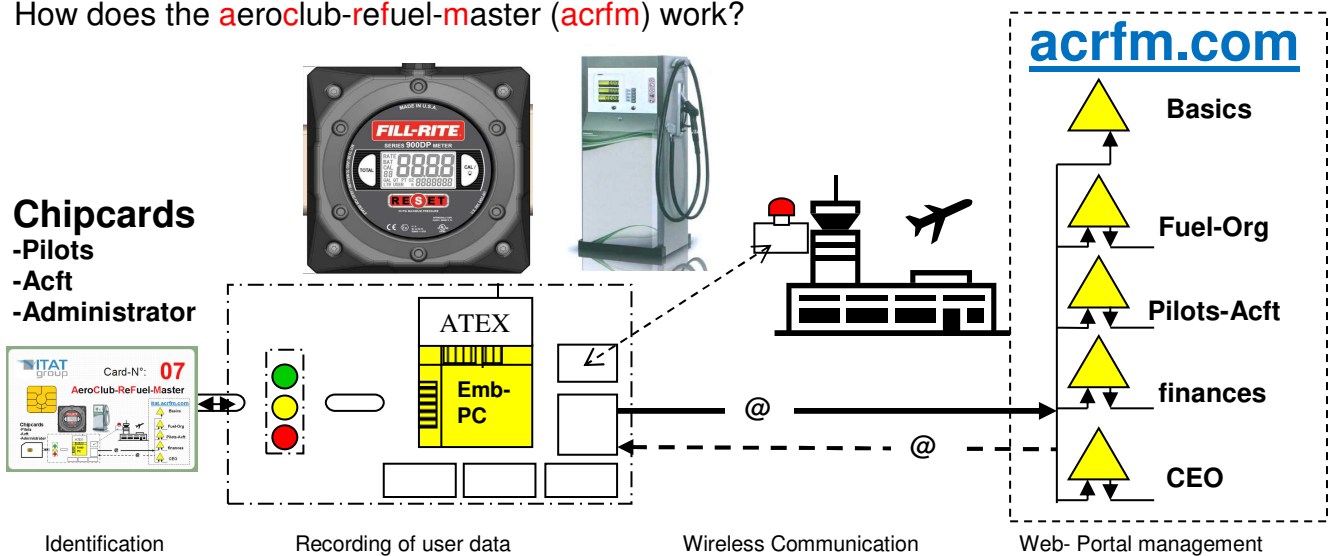


Hello private pilot friends,
the refuel action of our airplanes are getting more and more managed by the aero-clubs and or the operating pilots them self. But who will manage the operation within the aero club and take responsibilities?

Here the Internet can help to operate the business and manage accounting easily.

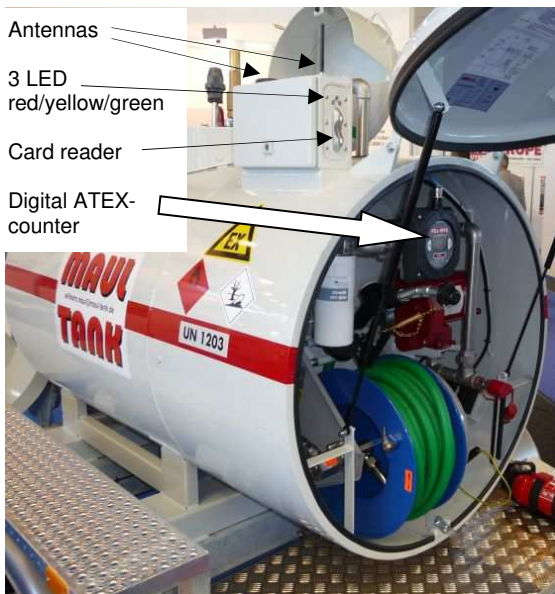
- Nobody need to write into the station refuel log list (and possibly make calculation errors by doing so) Instantly after finish the refuel the Internet shows automatically a new registration log number, who, when, the location, the fuel taken and the date, of course also the aero club price. This information is also sent automatically to the operator, which is either the pilot himself or the aero-club aircraft.
- Before the full fuel capacity of the station is used up, an automatic E-mail will either be be send to the operator on duty or to the refuel shop to order a refuel directly. The added fuel is also entered via Internet with the daily fuel price for further accounting to the users.
- Also the finance manager work is offloaded because a recalculation for every user data is not needed any more. Additional the finance manager can activate a prepayment account for uncertain customers or even deactivate the user account until payment has been received. And, of course this can be done from any location on Sunday while enjoying coffee during the work.

How does the **aeroclub-refuel-master (acrfm)** work?



Begin the refuel **by inserting the chip card**, and when finished, remove the card again. **That is all** what you need to do! Of course, also the safety aspect has been taken care of. Misuse and manipulations of cards are nearly impossible. For user discretion, every user is given a personal login account to assess the Internet portal. There were also special laws to comply with, which we implemented additionally to the received feedbacks from many aero clubs. The developed system now allows aero clubs to operate and manage their own refuel station so easily that it makes fun again.

And this is how it looks like on a refuel container trailer IBC 1000 deluxe:



Right top picture: The GSM modem using a SIM data card m2m GPRS, with 5 MB data volume per month (used only for internet data, without telephone service).



Left picture: The data recording device is located outside the ATEX zone. The card reader slot is vertically aligned with the state LEDs. On top are the communication antennas. Inside the container, the digital counter can be found that is connected after ATEX safety regulations.

Identification:

A contact chip card is used that contains the club logo as well as a card serial number. The card size is identical to normal bank cards. Millions of cards of this type are used throughout the world. They are robust, tested, fully sufficient to use on our system and have the size of our licence or the medical certificate. Therefore it is easy to carry them in the purchase pocket and have them always by hand when needed. The card programmed to contain the serial number of the assigned fuel station, the card serial number and a checksum, that is all. Everything else is managed by the refuel machine on the station and the Internet web portal of the aero club. So different fuel types require different chip card information and different refuel machines for each special fuel type. But all refuel machines are registered on the one web portal of the aero club. The name of the web portal consists of the aero club name with the after fix ".acrfm.com", it has the following format:

<aero club name>.acrfm.com

After the chip card is inserted one of the LED's starts to light up the same way as a traffic light operates. The same way it logical operates on a traffic junction the refuel procedure operates on the refuel station. It is very simple and logical.

Fuel Quantity Recording

The fuel quantity impulses generated either by certified counters or by not certified counters in refuel stations are accumulated, recorded one to one and are transmitted together with a time stamp to the web portal. The payable quantities for systems using certified fuel counters are read from the certified counting system, data transmitted to the web portal are only for information. Aero club stations using not certified counter systems the data received via Internet are taken into account for payable quantities for club members only.

Data Transmission Safety

The refuel machine operates using an embedded PC with a m2m data modem. It records all transactions and saves them temporarily, in parallel to the permanent data transmission to the Internet, until an acknowledge was received to indicate a successful transmission to the web portal. The transaction data are also stored for one year on the machine. Digital data as well as data memory are designed sufficiently so that the machine can be operated without the Internet connection. The machine is designed with 200 % redundancy to withstand any distortions from the Internet network. It is possible to refuel the aeroplane without internet connection and no data can get lost.

Controlled Self Service

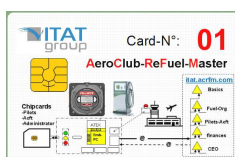
Normally the self service is not permissible by law (BSiVO). In opposite to this law it is possible for pilots to self-service if a line of sight to a second qualified person exists, that can be a tower operator or airfield operator, which are able to stop the refuel process in case of distortions. The available remote control option on the refuel machine permits the self-service, which uses a Bluetooth interface to remotely switch off the refuel machine.

Data Processing within the Internet Portal

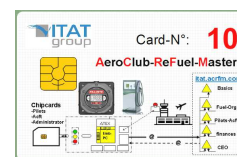
The web portal receives all the transactions and stores them chronologically. Then the transaction data are decoded and assigned to the configured system users that are pilot aircrafts, club aircrafts, club operators or dedicated management persons like the club cashier or the club managers. All refuel cards can be assigned freely to adapt to the aero club structure. The web portal address can either be easily linked within the web site of the aero club or, if programming experience and resources are available, be directly integrated into the aero club web site.

General Web Portal acrfm.com

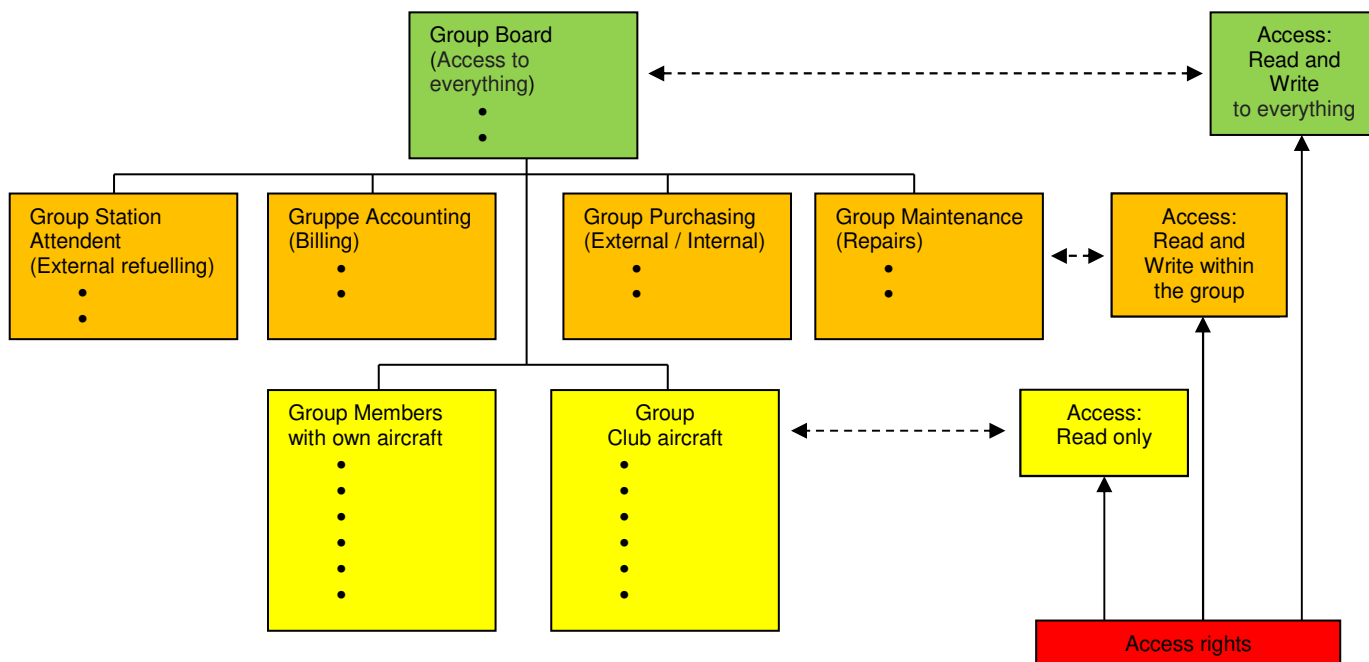
The entries or changes are almost self-explanatory. However, the club should first create a simple organization chart, then the entries can be made sequentially swiftly from it. So, a board member may simultaneously have a private plane or any machine. All participants are registered, assigned to different groups. The underlying groups the higher standing group includes the duty of the association in the access rights. Of course, multiple entries of a member can be carried out, for example, a cashier with a private aircraft. Self-explanatory then someone has several names and passwords for the different read and / or write access as well as a plurality of chip cards for different functions. Including all dual functions calculated from the required smart card number + reserve.



- 1...9999 Cards
- 1...99 Dispensers
- 1 Web portal acrfm.com



This organigram should include everybody and should also have reserves.



Now it's all about the portal, it is very easy.

As long as a field is green, these are the existing, stored entries. To enter, change, or delete data, click the Pen icon or the X-Cross icon. The input color is blue for this time.

The master data can, of course, be updated at any time (only by groups with access rights). The movement data from the refuel data acquisition can, of course, not be changed by anyone. And we also included a freely selectable club charge for the fuel costs themselves, of course.

▲ Basics

| | |
|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Main Menu Master file data Fuel management Financial administration Refueling actions Board information | >> Main Menu :: Master file data Master file data <ul style="list-style-type: none"> Information about Club CAT: Customer activated terminal Card Administration Participants Groups <p>Administer of basic data. The individual menu items are explained below.</p> <p>Club data: Enter & administer Club basic information with details Enter and administration of refuelling unit with individual details.</p> <p>CAT (Customer activated terminal): Create / administer CAT's and their detailed information.</p> <p>Chip-card administration: Create / administer Chip-cards.</p> <p>Participants: Create / administer participants. Allocate groups, authorisations and Chip-cards. Participants are Clubmembers or ACFT.</p> <p>Groups: Create / Edit groups. Allocate rights and participants.</p> |
|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

▲ Fuel-Organisation – so that new fuel can be obtained in time!

| | |
|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Main Menu Master file data >> Fuel management Persons in charge Refueling File Import | >> Main Menu :: Fuel management Fuel management <ul style="list-style-type: none"> Persons in charge Refueling File Import <p>Administration of Refuelling and Responsables.</p> <p>Responsible Persons: Allocation of responsible persons.</p> <p>Refuelings: Enter Refuellings.</p> <p>File Import: manual Import off refueling operations.</p> |
|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



Finances – Internal and external billing and control

Main Menue

- Master file data
- Fuel management
- » Financial administration
- Refueling actions
- Board information

»» Main Menue :: Financial administration

Financial administration

Register of unpaid refuelling actions for pilots- and ACFT-accounts with adjustments of the payment status. Blue lines indicate actions with the Tankattendants-card.

Adapt and fix list display.

Fuelling actions for:

display up from:

display up to:

List Limit:

Point in time Action-Nr. Card-Nr. TA Liter Amount Status

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|



Refuelling Pilots- / Clubact – Refuelling operations on all types of aircraft

Main Menue

- Master file data
- Fuel management
- Financial administration
- » Refueling actions
- Board information

»» Main Menue :: Refueling actions

Refueling actions

List of refuelling actions for pilots- and AcFT-Accounts. View per active participant. Blue lines are actions with the tank-attendants-card.

Fuelling actions for **Administrator**

Adapt and fix list display.

display up from:

display up to:

List Limit:

printing view

Point in time Action-Nr. Card-Nr. TA Liter Amount Status

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|



CEO – Chronological board information about everything as required!

Main Menue

- Master file data
- Fuel management
- Financial administration
- Refueling actions
- » Board information
- Fuel quantity correction
- Refuelings
- Status-Loglist
- Refueling actions

»» Main Menue :: Board information

Board information

- Fuel quantity correction
- Refuelings
- Status-Loglist
- Refueling actions

All actions- and log-listings for information of the association committee.

Filling level adjustments: List of all filling level adjustments executed with time stamp.

Filling of Tank: List of all fillings of all TA with date stamp.

Logliste of status: List of all status transmission of TA.

Refuelling actions: List of all refueling actions with all participants. Individual participants selectable. Participants can be members or ACFT.

- Fuel Quantity Correction

Main Menu

- Master file data
- Fuel management
- Financial administration
- Refueling actions
- » Board information
 - Fuel quantity correction
 - Refuelings
 - Status-Loglist
 - Refueling actions

»» Main Menu :: Board information :: Fuel quantity correction

Fuel quantity correction

Listing of the liquid-quantity adjustments.

Adapt and fix list display.

CAT Customer activated terminal:

display up from:

display up to:

List Limit:

[printing view](#)
 [CSV Export](#)

| Customer activated Tank Unit- CAT | Date | Filling level corrected |
|-----------------------------------|------|-------------------------|
| | | |

- Refuelling

Main Menu

- Master file data
- Fuel management
- Financial administration
- Refueling actions
- » Board information
 - Fuel quantity correction
 - Refuelings
 - Status-Loglist
 - Refueling actions

»» Main Menu :: Board information :: Refuelings

Refuelings

Listing of all refuelling events. Selectable per TA.

Adapt and fix list display.

CAT Customer activated terminal:

display up from:

display up to:

List Limit:

[printing view](#)
 [CSV Export](#)

| Customer activated Tank Unit- CAT | Responsible Person | Date | Quantity | price per liter | Kind of refuelling |
|-----------------------------------|--------------------|------|----------|-----------------|--------------------|
| | | | | | |

- Status Log List

Main Menu

- Master file data
- Fuel management
- Financial administration
- Refueling actions
- » Board information
 - Fuel quantity correction
 - Refuelings
 - Status-Loglist
 - Refueling actions

»» Main Menu :: Board information :: Status-Loglist

Status-Loglist

Listing of changes of status, selftestmessage and BT-emergency switch of the Tanking-Unit. Selectable per TA.

Adapt and fix list display.

CAT Customer activated terminal:

display up from:

display up to:

List Limit:

[printing view](#)
 [CSV Export](#)

| Customer activated Tank Unit- CAT | Portal Time | Date | BT-Monitoring | Status | Self test |
|-----------------------------------|-------------|------|---------------|--------|-----------|
| | | | | | |

- Refuel Actions

The screenshot shows the 'Refueling actions' section of the MAUL-TANK web interface. On the left is a 'Main Menu' with options like 'Master file data', 'Fuel management', 'Financial administration', 'Refueling actions', 'Board information', 'Fuel quantity correction', 'Refuelings', 'Status-Loglist', and 'Refueling actions'. The main content area is titled 'Refueling actions' and includes a description: 'Listing of refuelling actions for pilots and ACFT-accounts. View selectable per participant. Blue lines are actions with card of tank-attendant.' Below this is a configuration box 'Adapt and fix list display.' with fields for 'Tank Terminal' (213048), 'Fuelling actions for' (show all), 'display up from', 'display up to', and 'List Limit' (10). There are 'Resume' and 'Initial' buttons. At the bottom, there are links for 'View/download Tank operations PDF', 'printing view', and 'CSV Export'. A table header is visible with columns: Participants, Point in time, Action-Nr., Card-Nr., TA, Liter Amount, Status. The page shows '1 / 2' of data.

The board member can export refuel data into own controlling systems via Excel-CSV format as well as producing selected tank operation lists in PDF format.

Purchase, Delivery, Commissioning and Maintenance of the **aeroclub-refuel-master**

The technology and application of this internet appliance was developed gradually with the supplied 400 tank trailers and many surface-mounted stationary systems at general aviation airfields. But it would never have been so successful without the many ideas of aviators and Aero-Club's.

We would like to express our sincere thanks to all those involved in the new development.

Commissioning

All aeroclub-refuel-master are pre-installed and tested with a German SIM card (m2m data card). The delivery state is however without the SIM card (for contract reasons). The user can freely choose the required m2m card from a telephone network operator. With 500 tank operations per month, the data volume is less than 1 MB. We recommend to select 5 MB because of the significantly lower price.

The user connects the PC using a LAN Network cable and an internet explorer. The m2m card data PIN and APN must be entered into the machine configuration page, see user manual for detailed instructions.

A Firmware Update is likewise also possible. In case of an Update a separate instruction manual and the Firmware will be delivered via E-Mail.

Maintenance

Maintenance is carried out using the **aeroclub-refuel-master** web portal. After card data are modified the machine data are automatically synchronised via Internet. Synchronisation will start at each power up or periodically at two preconfigured times, see user manual for detailed instructions.

AeroClub – Automatic Refuel via Internet

MAUL-TANK

Access the [aeroclub-refuel-master portal \(acrfm.com\)](http://aeroclub-refuel-master.acrfm.com)

The acrfm portal currently exists in 4 languages. Please find the contact details below:

ltat.acrfm.com

airiecs.acrfm.com

hubmann.acrfm.com

maul-tank.acrfm.com

for Italian language

for French language

for English language

for German language

maurizio.bersani@itatgroup.it

luc.neveu@airiecs.fr

alfons@hubmann.ch

wilhelm.maul@maul-tank.de

To access you need a

Username:

Password:

>> Member logon

Member logon

Register Club-Members or ACFT-Accounts.

Enter your login data..

Member

Password

For this purpose, we ask you to contact one of our local sales offices, see address details above.

Good luck!



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Maurizio Bersani

Complete product catalogue 2017, see www.maul-tank.de