

PLC:LD,FBD,SFC,ST,IL,CFC Dasturlash tillari

*„Barcha genial narsa oddiy.
Lekin did bilan bo‘lishi kerak.“*

— Andrey Knishov

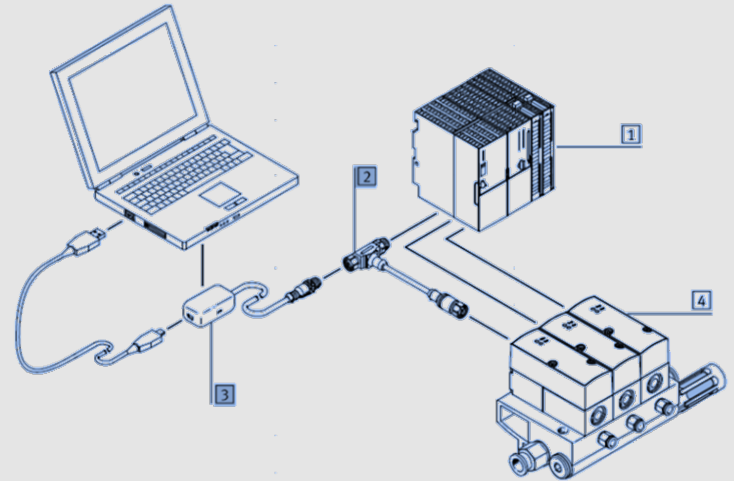


Reja

- IEC 61131-3 Dasturlash tillari
- CFC dasturlash tili va uning xususiyatlari
- CFCda ijro mexanizmlari uchun PLC dasturlash

IEC 61131-3 Dasturlash tillari

- **IEC 61131-3 - bu IEC 61131-3 xalqaro standartining bo'limi bo'lib, dasturlashtiriladigan mantiqiy kontrollerlar (PLC) uchun dasturlash tillarini tavsiflaydi. LD, FBD, SFC, ST, IL, CFC**



Dasturlar misoli Codesys dasturida amalga oshiriladi



CODESYS

CoDeSys - (Untitled)* - [PLC_PRG (PRG-CFC)]

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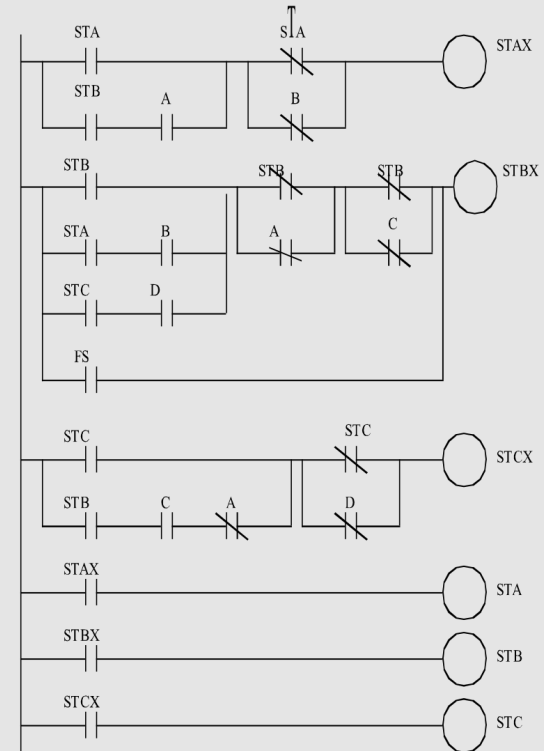
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0002 VAR
0003 END_VAR
0004
0005
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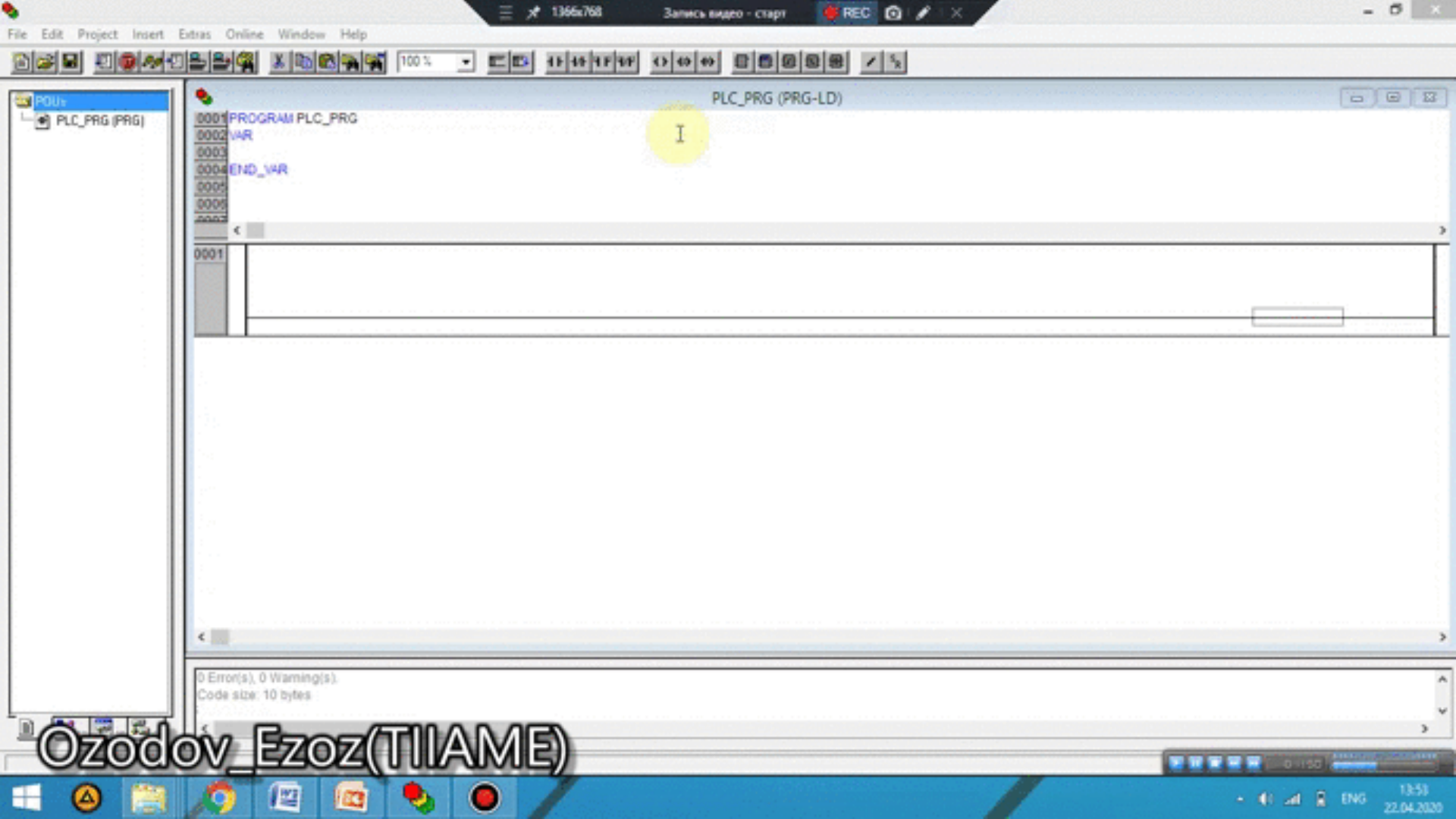
FDUs
PLC_PRG (PRG)

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LD (*Ladder Diagram*)

Tilning sintaksisi rele texnologiyasida tuzilgan mantiqiy sxemalarni almashtirish uchun qulaydir. Sanoat korxonalarida ishlaydigan avtomatlashtirish muhandislariga qaratilgan.





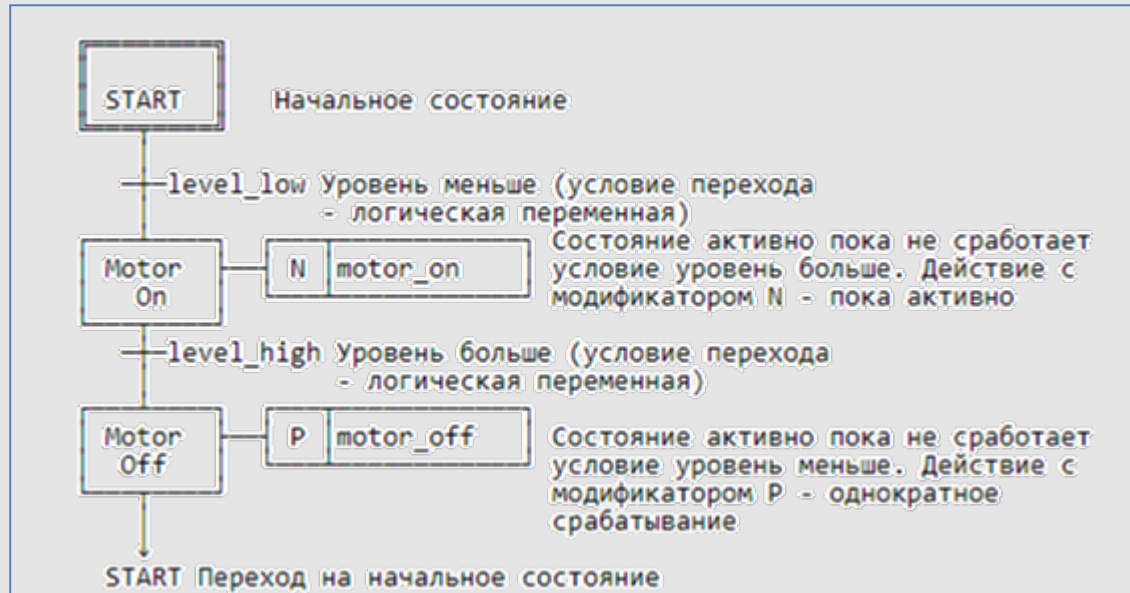
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0002 VAR
0003
0004 END_VAR
0005
0006
0007
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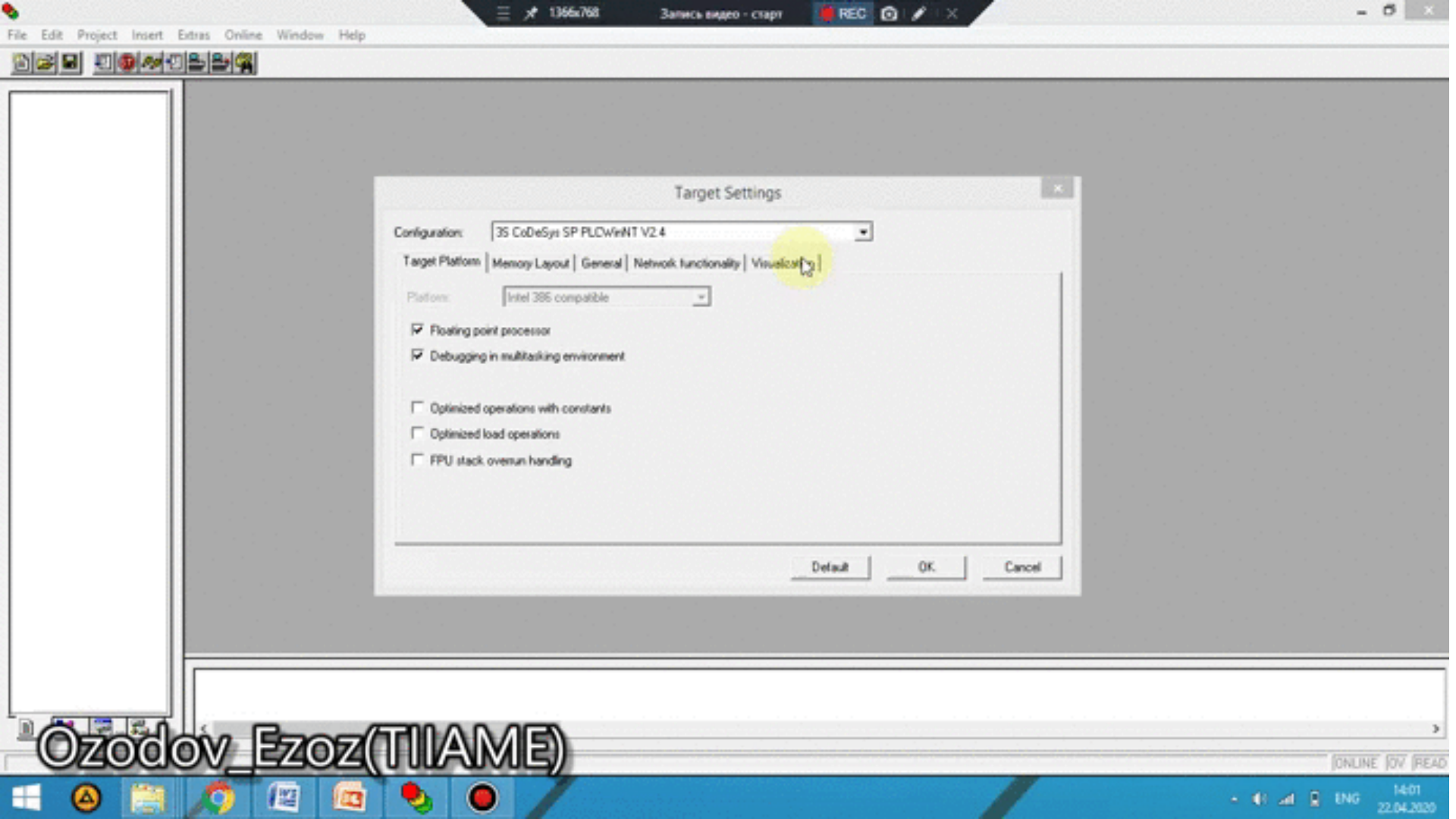
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Ozodov_Ezoz(TIAME)

SFC (Sequential Function Chart)

Tilning sintaksisi rele texnologiyasida tuzilgan mantiqiy sxemalarni almashtirish uchun qulaydir. Sanoat korxonalarida ishlaydigan avtomatlashtirish muhandislariga qaratilgan.





Target Settings

Configuration: 3S CoDeSys SP PLCWinT V2.4

Target Platform | Memory Layout | General | Network functionality | VisualCo

Platform: Intel 386 compatible

- Floating point processor
- Debugging in multitasking environment
- Optimized operations with constants
- Optimized load operations
- FPU stack overrun handling

Default

OK

Cancel

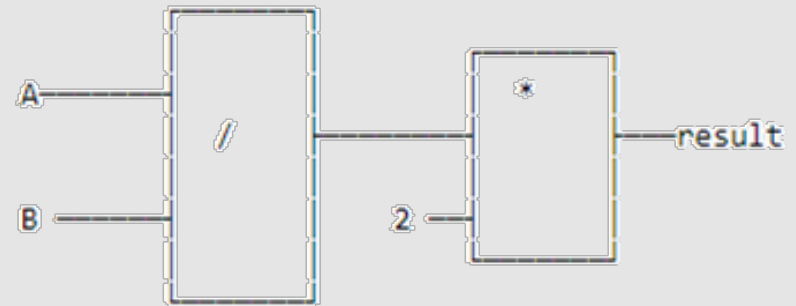
Ozodov_Ezoz(TIAME)

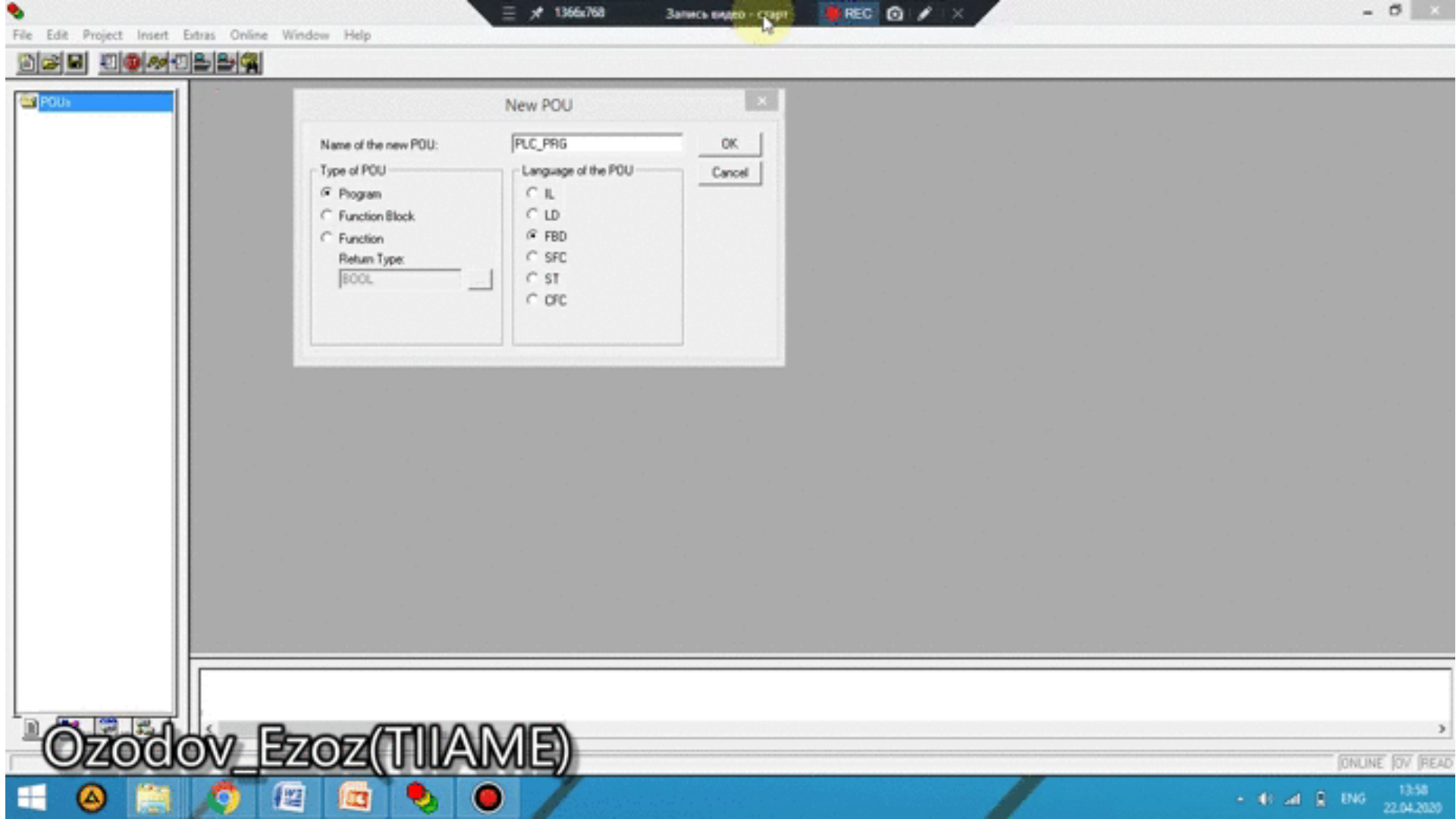
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FBD(Function Block Diagram)

Dastur yuqoridan pastgacha ketma-ket bajariladigan sxemalar ro'yxatidan tuzilgan. Yorliqlarga o'tish bo'yicha ko'rsatma dasturlash shartlari va tsikllari uchun sxemalarni bajarish ketma-ketligini o'zgartirishga imkon beradi.





Ozodov_Ezoz(TIAME)

ST(Structured Text)

- **Structured Text (ST)** — IEC61131-3 dasturlash tili. Sanoat kontrollerlari va operator stantsiyalarini dasturlash uchun mo'ljallangan. SCADA/HMI/SoftLogic paketlarida keng qo'llaniladi. Tuzilishi va sintaksisi jihatidan Paskal dasturlash tiliga eng yaqin. Katta dasturlarni yozish va analog signallar va suzuvchi nuqta raqamlari bilan ishlash uchun qulay.

```
VAR_CONSTANT
  Array_Sz: BYTE := 4;
END_VAR
VAR
  Iter: BYTE;
  arr: ARRAY [1..Array_Sz] of real:=3.2, 4.2 ,1.4, 7.8;
  fnd_max:REAL := -1.2E38;
END_VAR
FOR Iter := 1 TO Array_Sz DO
  fnd_max := MAX(fnd_max, arr[Iter]);
END_FOR
```



POUs

New POU

Name of the new POU: PLC_PRG

Type of POU

- Program
- Function Block
- Function

Return Type: BOOL

Language of the POU

- IL
- LD
- FBD
- SFC
- ST
- CFC

OK Cancel

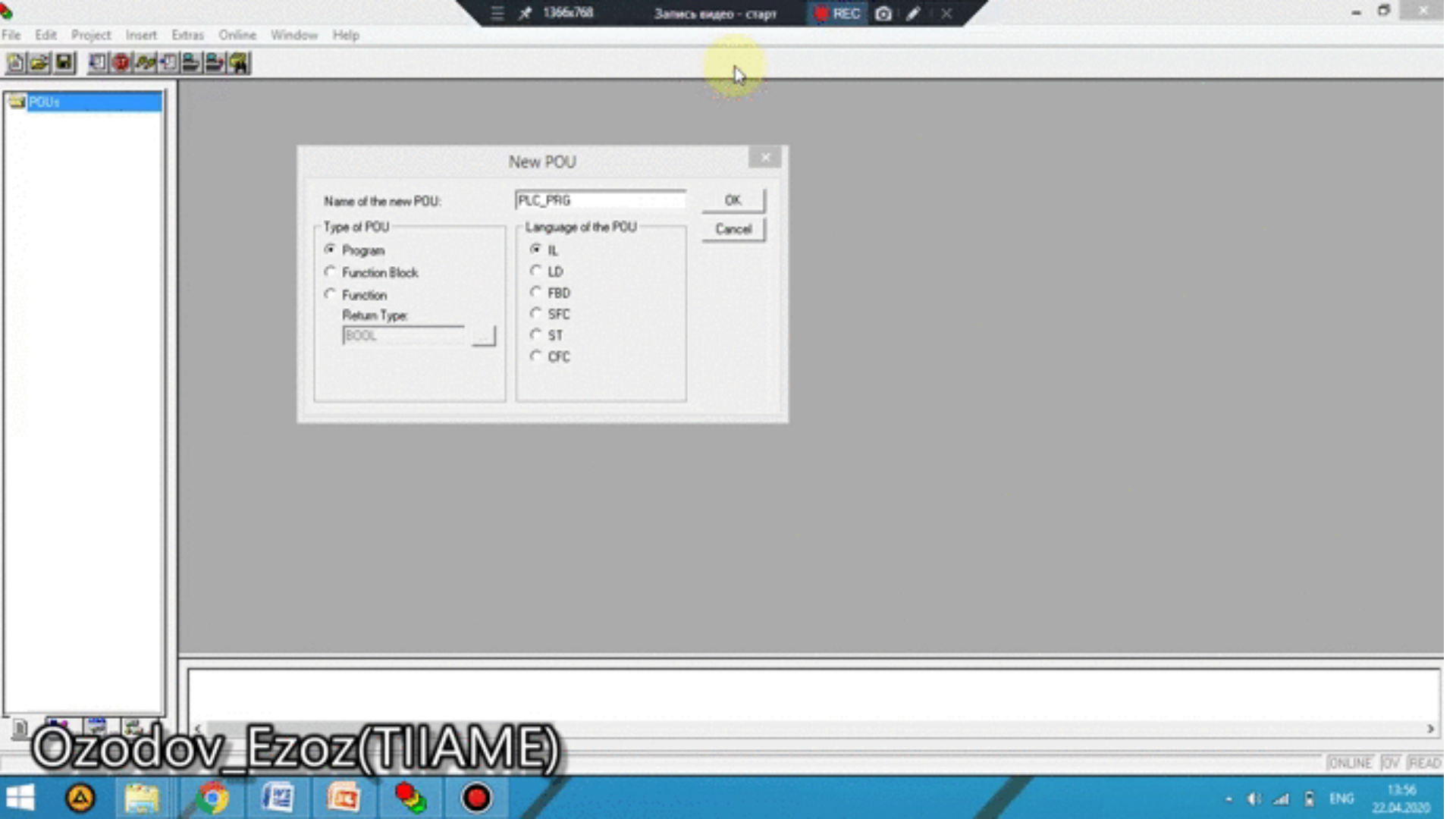
Ozodov_Ezoz(TIAME)

IL (Instruction List)

Sanoat kontrollerlarini dasturlash uchun mo'ljallangan. Sintaksis assemblerga o'xshaydi.

Misol: Chiziqli transformatsiya $Y(x)=A*x+B$

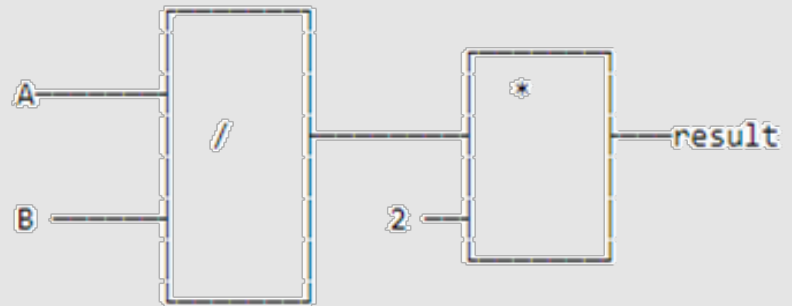
```
LD    X  
MUL  A  
ADD  B  
ST   Y
```

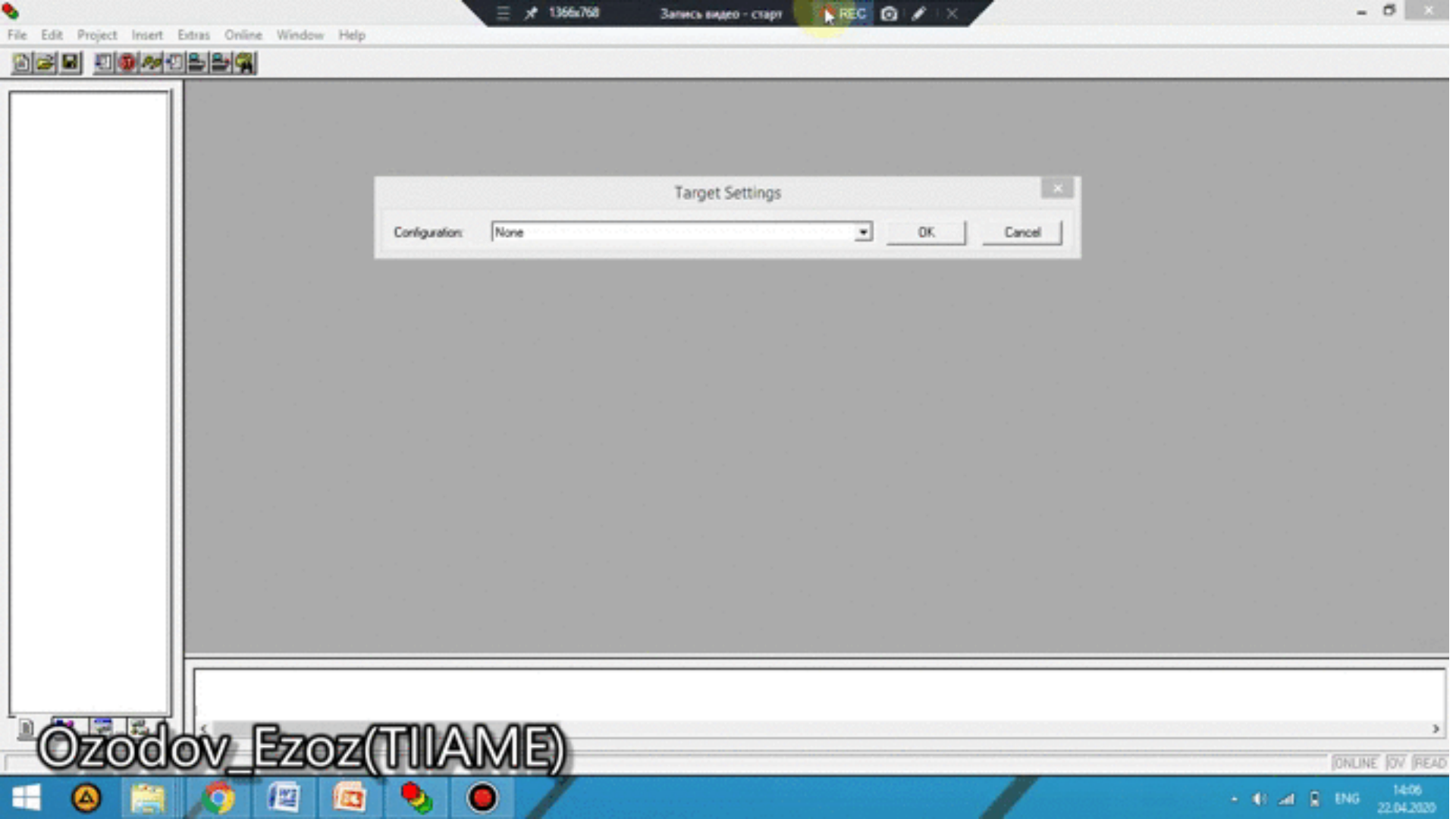


Ozodov_Ezoz(TIAME)

CFC(Continuous Function Chart)

Bu bloklarni bajarish tartibini o'zboshimchalik bilan o'rnatishga imkon beradi. CFC diagrammalari dasturchiga ko'proq harakat erkinligini beradi, ammo o'zaro almashish xato va kattaroq kodning biroz yuqori ehtimoli.





Target Settings

Configuration: None

OK

Cancel

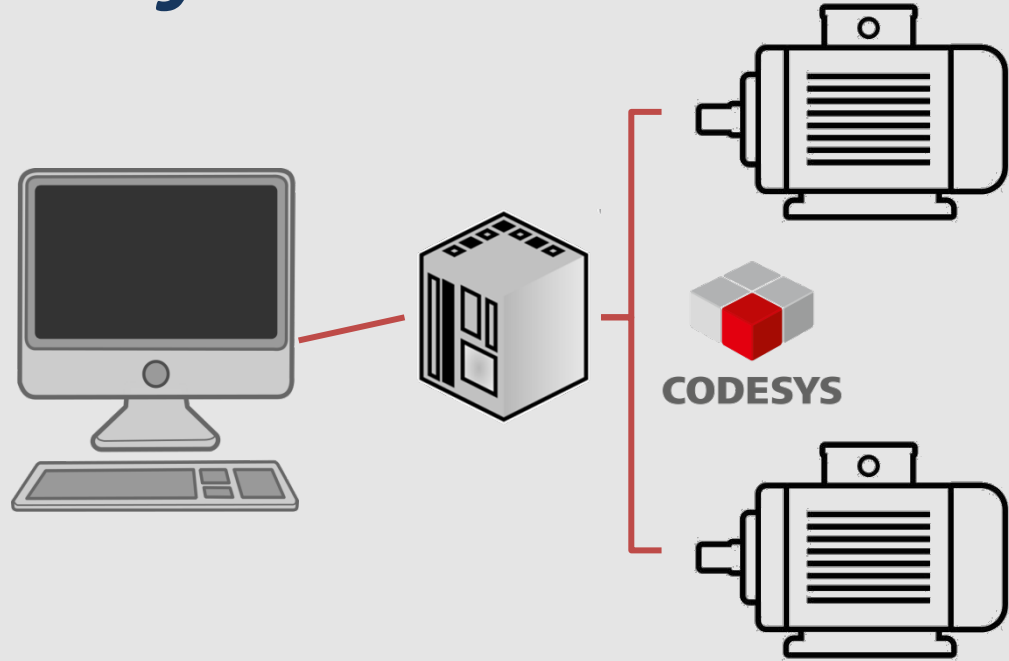
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Vazifa

Bir vaqtning o'zida o'chirishni hisobga olgan holda CFC tilida boshqarish va dvigatelni va murakkab ishlarni muqobil ravishda yoqish uchun dastur yarating.





Target Settings

Configuration:



Ozodov_Ezoz(TIAME)

E'tiboringiz uchun rahmat