Two pumps with time delay

Project for PR200-24.2

Project overview

The example describes a project for alternate operation of two pumps with start time delay to protect them against hydraulic shocks. The project contains 2 data processing blocks and 2 screens.

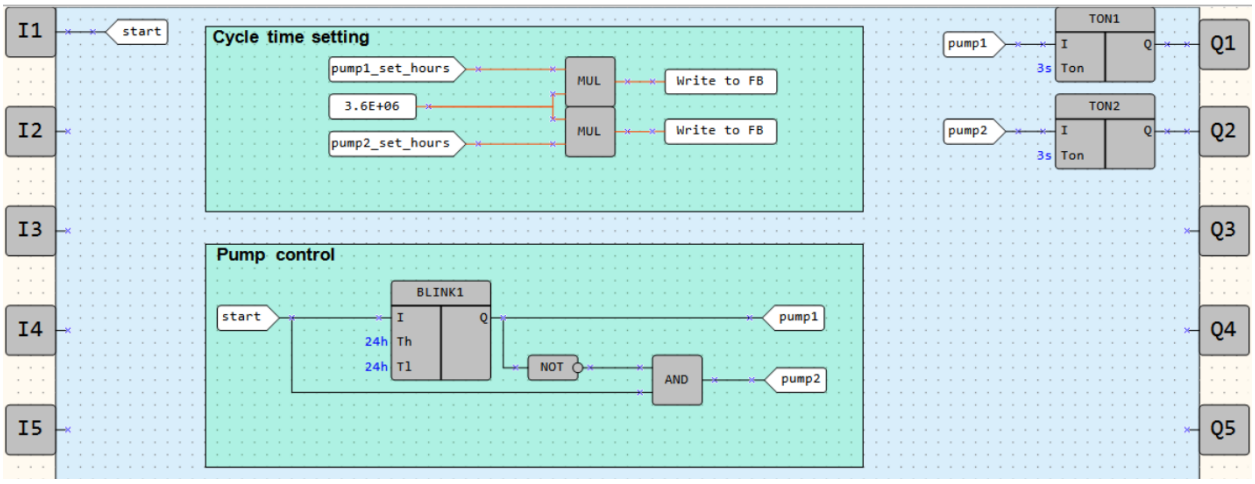

Fig. 1. Program workspace

Data processing blocks:

- Cycle time setting
- Pump control

Screens:

- *Pump control*
- *Cycle time setting*

Table 1. Device inputs/outputs

Name	Type	Description
I1	BOOL	Input (NO contact, latching) / Enable start
Q1	BOOL	Output / Pump 1
Q2	BOOL	Output / Pump 2

Table 2. Project variables

Name	Type	Description
pump1	BOOL	Pump 1 start
pump2	BOOL	Pump 2 start
start	BOOL	Enable start
pump1_set_hours	INT	Pump 1 / set cycle hours
pump2_set_hours	INT	Pump 2 / set cycle hours

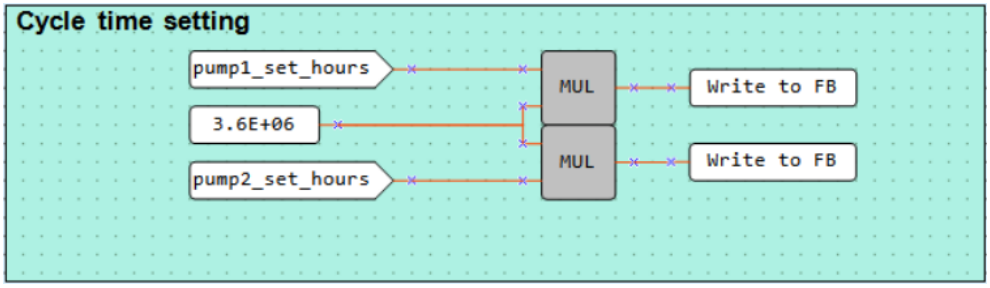

Fig. 2. Cycle time setting

The cycle run time for each pump is set in the block *Cycle time setting* (Fig. 2). It is entered in hours via the screen using the function buttons on the device. The time is then converted to milliseconds to be applied to a *BLINK* FB via *WriteToFB* blocks (Fig. 3).

The algorithm is activated if the signal on the input *I1* is *TRUE*. The pumps are switched on alternately over the *BLINK* FB.

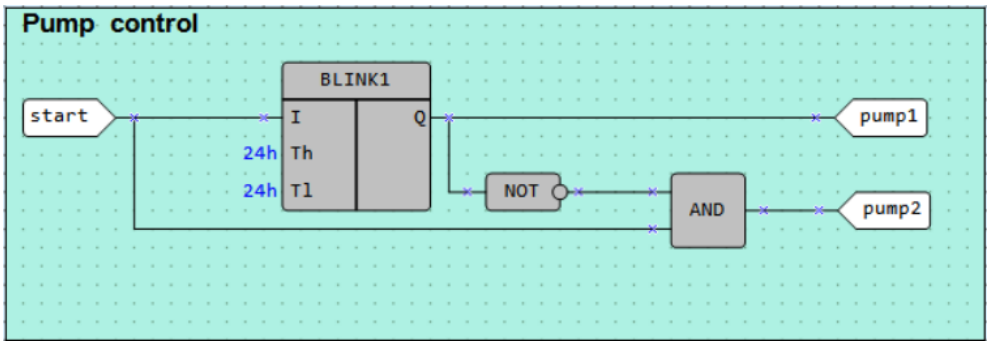

Fig. 3. Pump control

To protect the pumps against possible hydraulic shocks, the pumps are switched on with a time delay set in the *TON* FBs (Fig. 4). The set time is the delay between switching off one pump and switching on the other pump.

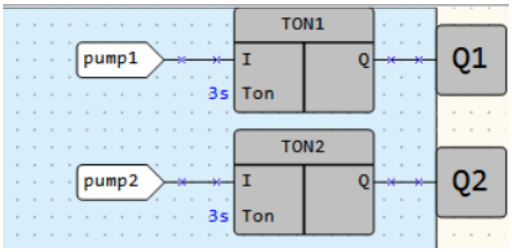

Fig. 4. Protection against hydraulic shocks

Screens

Table 3. Function buttons

Function buttons	Action
⩛	Scroll down through screen rows
⩚	Scroll up through screen rows
ALT + ⩛	Switch to the next screen
ESC	Switch to the first screen

Initially, the screen *Pump control* is displayed (Fig. 5). It shows the status of the both pumps (*ON/OFF*).

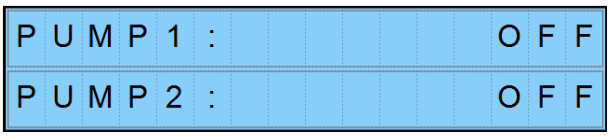

Fig. 5. Screen *Pump control*

The next screen *Cycle time setup* (Fig. 6) is used to set the cycle run time for each pump.

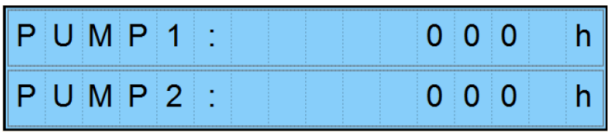

Fig. 6. Screen *Cycle time setup*