Control of Automatic Feeders (e.g. fish farm)

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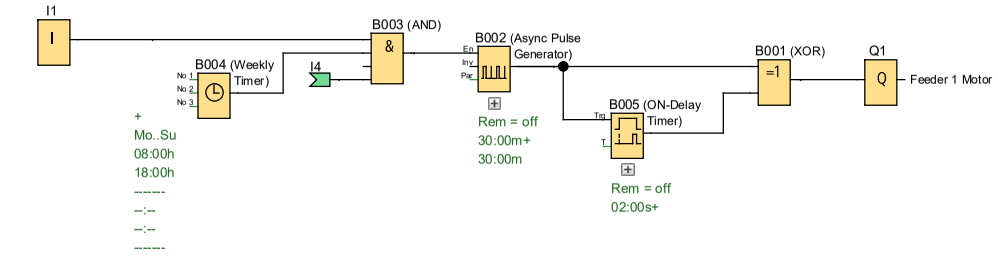
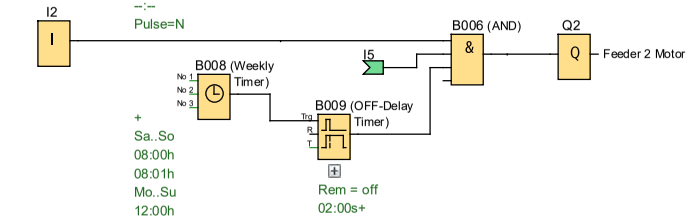
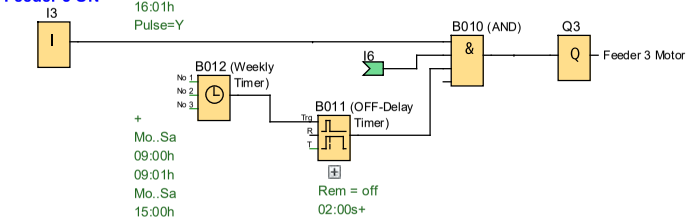
Feeder 1 ON



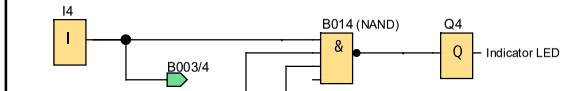
Feeder 2 ON



Feeder 3 ON



Feeder 1 Level Sensor



Feeder 2 Level Sensor

Feeder 3 Level Sensor

Requirements:

Control fish feeders to automatically dispense food. The fish are fed at different times according to their size and age. When a feed container is empty, the feeder should be switched off to prevent unnecessary discharge of the battery and an indicator LED should signal an empty feeder.

Each Feeder has:

* A conical feed container with a 12V motor (Q1, Q2, Q3) that spins a spreader disk to dispense food.
* A level sensor (I4, I5, I6) that signals when a feeder is empty (OFF when empty).
* A manual "On" switch (I1, I2, I3) to enable each feeder.

The conical container shape and the vibration of the motor ensure that feed is always advanced.

Feeder Schedule:

* Each feeder only runs if it's enable switch is ON, AND the feed level sensors reads NOT Empty (ON).
* If ANY feeder is empty, the (warning) indicator LED will light up and the empty feeder will turn off to save battery.

Feeder 1 (Q1) - Brood Fish

* Schedule: Every hour from 8:00 AM to 6:00 PM, every day.
* Duration: Runs for 2 seconds each time.
* Enable Conditions: Must have I1 ON and I4 (Level) NOT Empty.

Feeder 2 (Q2) - Young Fish

* Schedule:
  * Weekdays: Once at 12:00 PM and once at 4:00 PM.
  * Weekends: Additional feeding at 8:00 AM (Sat & Sun).
* Duration: Runs for 2 seconds each time.
* Enable Conditions: Must have I2 ON and I5 (Level) NOT Empty.

Feeder 3 (Q3) - Adult Fish

* Schedule: Monday through Saturday at 9:00 AM and 3:00 PM. (No feedings on Sunday).
* Duration: Runs for 2 seconds each time.
* Enable Conditions: Must have I3 ON and I6 (Level) NOT Empty.

In summary:

- The system provides scheduled, short bursts of food from three different feeders, but only if they are enabled and have food.
- A single warning LED indicates if any feeder needs to be refilled.

Components used:

- I1 On switch, feeder 1 (NO)
- I2 On switch, feeder 2 (NO)
- I3 On switch, feeder 3 (NO)
- I4 Level sensor, feeder 1 (NO)
- I5 Level sensor, feeder 2 (NO)
- I6 Level sensor, feeder 3 (NO)

- Q1 Automatic feeder 1
- Q2 Automatic feeder 2
- Q3 Automatic feeder 3
- Q4 Indicator LED

Advantages:

- The individual switching times can be easily changed.
- Sufficient switching cycles can be generated simply with the internal pulse generator.
- For large fish farms, where many tanks hold the same type of fish, the same control program can be reused for multiple tanks.
- By using a LOGO! 12RC, the feeders can be used without AC power (battery-powered).

Creator:	wm2432	C:\Program Files\Siemens\LOGOComfort_V6\samples\Siemens.gif	Project:	Steuerung von Futterautomaten (z.B. Forellenzucht)	Customer:	SIEMENS AG
Checked:	Witschel		Beispiel 26		Diagram No.:	13026
Date:	7/20/04 1:34 PM/8/27/25 9:08 AM		File:	automatic_feeders_FDB.lsc	Page:	1 / 4

Block Number (Type)	Parameter
B001(XOR) : (XOR)	
B002(Asynchronous Pulse Generator) : (Async Pulse Generator)	Rem = off 30:00m+ 30:00m
B003(AND) : (AND)	
B004(Weekly Timer) : (Weekly Timer)	+ Mo..Su 08:00h 18:00h ------- --:-- --:-- ------- --:-- --:-- Pulse=N
B005(On-Delay) : (ON-Delay Timer)	Rem = off 02:00s+
B006(AND) : (AND)	
B008(Weekly Timer) : (Weekly Timer)	+ Sa..So 08:00h 08:01h Mo..Su 12:00h 12:01h Mo..Su 16:00h 16:01h Pulse=Y
B009(Off-Delay) : (OFF-Delay Timer)	Rem = off 02:00s+
B010(AND) : (AND)	
B011(Off-Delay) : (OFF-Delay Timer)	Rem = off 02:00s+
B012(Weekly Timer) : (Weekly Timer)	+ Mo..Sa 09:00h 09:01h Mo..Sa 15:00h 15:01h Su --:-- --:-- Pulse=Y

Block Number (Type)	Parameter
B014(NAND) : (NAND)	
Q1(Output) : Feeder 1 Motor	
Q2(Output) : Feeder 2 Motor	
Q3(Output) : Feeder 3 Motor	
Q4(Output) : Indicator LED	

Connection	Label
I1	
I2	
I3	
I4	
I5	
I6	
Q1	
Q2	
Q3	
Q4	