Argos Script Library

Tank Volume Calculator

Monitor the level / volume of common tank shapes

APPLICATION NOTES

AN-NBAS-0003-EN

VERSION	LAST REVISION
1.0	"20211119"

Important User Information

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Argos Scripts – Tank Volume Calculator

Pre-requisites

An EC300-Series Netbiter gateway is activated on an **Argos Manage & Analyze** account with minimum firmware version **2.04.02.**

Function Description

Calculate the volume of horizontal, cylindrical tanks based on a sensor distance to the fuel level. Outputs calculated are tank volume, current volume, and tank volume as a percentage (%). The script supports calculations for up to **8** fuel tanks.

Applications - when to use this script

A common application for this script is to use analog sensor 0-20mA or 0-10V and to calculate the current level based on the sensor reading from horizontal, cylindrical tanks. But any configured parameter can be used as input into the script such a value from a Modbus enabled PLC or other type of controller.

Examples:
Tank level monitoring of diesel tanks, water tanks or any other liquid

About Argos scripts

An Argos script is a piece of additional Lua code that can be downloaded from Argos, and which is executed in the Netbiter gateway. This script enables the Netbiter gateway to perform logical or mathematical functions/actions locally, based on normal configured (logging/visualization/alarm) parameter.

Argos provides a script library, which holds different types of script designed to solve both general and application specific problems. Scripts are used in conjunction with a its linked script template. The scripts reference the normal Netbiter logging, visualization or alarm parameters utilizing the **Tag** label for the configured device parameter. The Tag label can be applied to **any configured** parameter as an input or output to a script. Some generic scripts are to be used with preset Tag labels to be used.

Scripts can be included as part of a Netbiter profile. Scripts are free to use, and available are based on your service level. Multiple scripts can be assigned to one Netbiter device.

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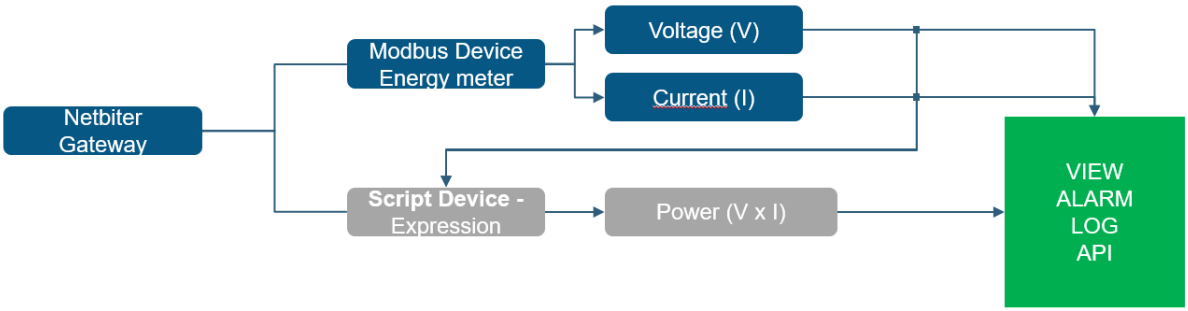


Figure 1 Script Overview

Virtual Device Type and Script Templates

A script is executed inside new device "script device" type named "Virtual EC300 series", similar to a Modbus, SNMP, J1939 or Ethernet/IP device.

A script templates are applied in the same way as any other Argos templates by selected when adding a device. The script templates contain setpoints, inputs or outputs associated with the script. These parameters within script template can then be used as inputs for alarms / logging or visualization in Argos dashboards or as input to another Argos script. All script templates contain two generic parameters, which can be found in the group General of the script template.

- **Information:** describes the version of the script
- **Running counter:** A continuous counter which can be used to verify that the script has been executed and running inside the gateway.

How to use this script

1 Add a device

(Management/<System>/Configuration/Device configuration) of Device type "Virtual EC300 series" and select the template "Tank Calculation".

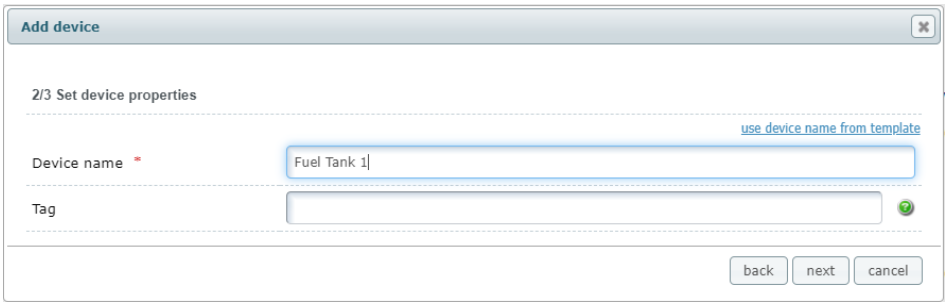


Figure 2 Add EC3XX Virtual Device

Give the Script Device a name so that you can configure it later – in this example called Fuel Tank 1

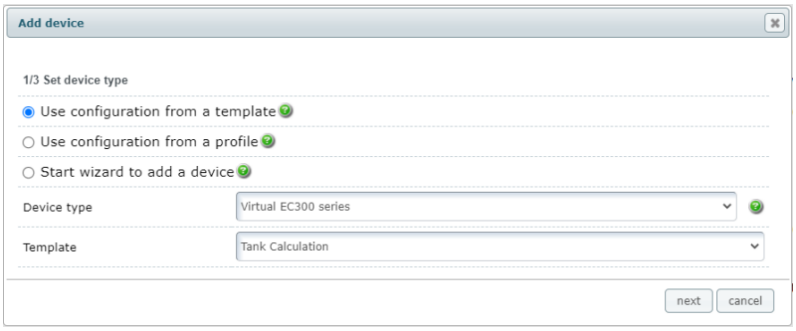


Figure 3 Name the Script Device

2 Add the related script to the system

Management/<System>/Configuration/Scripts
Select "Tank volume calculator"

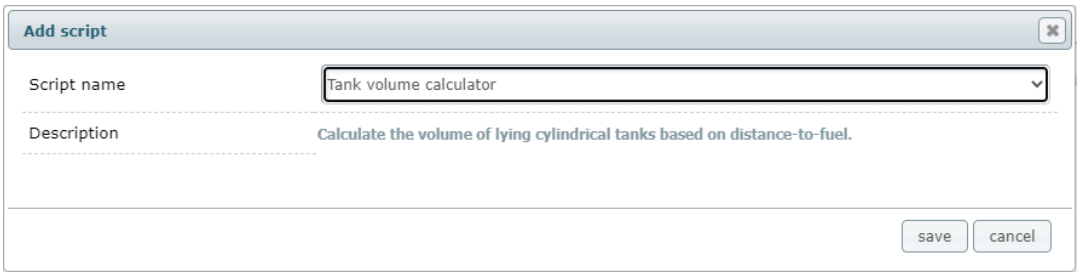


Figure 4 Add Script

3 Tag the Input parameter

Tag any logging, visualization, or alarm parameter(s) with the Tag "**DISTANCEx**" that you want to use as an input parameter the volume calculation.

Please Note!
Parameter used need to be output the distance to the fuel or the level to be measured in mm.

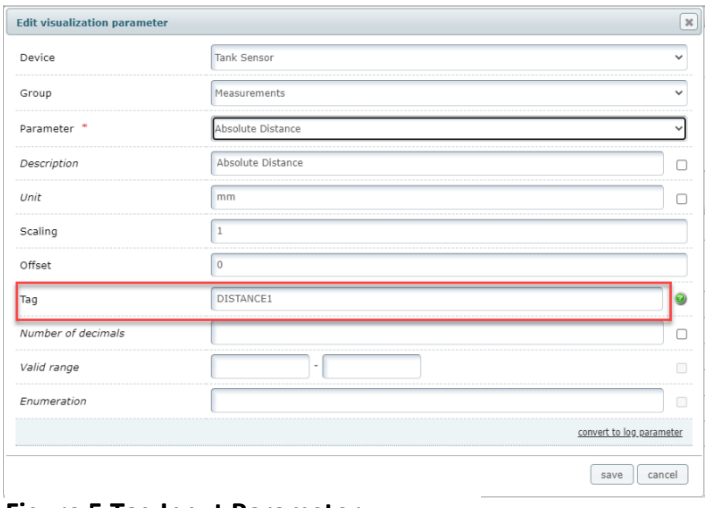


Figure 5 Tag Input Parameter

4 Set up the Visualization / Logging and Alarms

Go to Management/<System>/Configuration/Device configuration and set parameters from the virtual device added in step 1 to hold the applicable setpoint. and values that are available.
Available parameters are; Tank 1 readings: Level %, Max Volume, Volume.

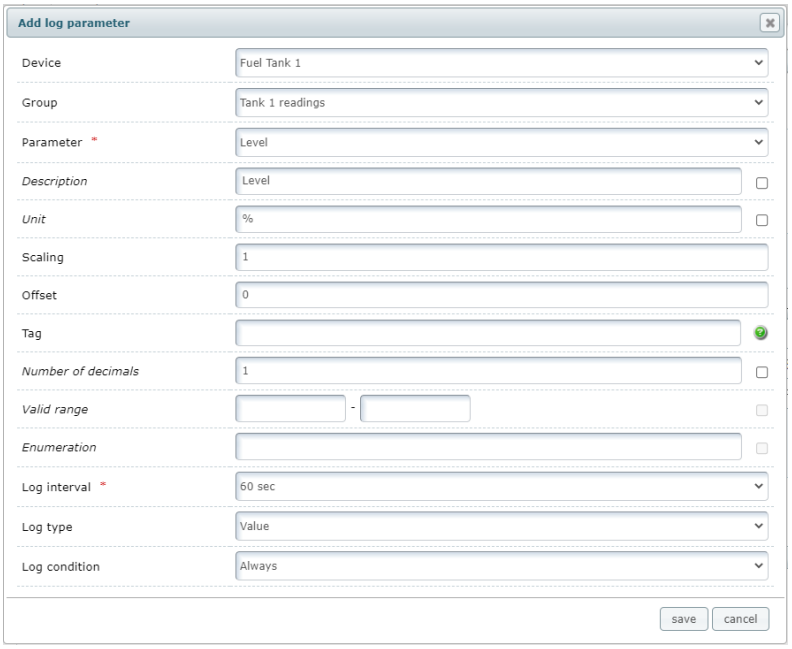


Figure 6 Adding the parameter for logging

5 Synchronize the Netbiter gateway

By performing a synchronization, we now inform the gateway which input is used as the distance parameter for the local calculations. Please note that we have not informed the gateway of the tank dimensions.

Figure 7 Synchronize the configuration

6 Setting up the Tank shape and dimensions

Using *Presentation/<System>/Browse devices/<the Device added in step 1>* it is now possible to configure the tank shape as well as adding the tank measurements.

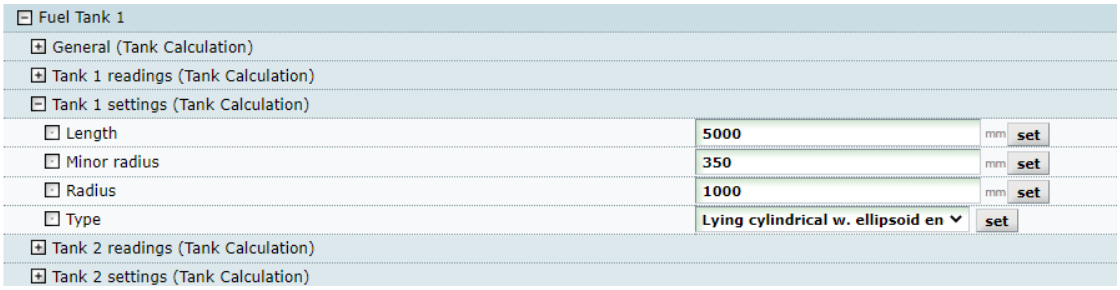


Figure 8 Setting up Tank shape and dimensions

7 See the result

Using *Presentation/<System>/Browse devices/<the Device added in step 1>* Tank Reading. The calculation is made directly in the gateway and displays the current level, calculated max volume of the tank, and the current volume in liters (use scaling and offset if you want to show the volume in gallons).
The parameter valid refers if a valid signal is available by the sensor to the Netbiter gateway to be able to perform the calculation.

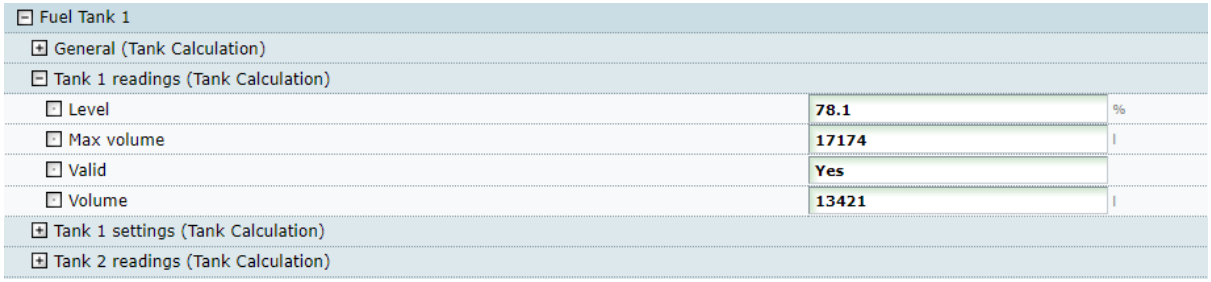


Figure 9 See the result

Some Tips!

Calculate the total amount of fuel from multiple tanks.
Utilize the script" Expressions" if you want to create calculate the total volume of the multiple tanks.

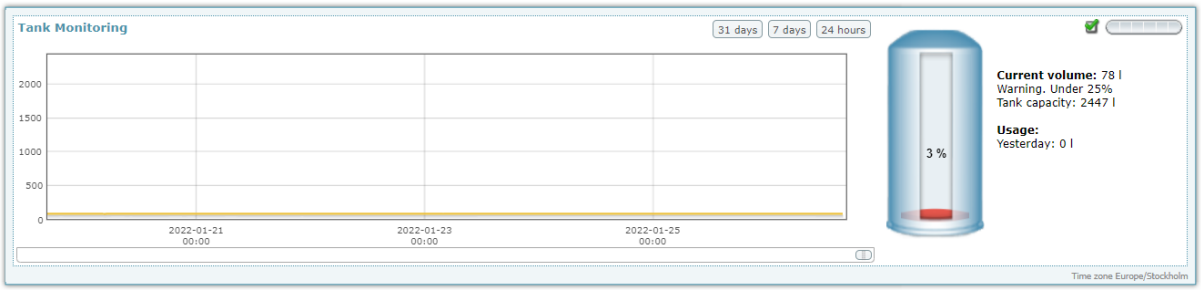
Monitor the consumption rate of the fuel
Use the script "consumption rate" to track the fuel usage, refill rate.

Using Western Global Tanks
Script is available if you use Western global TCG tanks. Just select you model.

Present the volume locally utilizing the local display connected to the Netbiter gateway.

8. Other function available in Argos regarding Tank monitoring.

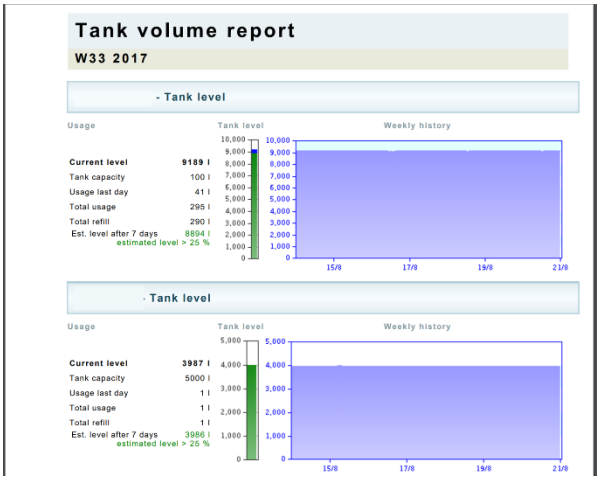
Dashboard



Tank Report

Automatic generated reports

- Weekly /monthly
- **Get status**
  - Current level
  - Usage last day
  - Total refills



Estimation when fuel needs to be refilled based on usage!

Consolidate remote data into a **Single** report

Data Export data to 3rd party solutions

For more information about the scripts, please contact you local HMS support contact.