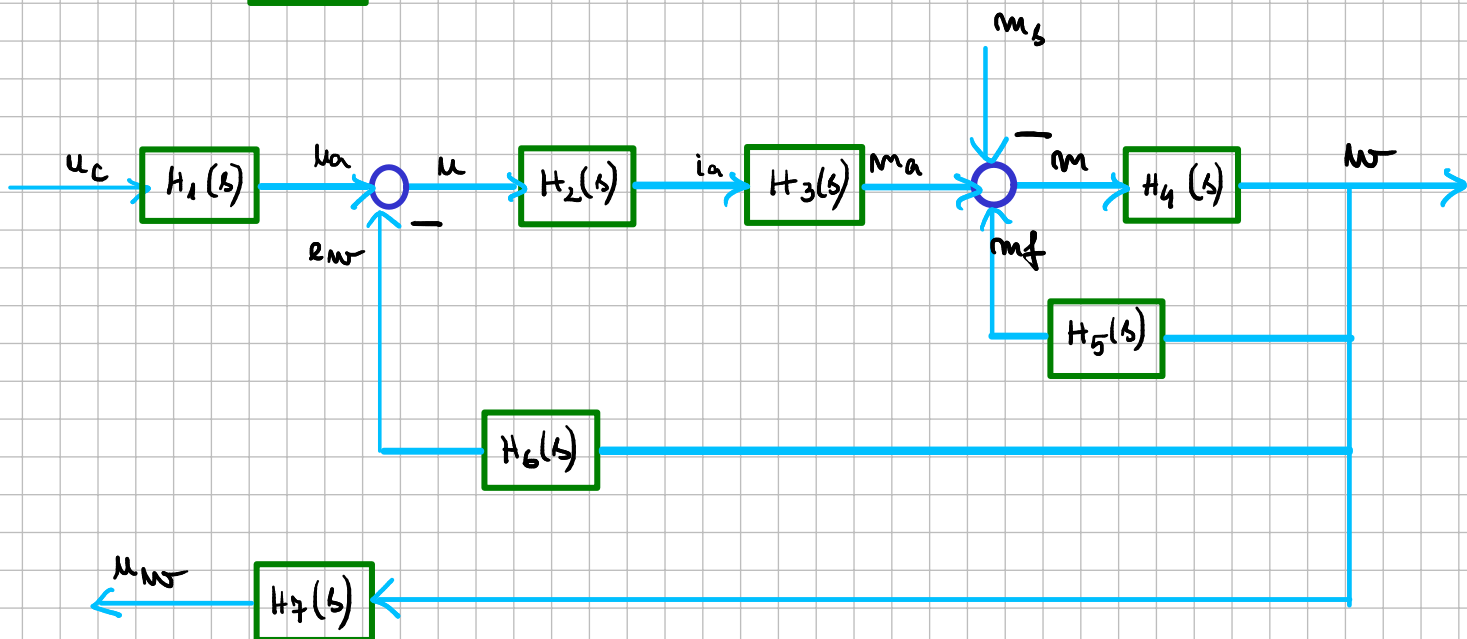
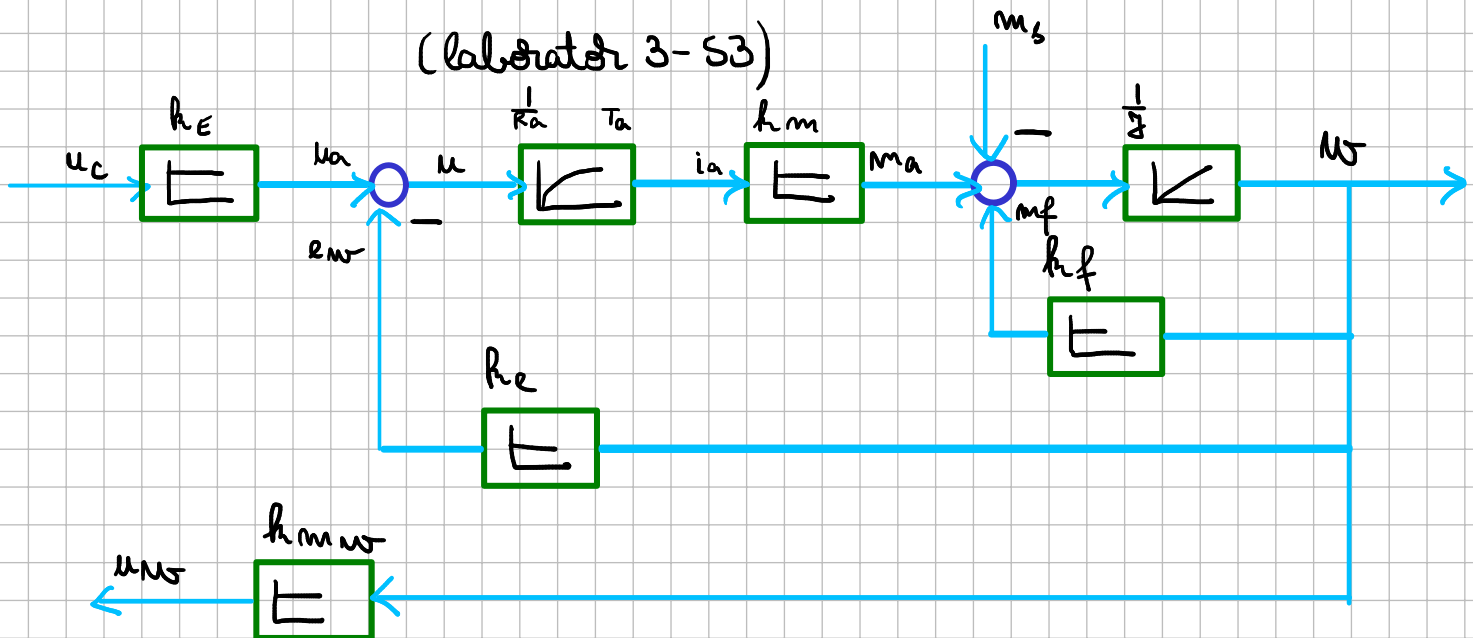


Testia sistemelor (laborator 3-53)

14.10.2024



H_4, H_5 - reactive

$$H_{45} = \frac{H_4}{1 + H_4 H_5}$$

H_2, H_3, H_{45} - serie

$$H_{2345} = H_2 \cdot H_3 \cdot \frac{H_4}{1 + H_4 H_5}$$

H_{2345}, H_6 - reactive

$$H_{23456} = \frac{H_{2345}}{1 + H_{2345} \cdot H_6}$$

H_1, H_{23456}, H_7 - serie

$$H = H_1 \cdot \frac{H_{23456}}{1 + H_{23456} \cdot H_6} \cdot H_7$$

$$H_1(s) = R_E$$

ET-P

$$H_2(s) = \frac{\frac{1}{R_a}}{T_a \cdot s + 1} = \frac{1}{R_a(s \cdot T_a + 1)}$$

ET-PT1

$$H_3(s) = R_m$$

ET-P

$$H_4(s) = \frac{1}{s} = \frac{1}{y \cdot s}$$

ET-i

$$H_5(s) = R_f$$

ET-P

$$H_6(s) = R_e$$

ET-P

$$H_7(s) = R_{mw}$$

ET-P

$$H_{2345} = H_2 \cdot H_3 \cdot \frac{H_4}{1 + H_4 + H_5}$$

$\left(\frac{1}{y \cdot s} \right)$

$$H_{2345}(s) = \frac{1}{R_a(s \cdot T_a + 1)} \cdot R_m \cdot \frac{\frac{1}{y \cdot s}}{1 + \frac{R_f}{y \cdot s}} = \frac{R_m}{R_a(s \cdot T_a + 1)} \cdot \frac{1}{y \cdot s + R_f}$$

$$H_{23456} = \frac{H_{2345}}{1 + H_{2345} \cdot H_6}$$

$(R_a(s \cdot T_a + 1)(y \cdot s + R_f))$

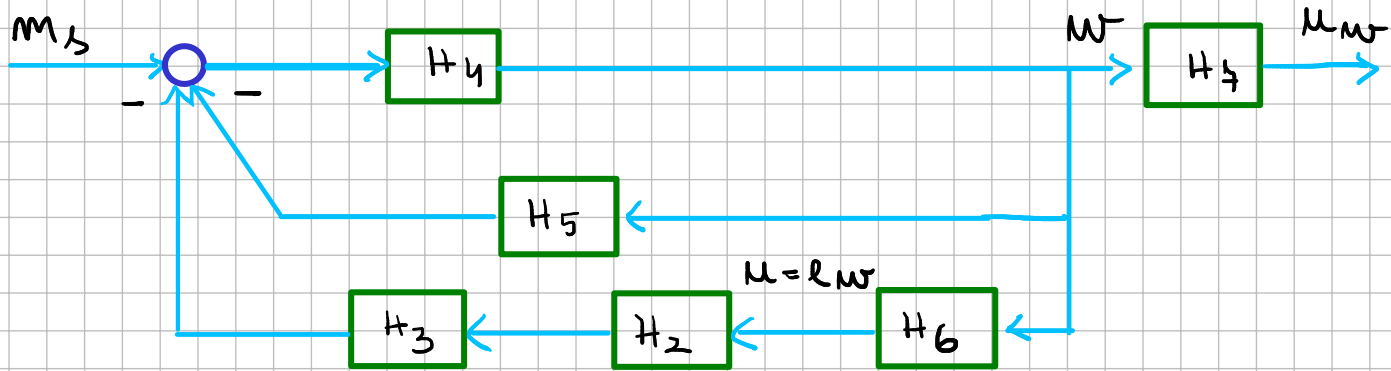
$$H_{23456}(s) = \frac{\frac{R_m}{R_a(s \cdot T_a + 1)(y \cdot s + R_f)}}{1 + \frac{R_m}{R_a(s \cdot T_a + 1)(y \cdot s + R_f)} \cdot R_e} = \frac{R_m}{R_a(s \cdot T_a + 1)(y \cdot s + R_f) + R_m \cdot R_e}$$

$$H = H_1 \cdot \frac{H_{23456}}{1 + H_{23456} \cdot H_7} \cdot H_7$$

$$T_a = \frac{L_a}{R_a}$$

$$H(s) = R_E \cdot \frac{R_m}{R_a(s \cdot T_a + 1)(y \cdot s + R_f) + R_m \cdot R_e} \cdot R_{mw} =$$

$$= \frac{R_E \cdot R_m \cdot R_{mw}}{(s \cdot L_a + R_a)(y \cdot s + R_f) + R_m \cdot R_e}$$



H_4, H_5 - reacție $H_{45} = \frac{H_4}{1 + H_4 H_5}$

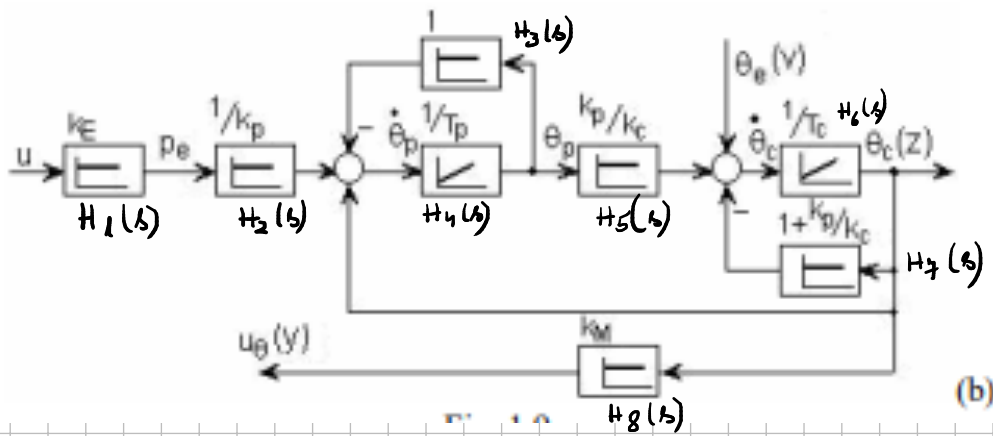
H_3, H_2, H_6 - serie $H_{236} = H_2 H_3 H_6$

H_{45}, H_{236} - reacție $H_{23456} = \frac{H_{45}}{1 + H_2 H_3 H_{45} H_6}$

H_7, H_{23456} - serie

$H = H_{23456} \cdot H_7$

Pe înlocuire



$$H_1(s) = k_E$$

ET-P

$$H_5(s) = \frac{k_P}{k_C}$$

ET-P

$$H_2(s) = \frac{1}{k_P}$$

ET-P

$$H_6(s) = \frac{1}{T_C \cdot s}$$

ET-i

$$H_3(s) = 1$$

ET-P

$$H_7(s) = 1 + \frac{k_P}{k_C}$$

ET-P

$$H_4(s) = \frac{\frac{1}{T_P}}{s} = \frac{1}{T_P \cdot s}$$

ET-i

$$H_8(s) = k_M$$

ET-P

$$H_6, H_7 - \text{reactie} \quad H_{67}(s) = \frac{H_6}{1 + H_6 \cdot H_7} = \frac{\frac{1}{T_C \cdot s}}{1 + \frac{1}{T_C \cdot s} \cdot \left(1 + \frac{k_P}{k_C}\right)}$$

$$H_3, H_4 - \text{reactie} \quad H_{34}(s) = \frac{H_4}{1 + H_3 H_4}$$

$$H_{34}, H_5, H_{67} - \text{serie} \quad H_{34567} = \frac{H_4}{1 + H_3 H_4} \cdot H_5 \cdot \frac{H_6}{1 + H_6 \cdot H_7} =$$

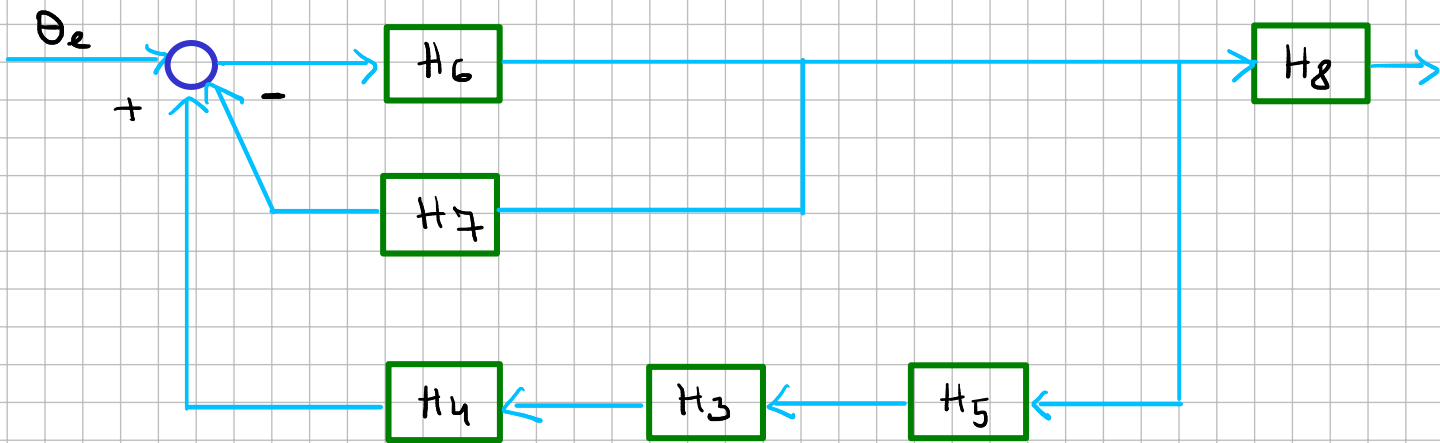
$$= \frac{\frac{1}{T_P \cdot s}}{1 + \frac{1}{T_P \cdot s}} \cdot \frac{k_P}{k_C} \cdot \frac{\frac{1}{T_C \cdot s}}{1 + \frac{1}{T_C \cdot s} \left(1 + \frac{k_P}{k_C}\right)} = \frac{1}{T_P \cdot s + 1} \cdot \frac{k_P}{k_C} \cdot \frac{1}{T_C \cdot s + \frac{k_C + k_P}{k_C}} =$$

$$= \frac{1}{T_P \cdot s + 1} \cdot \frac{k_P}{T_C \cdot s \cdot k_C + k_C + k_P}$$

$$H_{34567}, 1 \rightarrow \text{reactie} \quad H_X = \frac{H_{34567}}{1 - H_{34567}}$$

$$H_1, H_2, H_X, H_8 - \text{serie}$$

$$H = H_1 \cdot H_2 \cdot \frac{H_{34567}}{1 - H_{34567}} \cdot H_8$$



H_6, H_4 - reactive $H_{6,4} = \frac{H_6}{1 + H_6 H_4}$

$\overbrace{H_3, H_4, H_5}^{\text{serie}}, H_{67}$ - reactive $\Rightarrow \frac{H_{67}}{1 - H_3 H_4 H_5 H_{67}}$

H_{34567}, H_8 - serie

$$H = \frac{H_8 H_{67}}{1 - H_3 H_4 H_5 H_{67}}$$

Se înlocuiesc