

MATLAB DASTURI SIMULINK PAKETI YORDAMIDA ELEKTR TOKINI O‘ZGARMAS HOLATINI IDENTIFIKASİYALASH MODELINI YARATISH

Abdujalilov Sodiqjon Muhammadamin o‘g‘li

Namangan muhandislik-qurilish instituti, Namangan shahri.

sodiq.abdujalilov1992@gmail.com

Parpiyev Sanjarbek Po‘lat o‘g‘li

Namangan muhandislik-qurilish instituti, Namangan shahri.

sanjarbekparpiyev5@gmail.com

Annotatsiya. MATLAB dasturi, Simulink bo‘limi orqali biz energetika masalalarini bajarish imkoniyatiga ega bo‘lamiz, chunki ushbu dastur orqali turli xil sxemalarni shakillantirib uni vizualni ko‘rinishga keltirishimiz mumkin bo‘ladi. Simulink paketi orqali tok kuchaytirgich sodda xemasini shakillantirib natija olishimiz mumkin bo‘ladi.

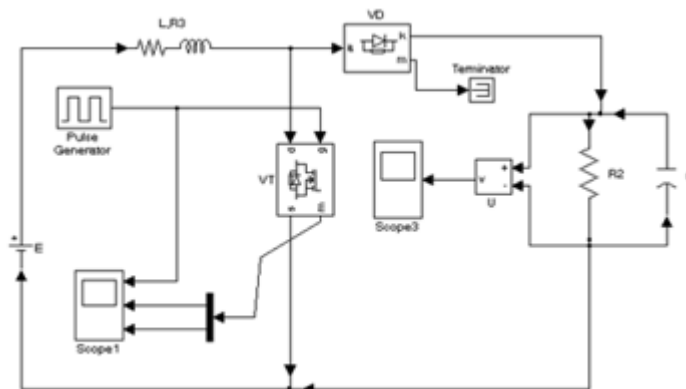
Biz quydagi masalani MATLAB dasturi simuling paketi yordamida **tok kuchaytirgichni sxemasini ixtiyoriy kiymatlar uchun ishlaydigan qurilmani tadbiq etishni** ko‘rib chiqamiz.

Energetika soxasida mutaxassislar tayyorlashda IT texnologiyalarini o‘rni va zamonaviy kompyuterlarda dasturiy paketlar yordamida masalalrni yechish ularni vizualniy ko‘rinishlarni namoish etish natijalarni aniq yechimini olish uchun biz dasturlar peketidan quydagi dasturni tanlab olamiz.

MATLAB dasturi yordamida energetika masalalrni Simulink bo‘limi orqali tur xil mantiqiy amallarni va kuchlanishlarni xisoblashimiz mumkin bo‘ladi. Simulink paketi orqali tok kuchaytirgichni sxemasi va dasturini ketma ketlik asosida bajarib natija olishimiz mumkin bo‘ladi.

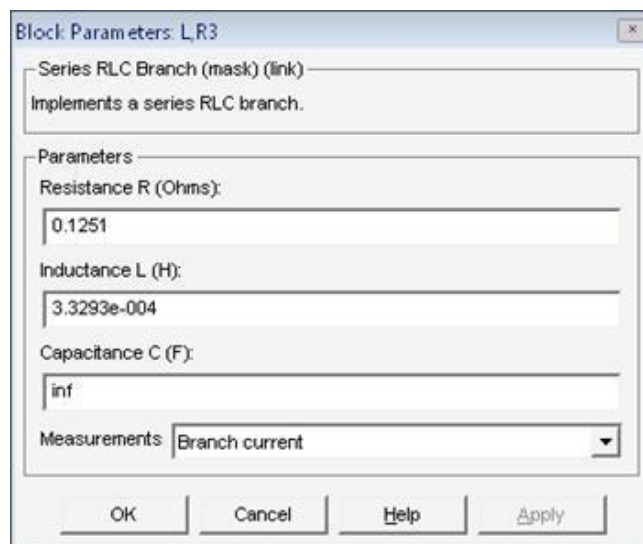
MATLAB dasturining Simulink muxitida boots tipidagi stabilizator sxemasi quyidagicha ko‘rinishga ega.

Parametrik doimiy voltaj stabilizatori sifatining asosiy ko‘rsatkichlarini aniqlash uchun biz uni kirishda voltaj o‘zgarishi uchun funksional diagramma sifatida taqdim etamiz 1-rasm.



1-rasm

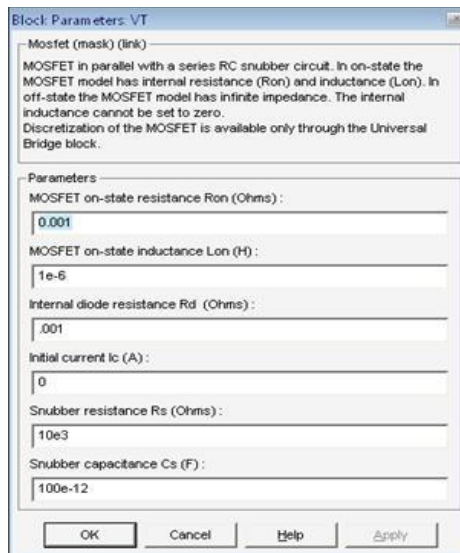
Quvvat manbai sifatida biz MATLAB dasturining Simulink kutubxonasidan doimiy voltaj manbasini ifodalovchi kuchlanish manbai blokini tanlaymiz. Uning parametrlarida biz kuchlanishni 48V ga o‘rnatamiz . Tok (**L, R3**) RLC davri bo‘lgan Series **RLC** Branch (**L, R3**) blokini tadqiq qilinadi. U quyidagicha parametrga ega



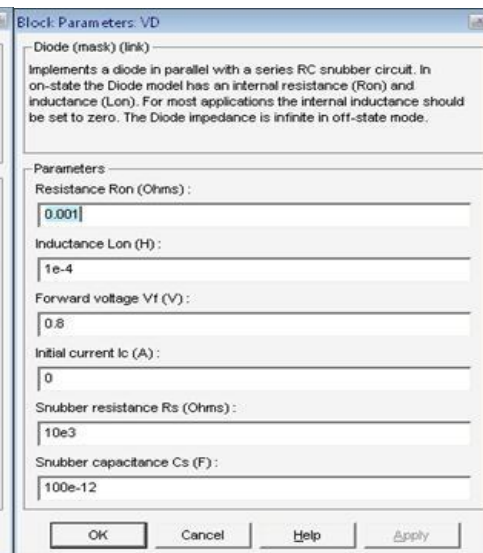
2-rasm

Mosfet bloki yordamida tranzistor (VT)da modellashtirilgan. Konverterdagi tranzistor va diod asosiy rejimda ishlagani uchun ularning matematik modellari uchun himoya davrlarining mos parametrlarini tanlaymiz.

Mosfet modeli ma’lumot chiqishiga ega, biz uni osiloskop modeli bilan bog‘laymiz (Scope1). G kiritish tranzistorning eshigini ifodalaydi va impuls generatori tomonidan impulslanadi. Mosfet blokining parametrlari 3-rasmda keltirilgan. Diod blokini simulyasiya qiladi. Parametrlar 4-rasmda keltirilgan.

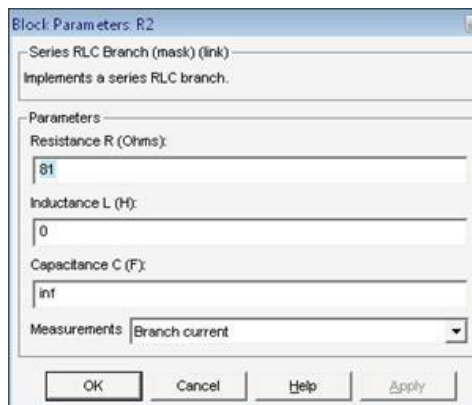


3-rasm

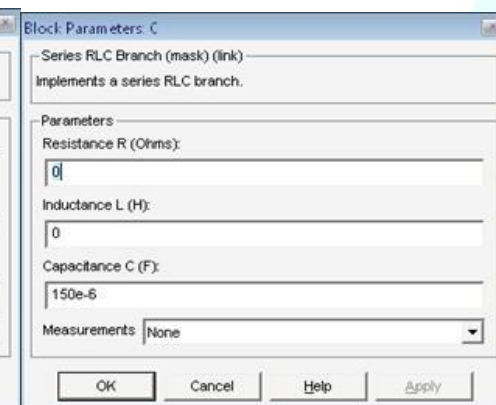


4-rasm

Yuk (R2) va filtr (C) RLC seriyali filiallari tomonidan simulyasiya qilinadi.



5-rasm. (R2)



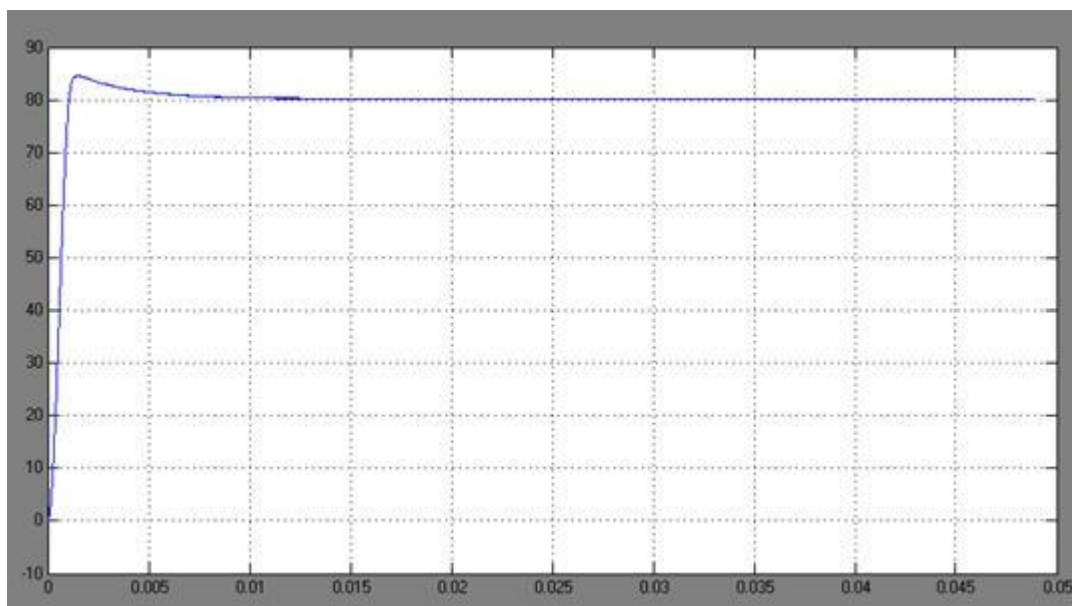
6-rasm (C)

Stabilizator uchun biz tranzistor va diodlarni tanlab olamiz

- Transistor: 2SK133
- Drenaj manbai kuchlanishi 120V
- Maksimal drenaj manbai oqimi 7A
- Darvozaning kuchlanishi maksimal 14V
- Qatlam manbai kuchlanishini uzilishi 1,5V
- Derejan oqimi 3A

- Imkoniyatlarni yopish uchun manba 600pcF
- Ko‘tarilish vaqti maksimal 180 soat
- Diod: 2D213A
- Maksimal chastota 50000Hz
- Maksimal old oqim 10A
- Maksimal teskari kuchlanish 200V
- Maksimal teskari oqim 200 mA
- Imkoniyat 500pcF
- Konverter chiqish voltaj grafigi
- Chiqish kuchlanish grafigi osiloskopdan olingan. U voltmetrga yuk bilan

parallel ravishda ulanadi.



6-rasm.

Chiqish kuchlanishining barqaror holatdagi qiymati 80,5 V ni tashkil qiladi, tranzistorning holatining nisbiy davomiyligi 0,44 ga teng. Bu sxema parametrlarini hisoblashning maqbul aniqligini ko‘rsatadi, chunki qiymatlar hisoblangandan oshmaydi. Vaqtinchalik rejimda 85V ga teng bo‘lgan haddan tashqari kuchlanish paydo bo‘ladi. Vaqtinchalik vaqt 0,01s.

Demak energetika yo‘nalishdagi talabalarga tajriba ishlarini bajarish uchun MATLAB paketining Simulink bo‘limi orqali barcha energetika masalalarini yechishda zamonaviy paketlarni qo‘llash mumkin.

Foydalanilgan adabiyotlar

1. Dyakonov V. P. Simulink 4. Spesialnyy spravochnik. — SPb.: «Piter», 2002. — 528 s. — ISBN 5-318-00551-9.
2. Solutions Of Boundary-Value Problems For A System Of Differential Equations Of The Fourth Order With The Method Of Finite Differences, Turkish Journal of Computer and Mathematics Education Vol.12 No.10 (2021), 2209-2213
3. Problems of Development and Solution of Technological Processes of Cleaning Cotton with Small PJAEE, 17 (7) (2020) Dispersion Particles and Dust.
4. Dyakonov V. P. MATLAB 7.*/R2006/2007. Samouchitel. — M.: «DMK-Press», 2008. — 768 s. — ISBN 978-5-94074-424-5
5. Dyakonov V. P. MATLAB R2006/2007/2008 + Simulink 5/6/7. Osnovy primeneniya. Izd-ye 2-ye, pererabotannoye i dopolnennoye. Biblioteka professionala. — M.: «SOLON-Press», 2008. — 800 s. — ISBN 978-5-91359-042-8

