m}{\sqrt{2}} \cdot \sqrt{1 - \frac{\alpha}{\pi} + \frac{\sin 2\alpha}{2\pi}}$$

8-TIRISTORSKI ISPRAVLJAČI SA OPTEREĆENJEM KAO STRUJNIM PONOROM



$$U_{AVG} = \frac{2U_m}{\pi} \cdot \cos\alpha \qquad U_{RMS} = \frac{U_m}{\sqrt{2}}$$

9-TIRISTORSKI ISPRAVLJAČI SA OPTEREĆENJEM KAO STRUJNIM PONOROM-I UZ UVAŽAVANJE KOMUTACIJE (površina Sk)

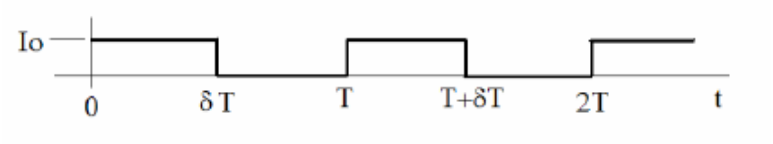


$$U_{AVG} = \frac{2U_m}{\pi} \cdot \cos\alpha - \frac{2 \cdot X_k \cdot I}{\pi}$$

X_k-komutaciona reaktansa, I-struja strujnog ponora

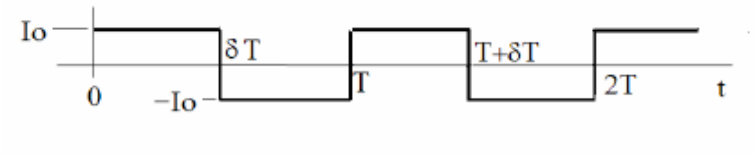
10-PRAVOUGAONI TALASNI OBLICI

10.1.



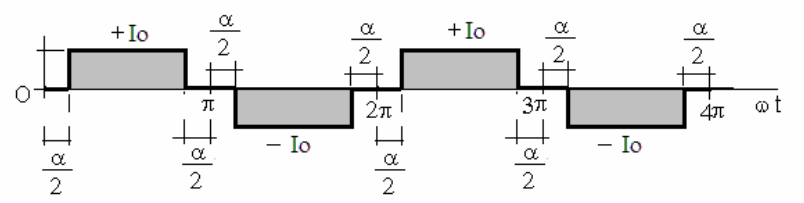
$I_{AVG} = \delta \cdot I_0$, $I_{RMS} = I_0 \cdot \sqrt{\delta}$, $\delta \in [0...1]$

10.2.



$I_{AVG} = (2\delta - 1) \cdot I_0$, $I_{RMS} = I_0$, $\delta \in [0...1]$

10.3.



$I_{AVG} = 0$ $I_{RMS} = I_0 \cdot \sqrt{1 - \frac{\alpha}{\pi}}$