Integrirani pogonski sistemi

Modeliranje električnih pogonov

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Preizkus modela AS

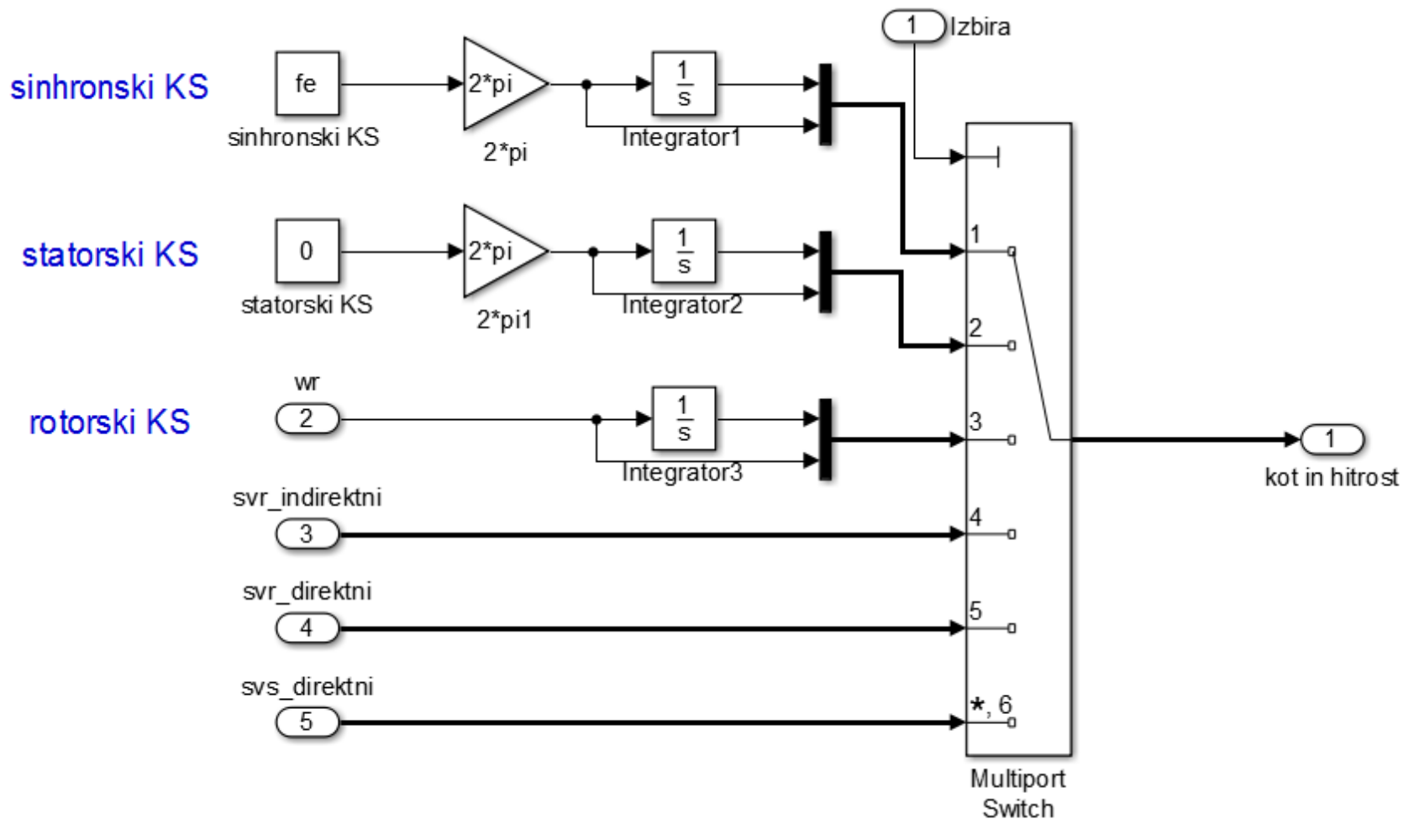
Zagon v različnih koordinatnih sistemih

V model vstavite `Scope` ter mu definirajte 8 osi ter pripeljite naslednje signale: $u_{qs}, u_{ds}, i_{qs}, i_{ds}, i_{qr}, i_{dr}, \omega_r, M_e$.

Preizkusite delovanje motorja (zagon in stacionarno obratovanje) v različnih koordinatnih sistemih:

- statorski KS ($\omega = 0$),
- rotorski KS - rotorska električna vrtilna hitrost ($\omega = \omega_r$),
- sinhronski KS - vrtilna hitrost statorske napetosti ($\omega = \omega_e$),
- KS rotorskega polja ($\omega = \omega_{\psi_r}$) (indirektna orientacija),
- KS rotorskega polja - vrtilna hitrost ($\omega = \omega_{\psi_r}$),
- KS statorskega polja - vrtilna hitrost ($\omega = \omega_{\psi_s}$).

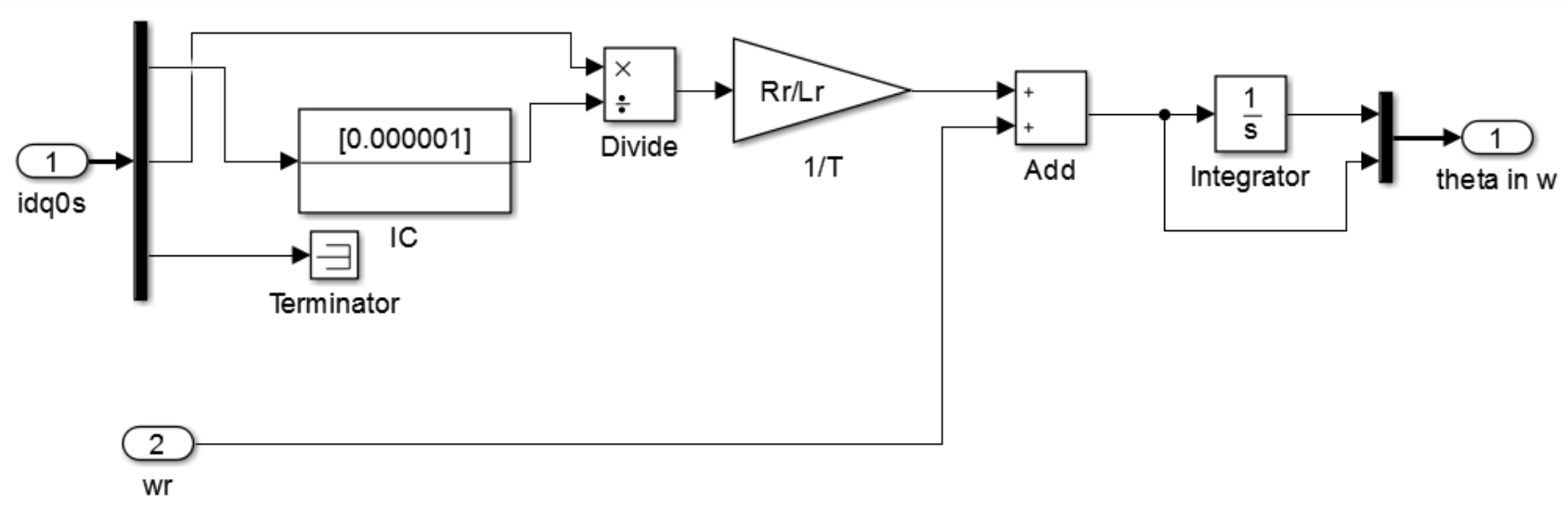
Nastavitev izbirnika različnih KS



KS rotorskega polja (indirektna orientacija)

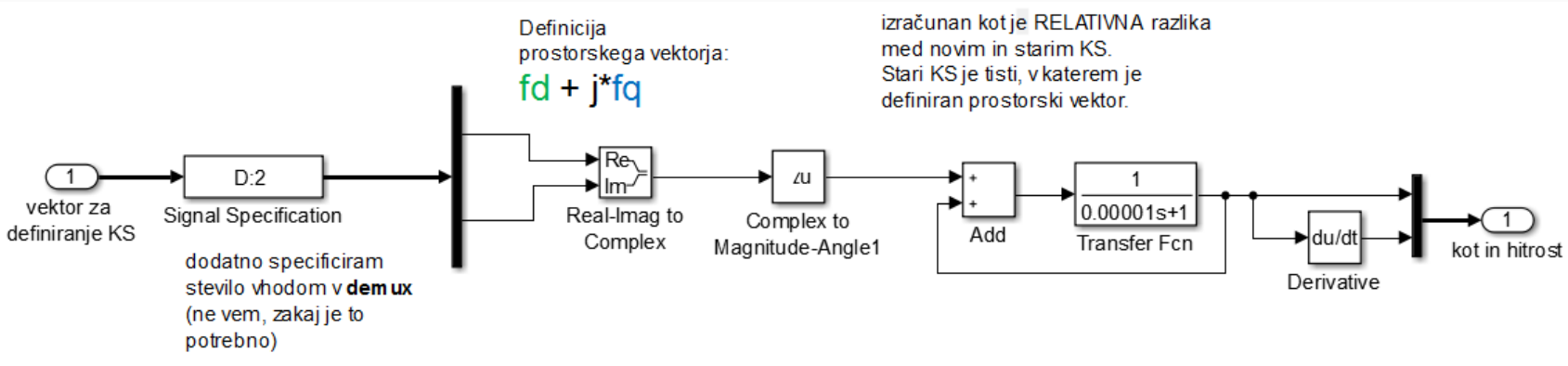
Trenutno lego rotorskega magnetnega sklepa izračunamo s pomočjo indirektne orientacije polja

$$\omega_{mr} = \omega_r + \omega_{sl} = \omega_r + \frac{R_r}{L_r}\frac{i_{qs}}{i_{ds}}$$

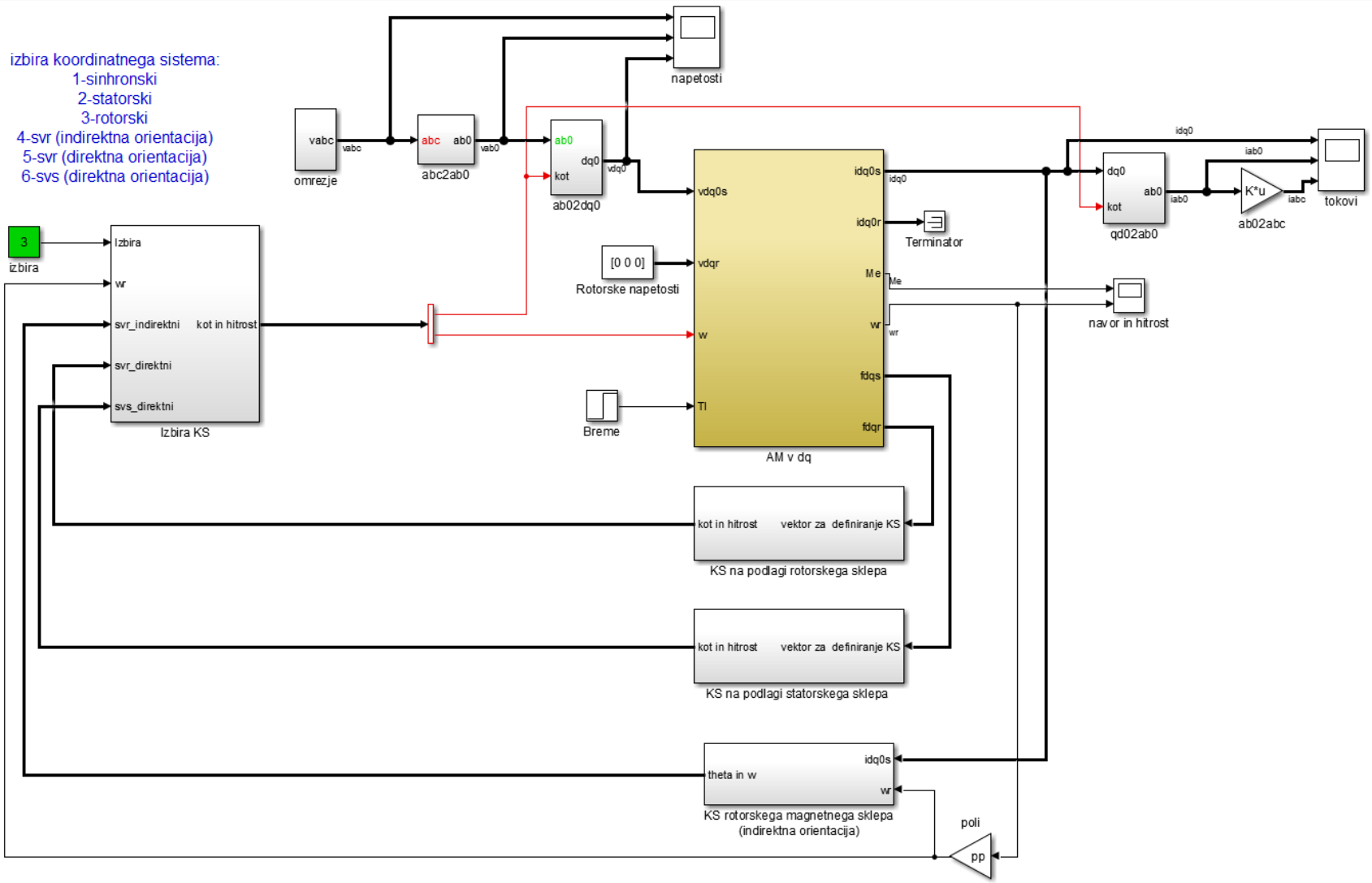


Izvedba - KS rotorskega (statorskega) magnetnega sklepa

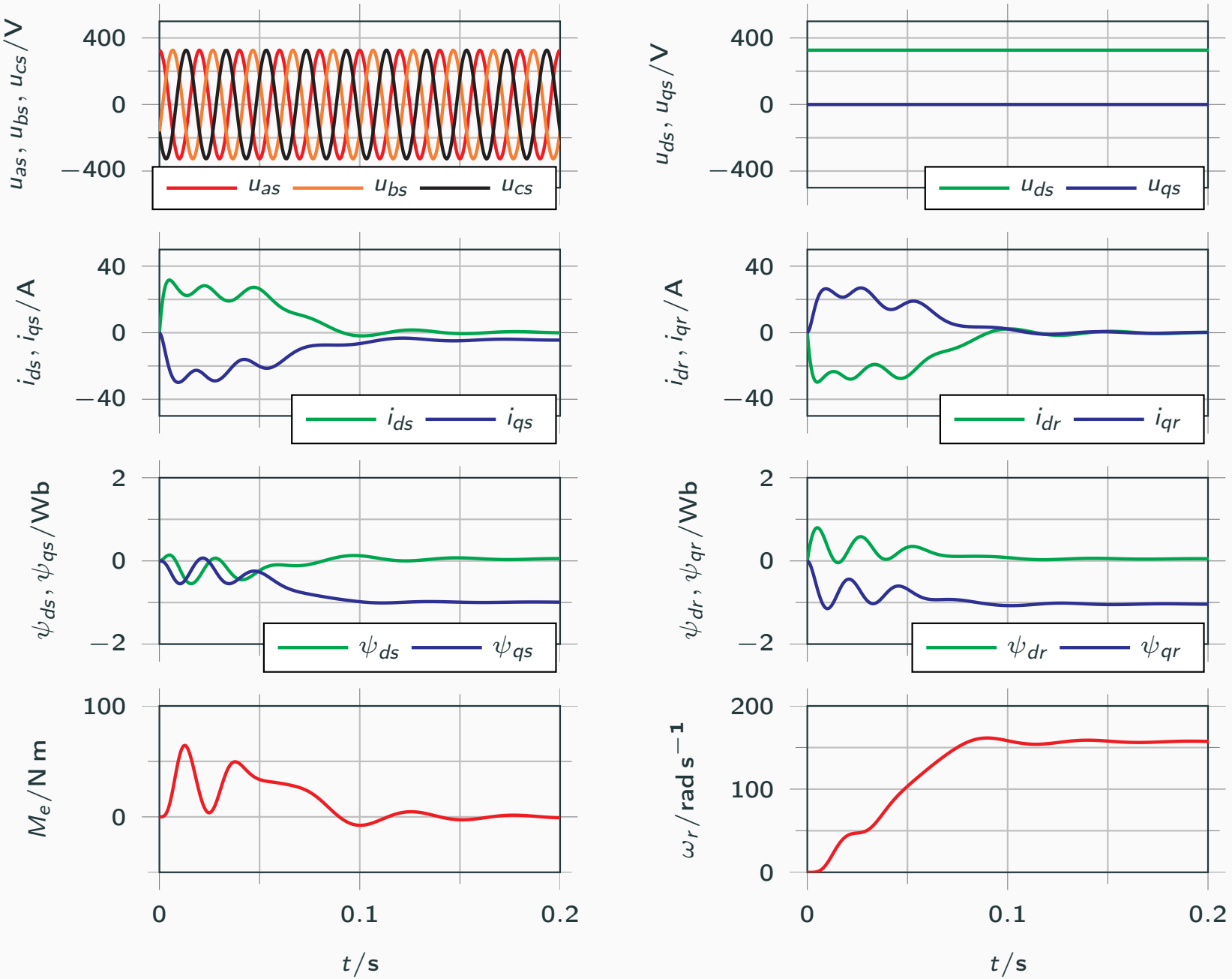
Motorsko spremenljivko lahko uporabimo tudi za definiranje lastnega KS, v katerem nato opazujemo druge veličine. Zanima nas ψ_r in ψ_s.



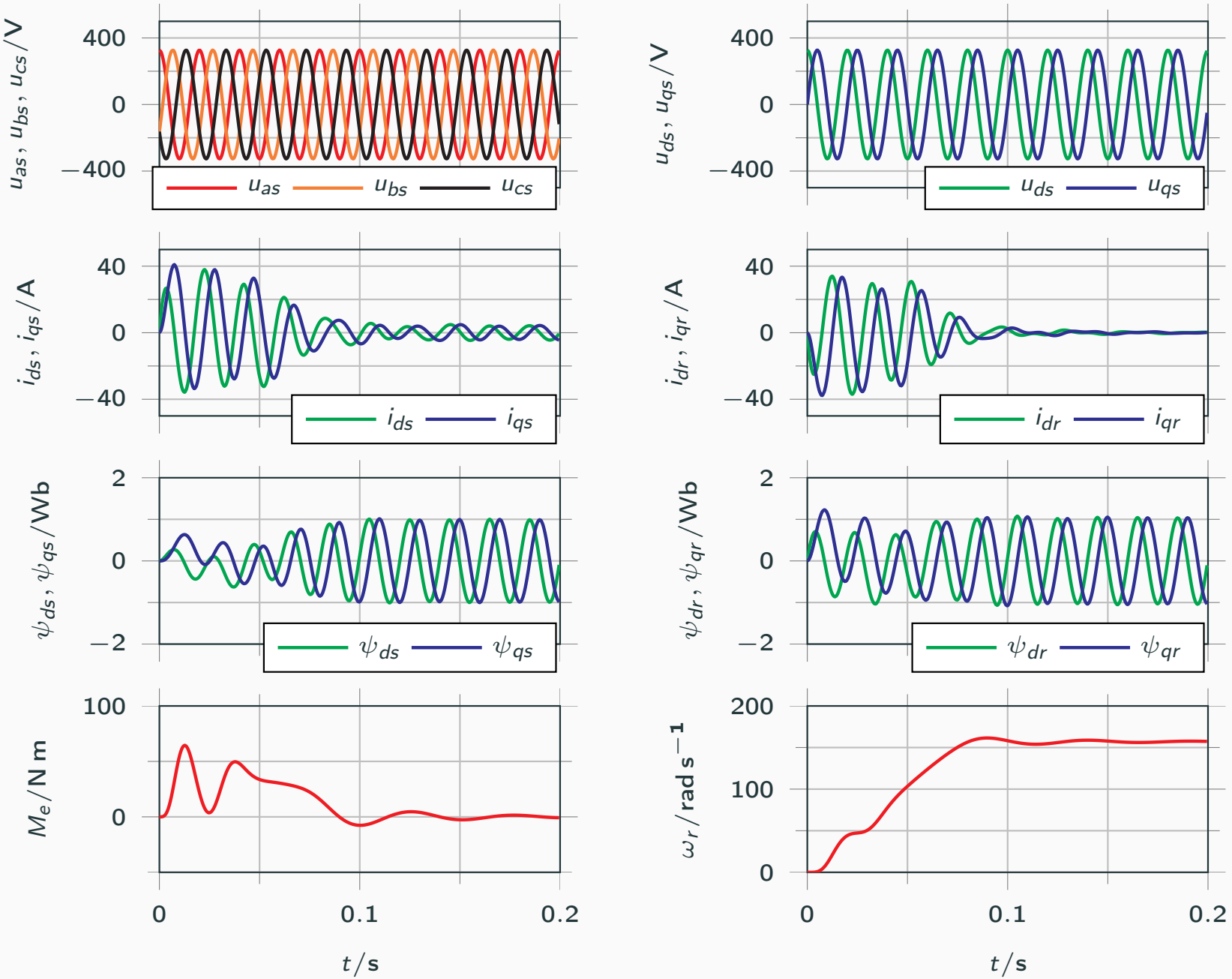
Celoten model



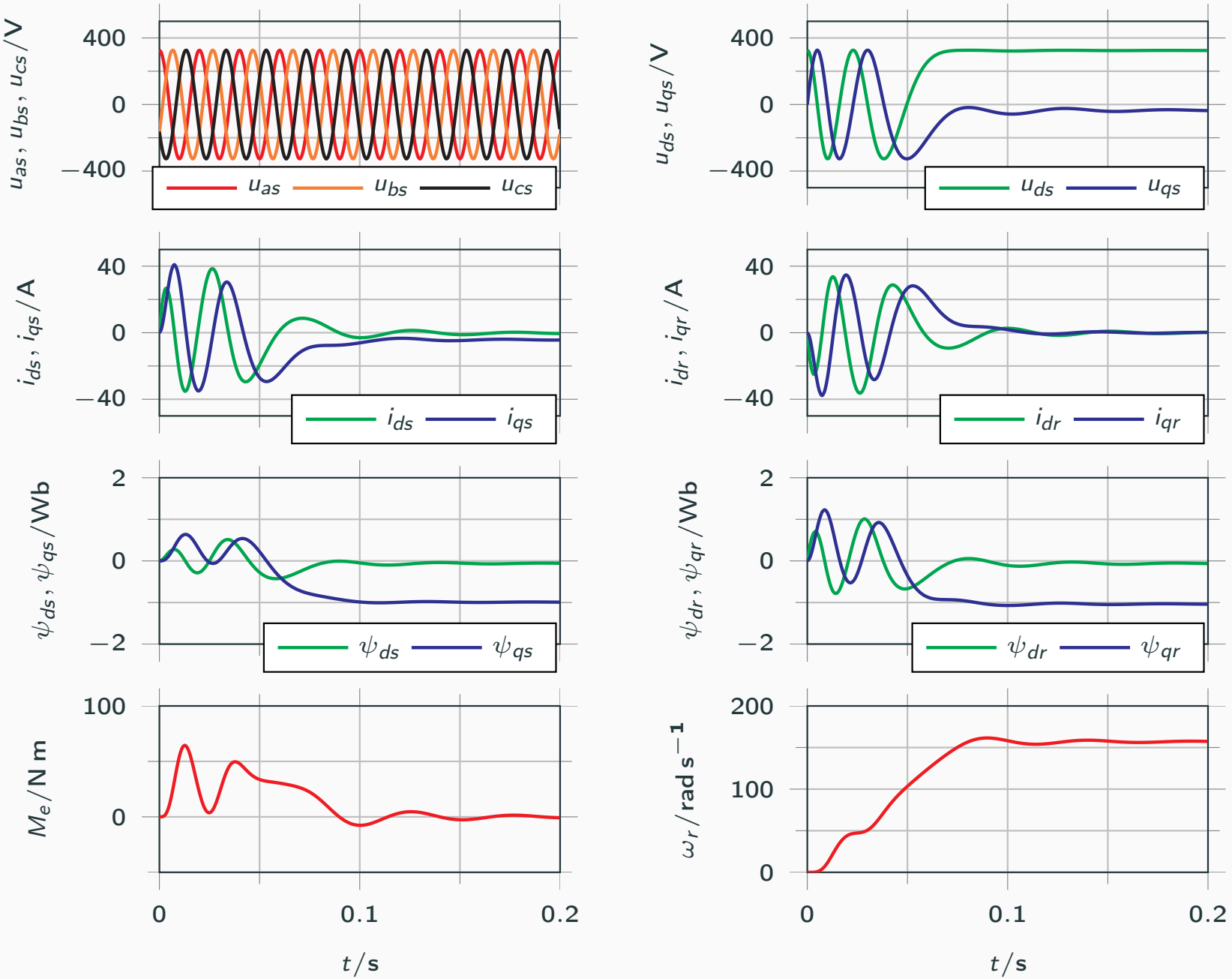
Zagon AM – sinhronski KS ($\omega = \omega_e$)



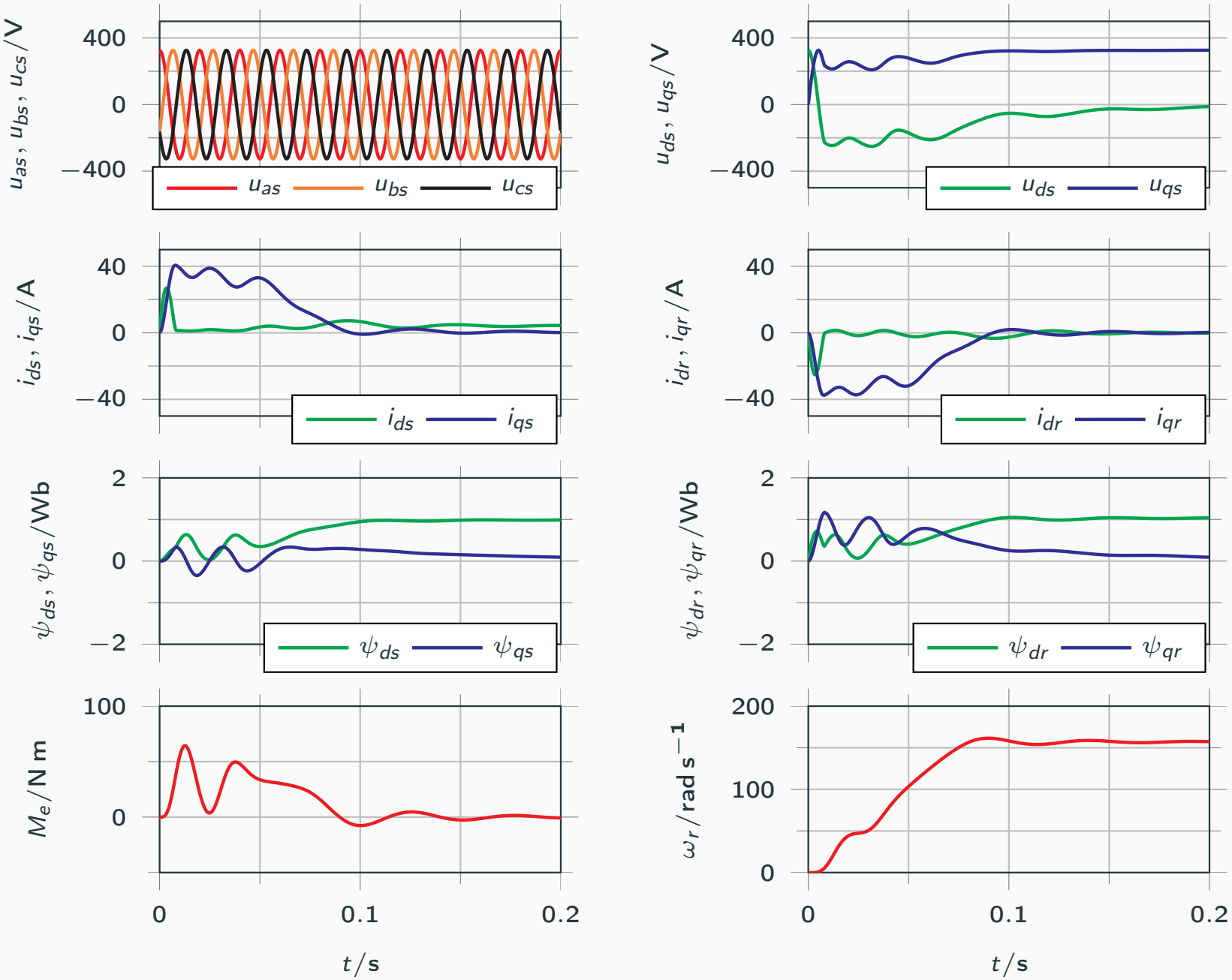
Zagon AM – statorski KS ($\omega = 0$)



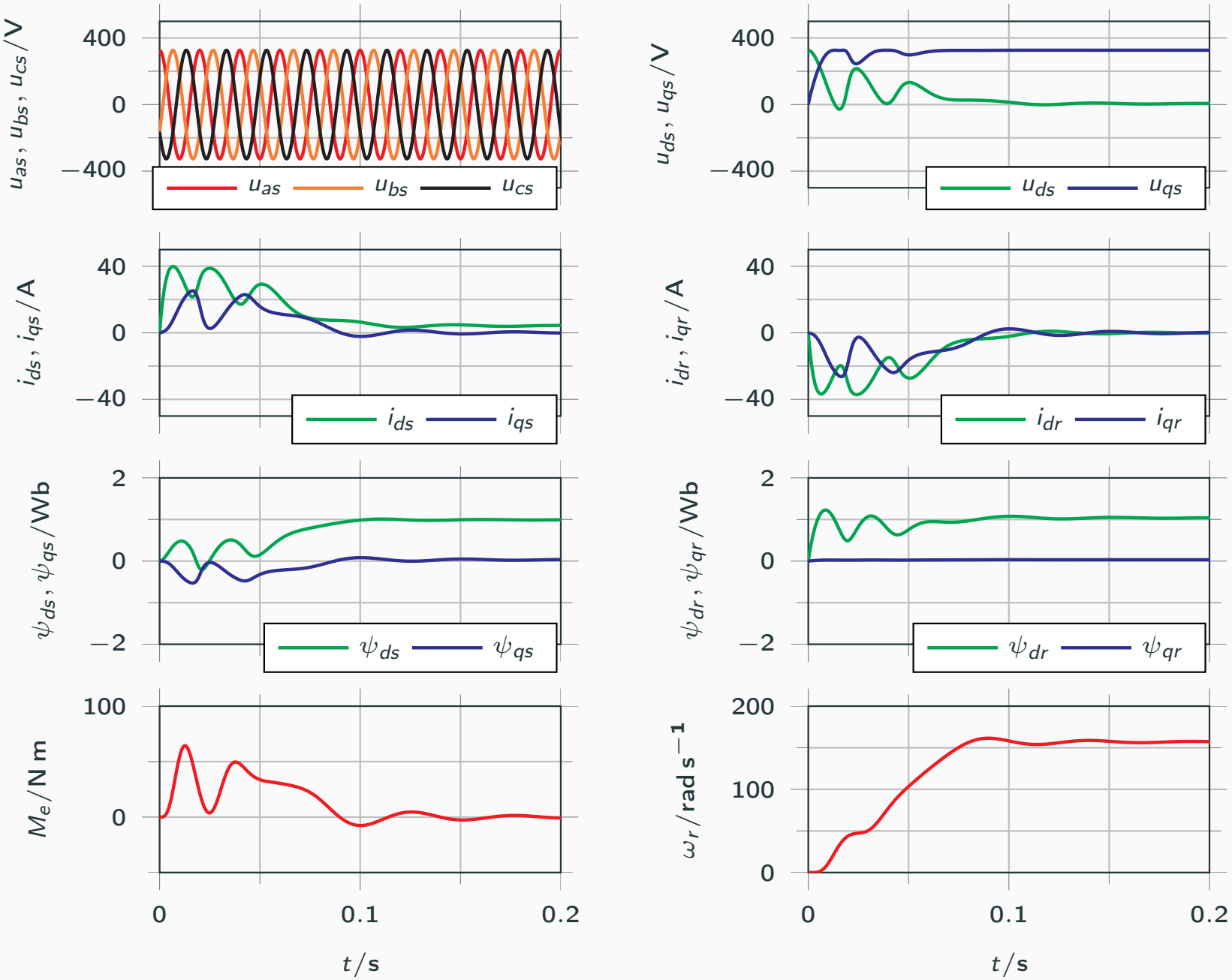
Zagon AM – rotorski KS ($\omega = \omega_r$)



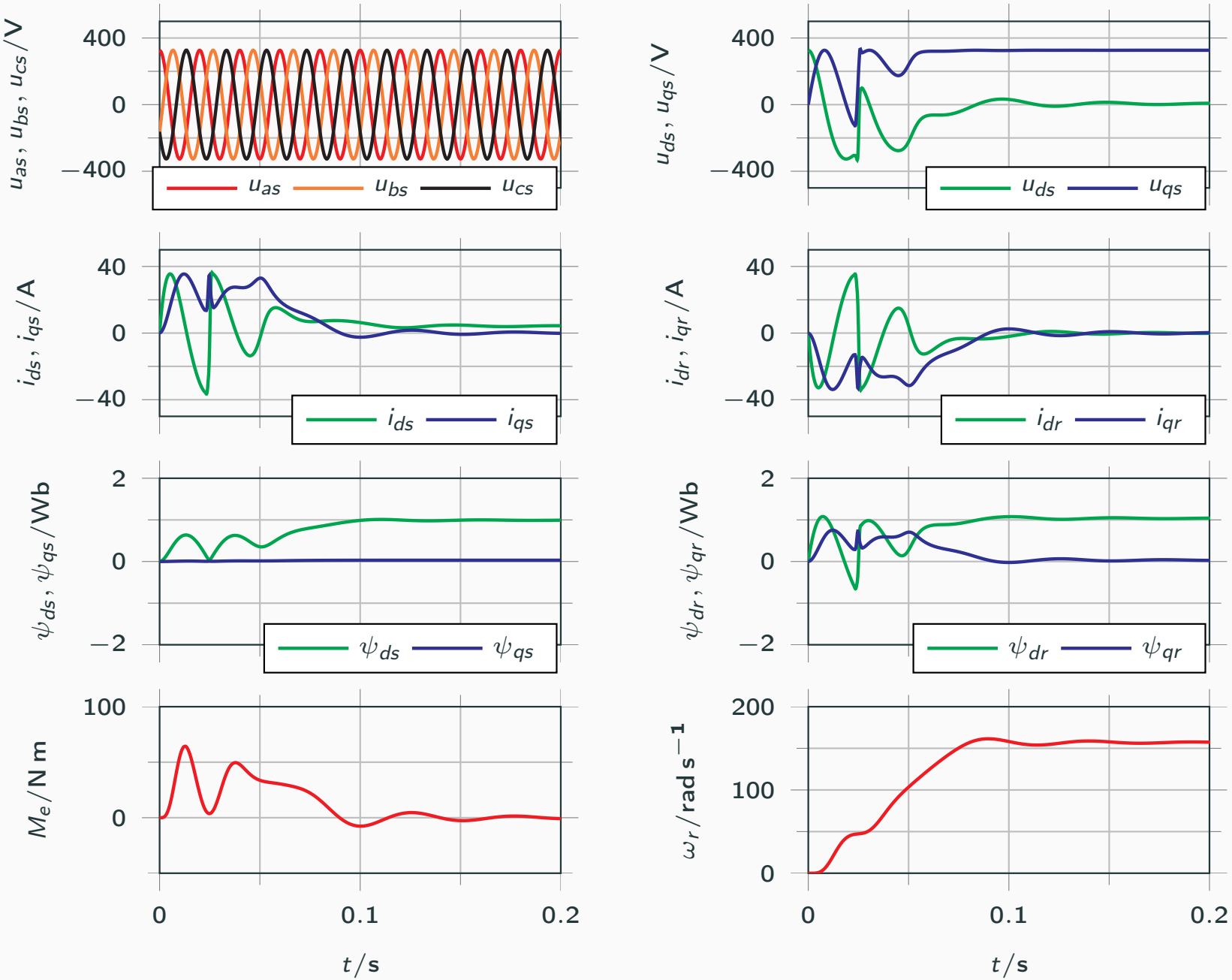
Zagon – KS rotorskega mag. sklepa ($\omega = \omega_{\psi_r}$) (indir. orien.)



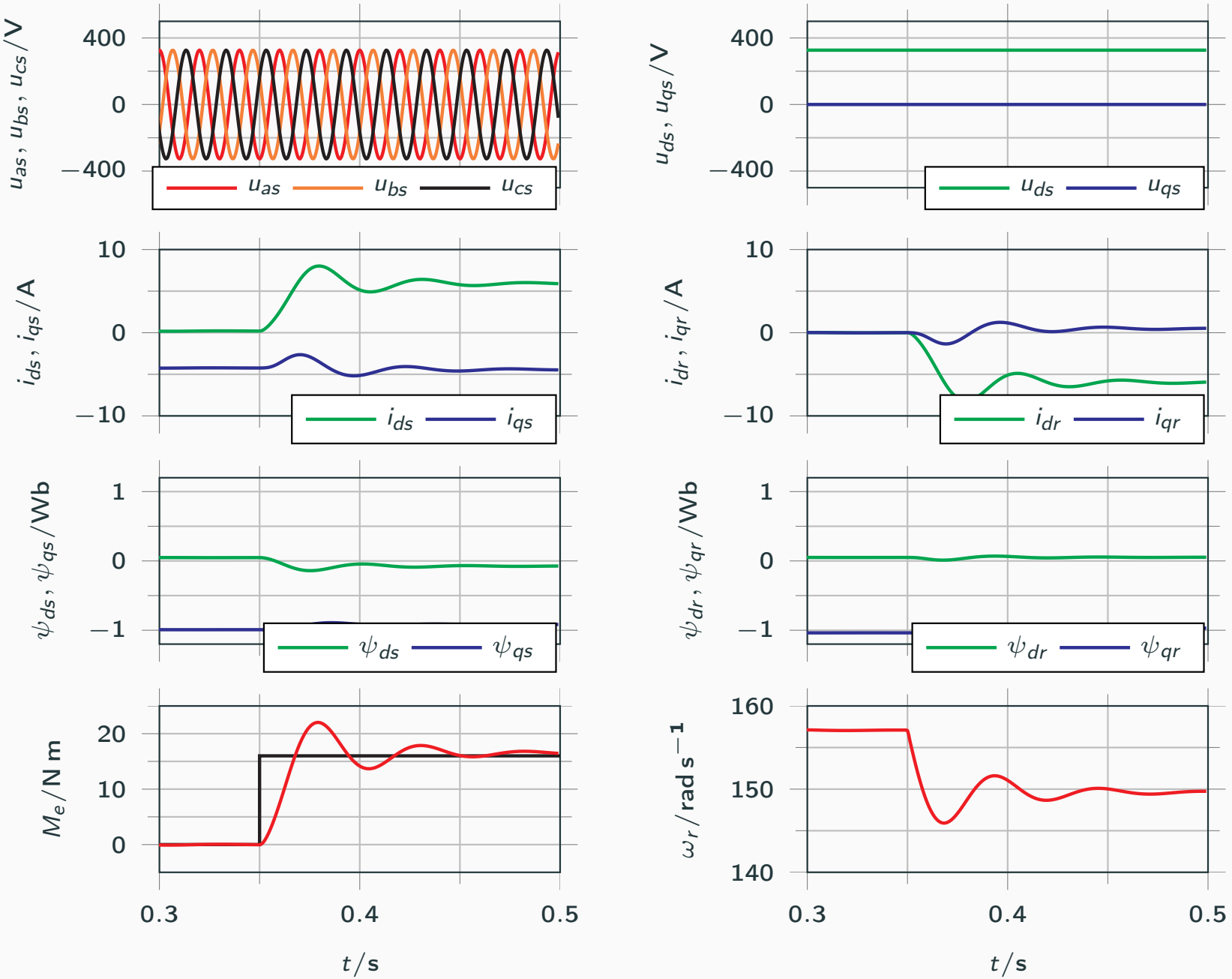
Zagon – KS rotorskega mag. sklepa ($\omega = \omega_{\psi_r}$)



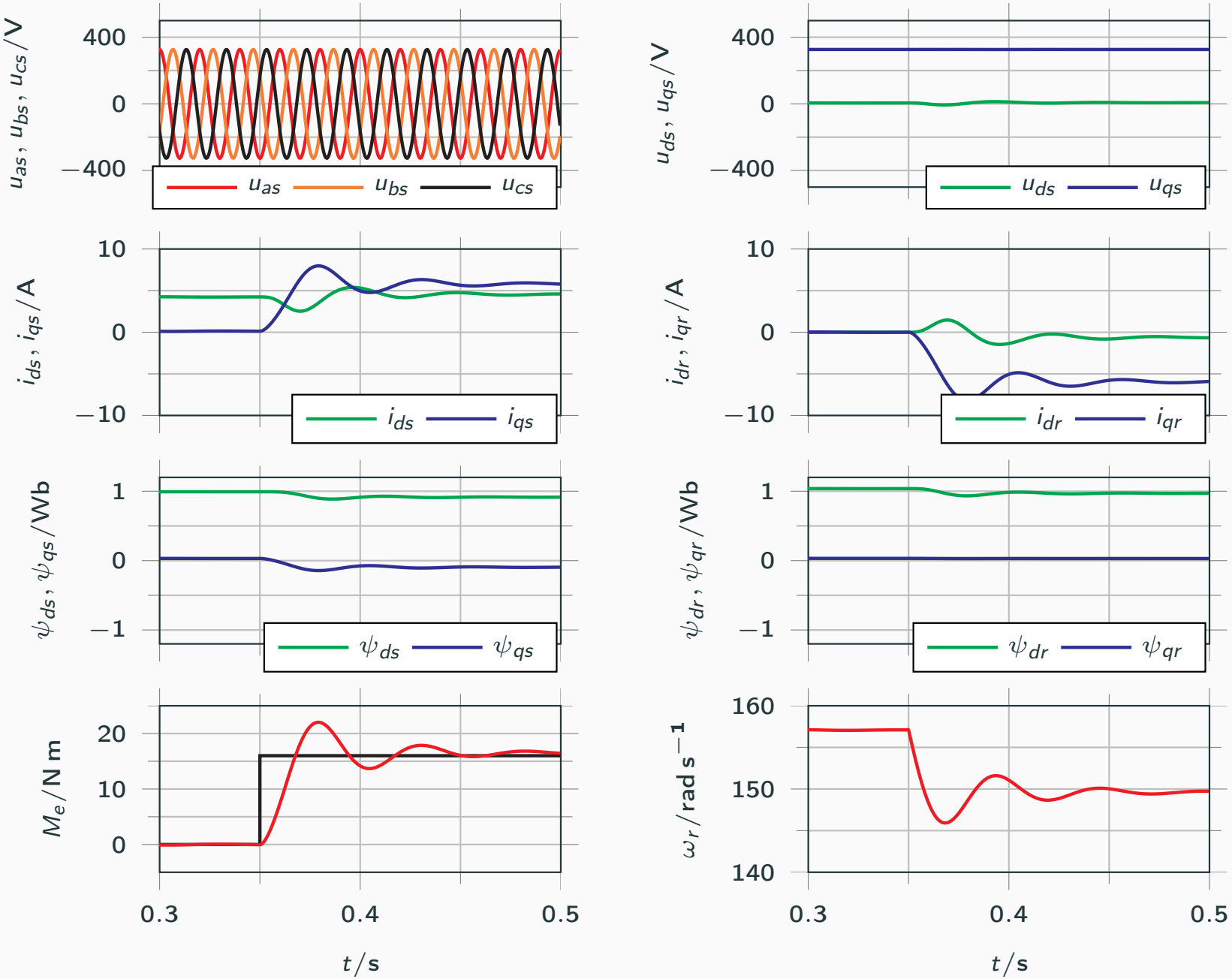
Zagon – KS statorskega mag. sklepa ($\omega = \omega_{\psi_s}$)



Nazivna obremenitev – sinhronski KS ($\omega = \omega_e$)



Nazivna obremenitev – KS rotorskega mag. sklepa ($\omega = \omega_{\psi_r}$)



Nazivna obremenitev – KS statorskega mag. sklepa ($\omega = \omega_{\psi_s}$)