WELDCUBE PREMIUM
RELEASE 2.2

RELEASE DESCRIPTION

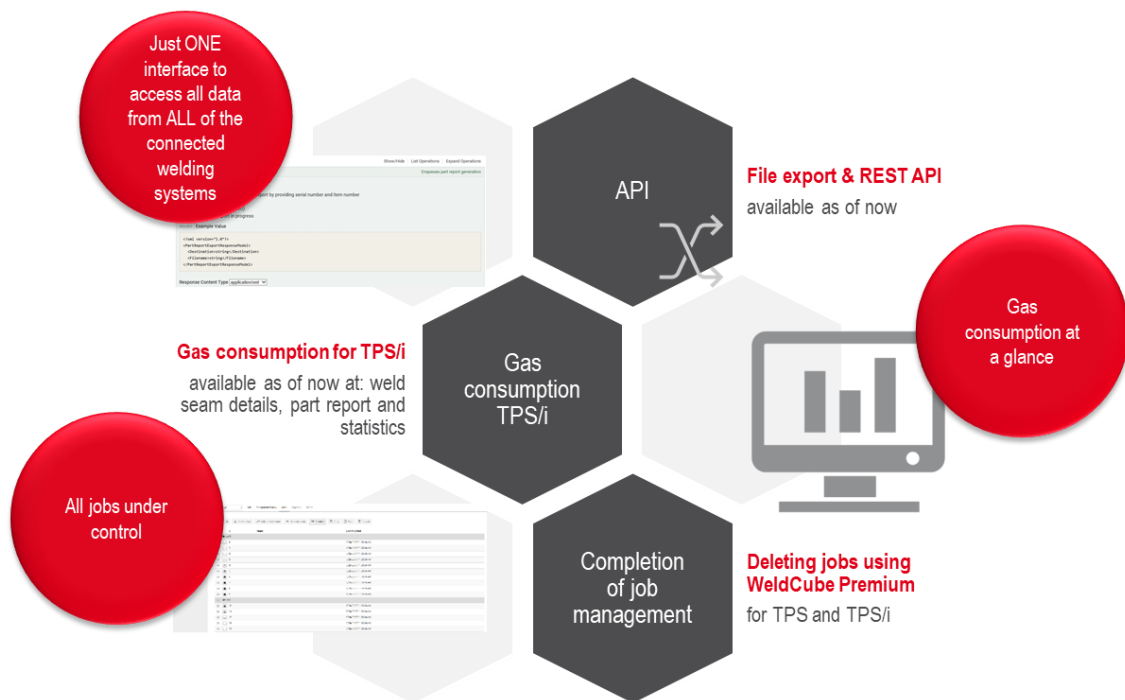# TABLE OF CONTENTS

1 OVERVIEW: NEW FUNCTIONS

Release 2.2 provides several news and improvements for the WeldCube Premium application.

TPS/i firmware version 1.8.6 is required for using release 2.2 together with TPS/i. The following chart shows the most important new possibilities:

Attention:

/ Gas consumption for TPS/i requires TPS/i firmware version 2.0.

/ TPS/i firmware versions 1.9 and 2.0 fix many troubles with data communication between TPS/i and WeldCube Premium. Thus, we highly recommend updating TPS/i firmware to version 2.0.

The following list provides an overview of all new functions with release 2.2:

/ General
   / TPS device backup & restore
   / Logbook entry for user login / logout at the welding device (TPS/i)
   / Roll-out of time server for Delta Spot
   / Shutdown function
/ Set values
   / Centrally deleting jobs of TPS and TPS/i using WeldCube Premium
/ Actual values
   / Gas consumption (gross & net) per weld now also for TPS/i
   / Higher sampling rate for spot welds available as of now
/ Data interface / API
   / New data types available for file export: XML & JSON
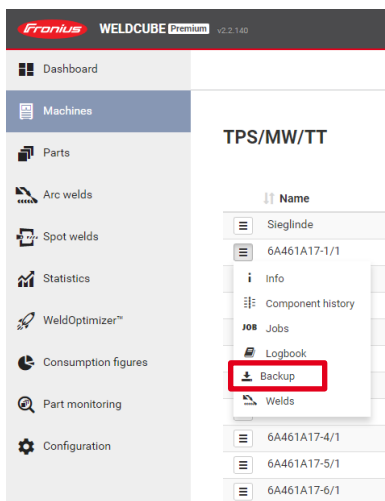   / REST-API with many possibilities

2 GENERAL

2.1 TPS device backup & restore

It is now possible to create a full backup of all data at UST and RCU of a TPS manually and to restore this backup manually as well.
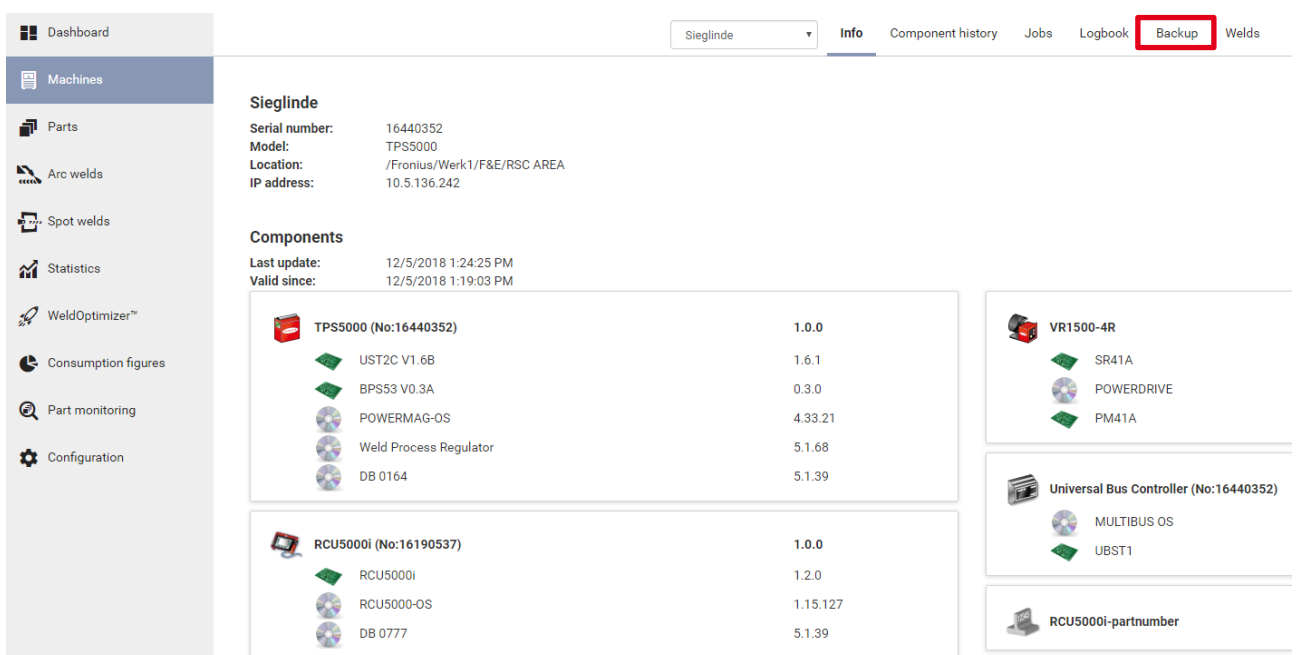
2.1.1 Backup

In order to use this function there is a new menu item called "backup" available at the machine menu of WeldCube Premium.
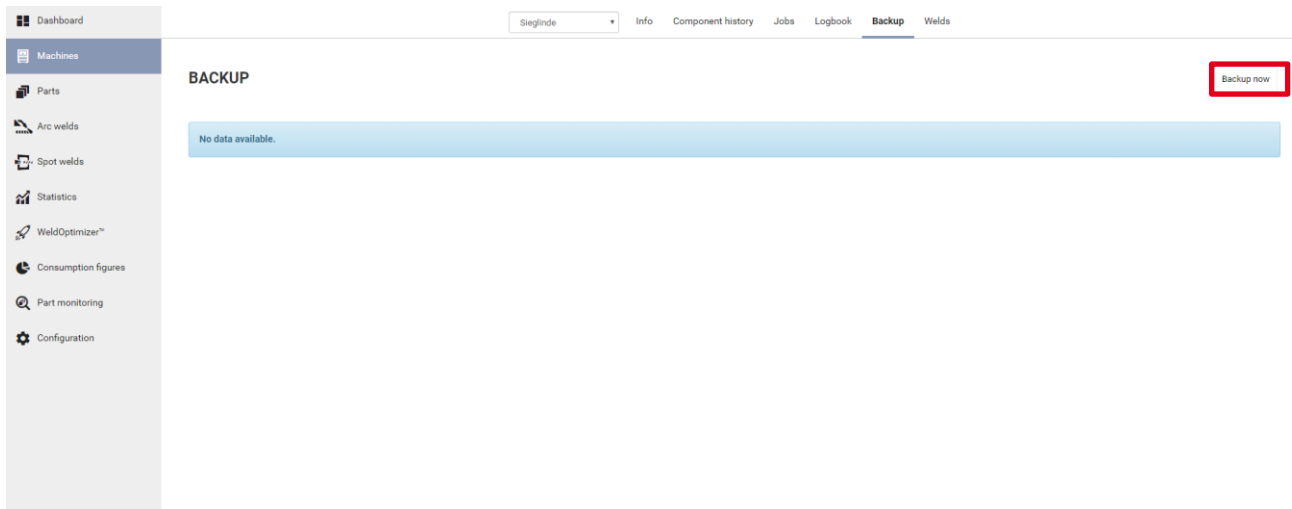
/ Directly at the **machine overview**:

/ At the **machine information page**:

Choosing "backup now" at the backup screen immediately starts backup creation.


First tests did show that an RCU backup lasts about 1-2 minutes – but: this duration will vary from customer to customer.

Every backup creates its own list entry. There is a description field available for every created backup, which is empty as standard and can be adapted individually by the customer. The text entered there is saved automatically by the system. A green checkmark shows the successful completion of the saving process.
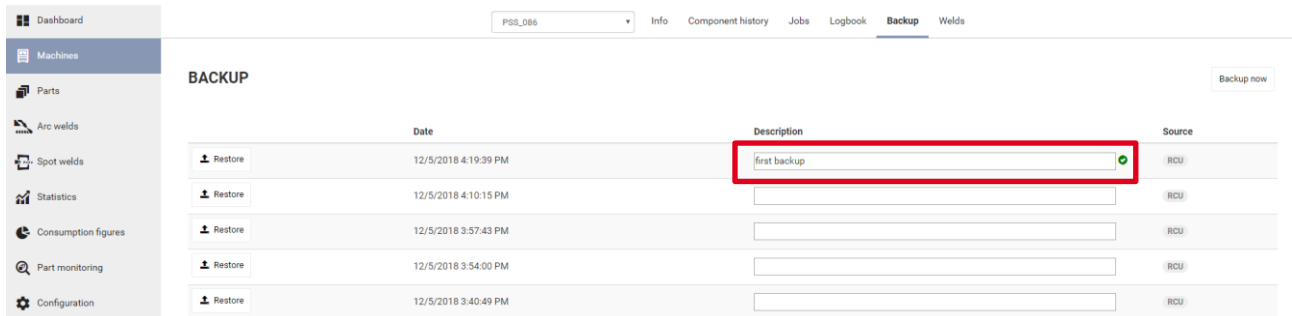

2.1.2 Restore

The restore function is also available via the backup menu (see 2.1.1). Every backup entry has its own "restore" button used for starting the restore process.
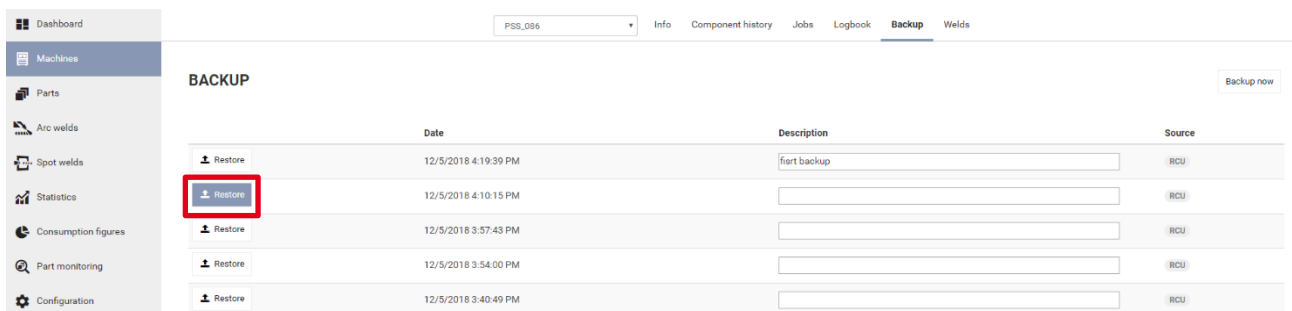
2.1.3 General information on backup / restore

/ Restarting a backup is only possible after the previous backup completes successfully.
/ Every welding device has its own backup list.
/ It is only possible to restore a backup to the welding device it was created for.
/ Yellow or red messages show status or error information.
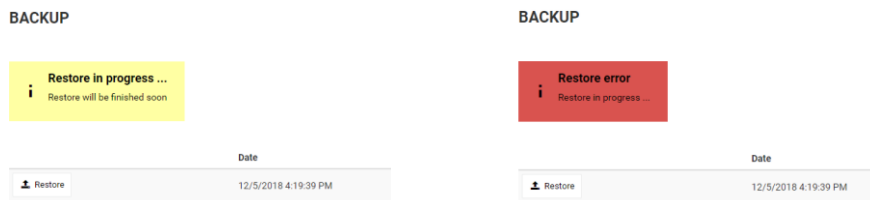
/ The backup page does not reload dynamically. This means that a new backup is only visible when the user reloads the page manually.

2.2 Logbook entry for user login / logout at the welding device (TPS/i)

TPS/i user login and logout (via web interface or display) using RFID cards or passwords is recorded within the logbook as of now. Thus, this information is also available for analysis.

Lines with the 🧑 icon identify such login / logout records and are thus easily found when checking the list.
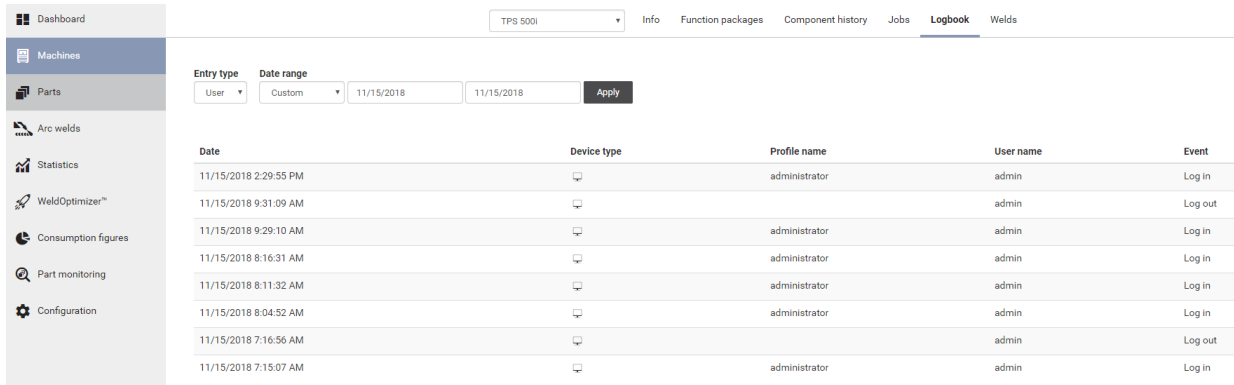
2 different views are available within the logbook using the given filter possibilities:

/ **All:** next to the 🧑 icon there is a sentence for informing the user about the action (log in or log out). Additionally the type of logon / logoff is provided.

If "show welder" is deactivated within the user roles, the user name is made anonymous using three asterisks (***).

/ **User:** this view uses ▤ for the TPS/i display and 🖥 for the TPS/i website in order to visualize where log in / out took place:
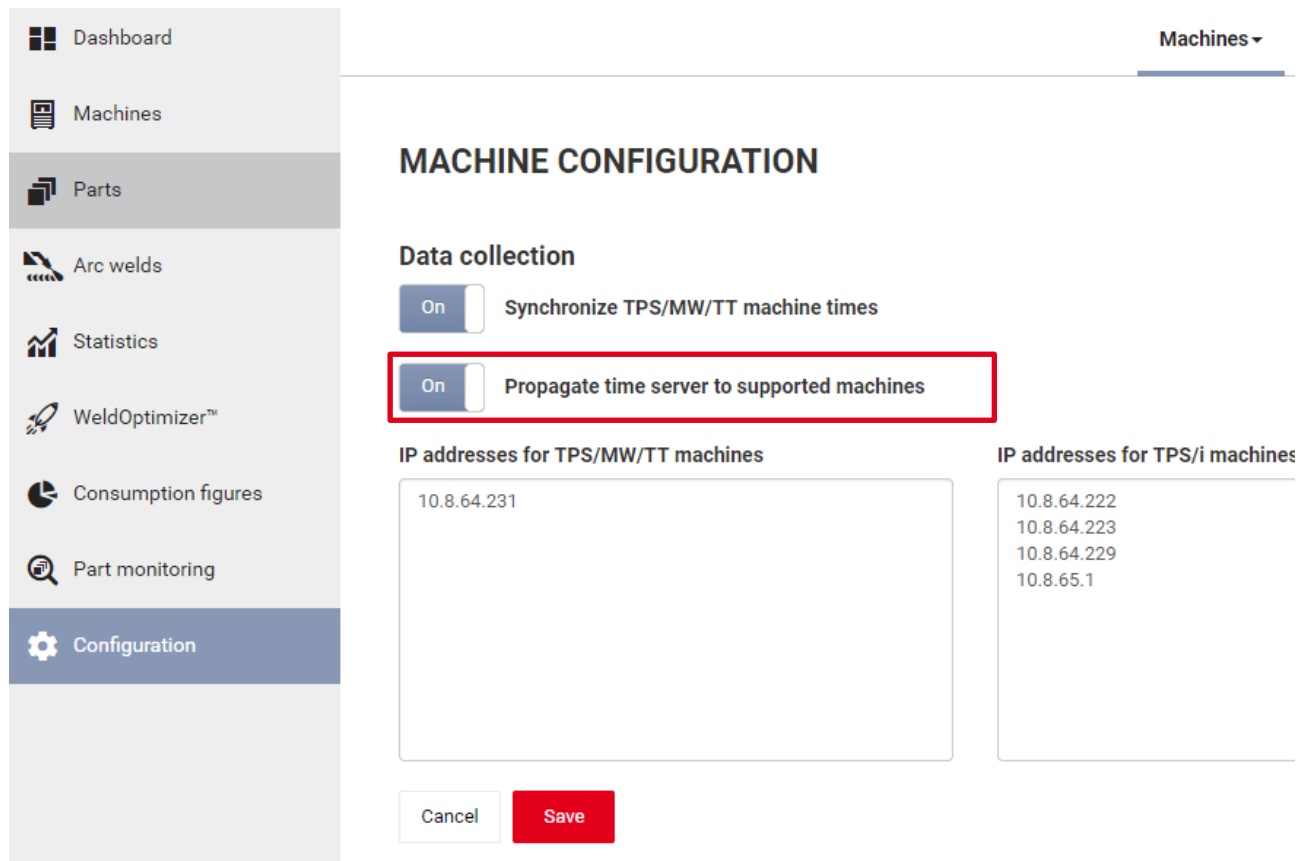
If "show welder" is deactivated within the user roles, the user name is made anonymous using three asterisks (***).

2.3 Roll-out of time server for Delta Spot

This new option enables the automatic setting of the timeserver defined for WeldCube Premium for all connected DeltaSpot systems.

It is possible to activate / deactivate this option in the configuration menu for "machines":

2.4 Shutdown function

Besides the "restart" button there is now also a „shutdown" button for shutting down WeldCube Premium. Both functions are available within the configuration menu using the sub menu "system" → "Restart/Shutdown":
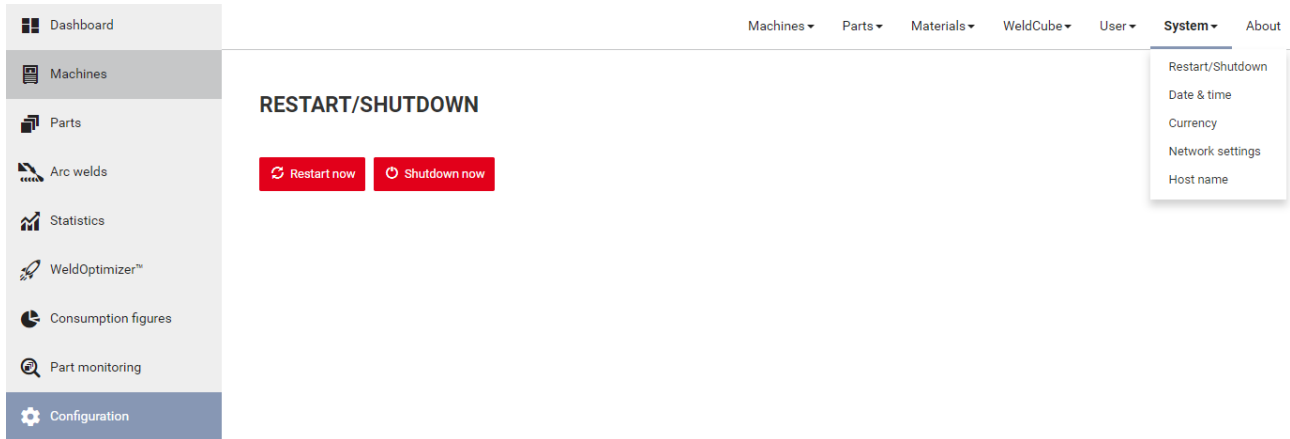
3 SET VALUES

3.1 Centrally deleting jobs of TPS and TPS/i using WeldCube Premium

Release 2.2 finally completes the management of welding jobs for TPS and TPS/i by providing the function of centrally deleting jobs. Two possibilities are available at the job overview of a welding device:

/ Deleting single jobs using **„Delete" in the context-menu** of the job:
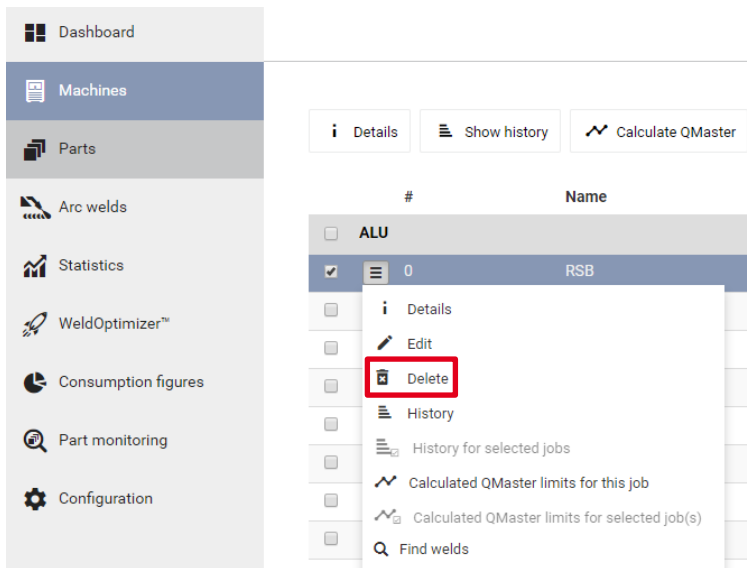
/ Using the **delete button** for the selection made (jobs with checkmark):
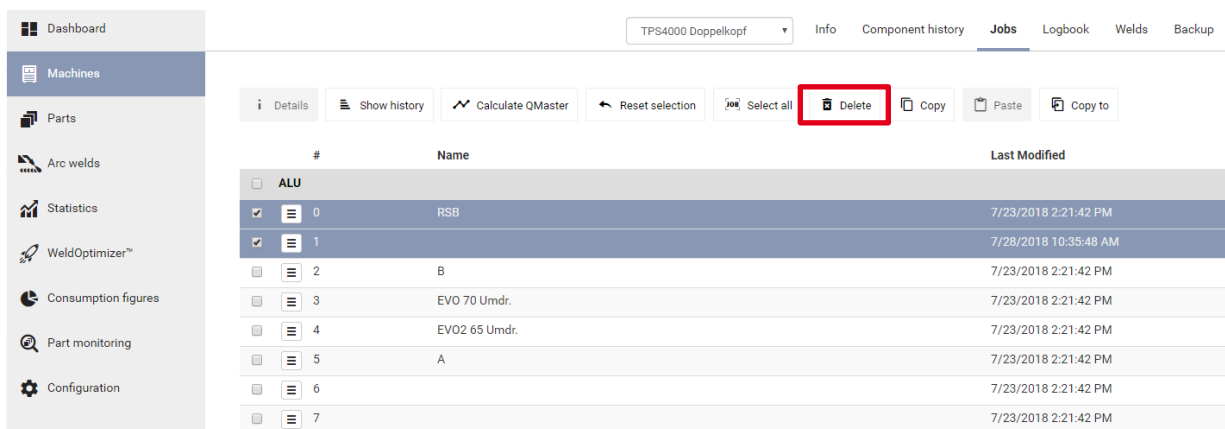
When a job was deleted, there is a progress symbol at the right hand-side showing that the delete command is progressed at the welding device. As soon as the job was really deleted at the welding device, a green checkmark appears and the job name is removed from the overview in WeldCube Premium.

Thus, the process for deleting the job/s is successfully completed.

/ Excursus: **restoring** job (settings)

If a deletion was performed by mistake, the job history in WeldCube Premium allows restoring the job:

4 ACTUAL VALUES

4.1 Gas consumption per weld now also for TPS/i

Gas consumption for TPS/i isn ow also available with WeldCube Premium.
Attention: TPS/i firmware version 2.0.0 required as well as OPT/i gas regulator or gas sensor.

4.1.1 Consumption documentation & visualization per weld seam

Consumption is shown per weld from welding start to welding end as well as per section in liters [l] or in cubic foot [ft^3] depending on settings.

4.1.2 PDF report

The PDF report (part and weld report) also shows the gas consumption per weld and section.

4.1.3 Statistics

The statistics section provides gas consumption for TPS/i with the same options as for TPS.
Furthermore, it is possible to do and graphically visualize evaluations of gas costs as soon as prices per gas are recorded within WeldCube Premium (within the configuration menu → „materials" → "welding gases").

4.1.4 Gross gas consumption per weld (TPS/i)

Finally, there will be 2 cas consumption values for TPS/i available at WeldCube Premium:
/ Gas consumption (net) describes the consumption from ARC-ON to ARC-OFF
  / Naming until release 2.1: gasconsumption
  / Naming from release 2.2: arcgasconsumption
/ Gas consumption (gross) describes the consumption from ARC-OFF to ARC-OFF
  / Naming until release 2.1: NOT AVAILABLE
  / Naming from release 2.2: gasconsumption

Specialities & additional information:
/ Gross gas consumption (gasconsumption) is available for TPS/i only and NOT for TPS – for TPS it will never be available.
/ Gross gas consumption (gasconsumption) is only available at statistics and not for welding details.
/ Net gas consumption (arcgasconsumption) is valid per weld. Thus, it is not possible to group per job number when using statistic filters. This filter possibility is deactivated.
/ Historical values are not updated / adapted. The already existing gas consumption value will be renamed to ArcGasConsumption. The newly measured gross gas consumption value is stored using the naming "GasConsumption".

- When using a filter for Gas Consumption, there won't be a calculation of gas consumption for old TPS/i values (in contrast to new welds produced after updating to release 2.2).
- All filters have to be set to Arc Gas Consumption in order to receive continuous and valid information

4.2 Higher sampling rate for spot welds available as of now

Until now, the sampling rate for documentation values (set and actual values) for spot welds was defined with two milliseconds. As of now, also sampling rates below one millisecond [ms] are supported.

It is up to the spot welding server to define the sampling rate. Currently, 0.5 ms (500 micro seconds) are a common resolution.

5 DATA INTERFACE / API

5.1 XML & JSON as new formats for file export

In addtion to the existing CSV export, WeldCube Premium now also provides the formats

 / **XML** and
 / **JSON**

for **exporting welds**. The main advantage of these two formats is the hierarchically structured storage of exported data. This allows providing more information than with a CSV export.
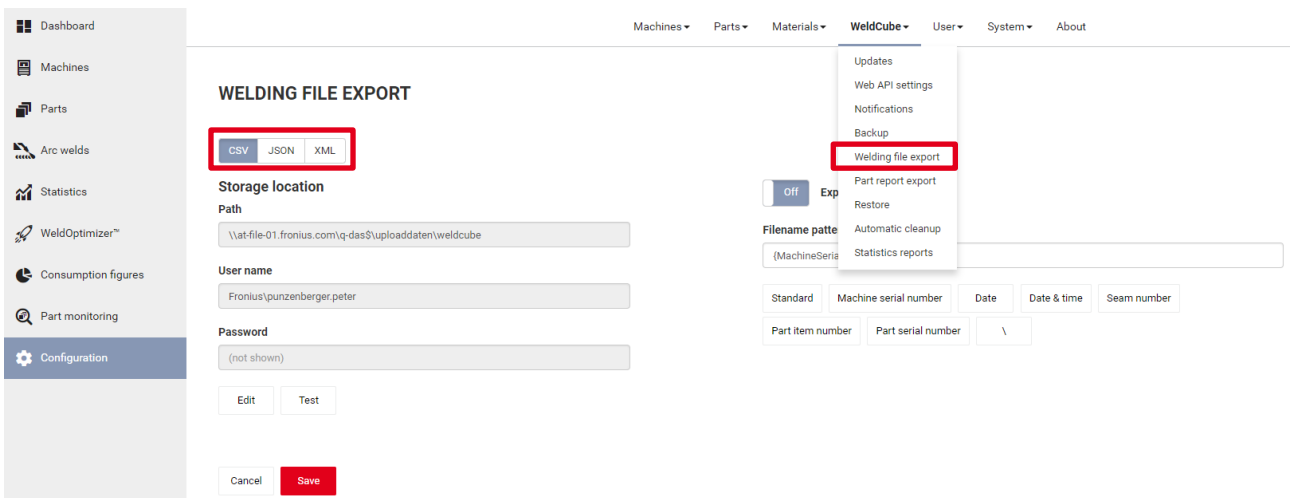
Customers can flexibly configure the storage structure (file names) of the export files using patterns. This means that every customer can define the storage structure of the files by himself using the available parameters:

 / Machine serial number
 / Date (with and without time)
 / Seam number
 / Part item number
 / Part serial number

Using those parameters, the desired path is built. Alternatively, it is always possible to use the standard.
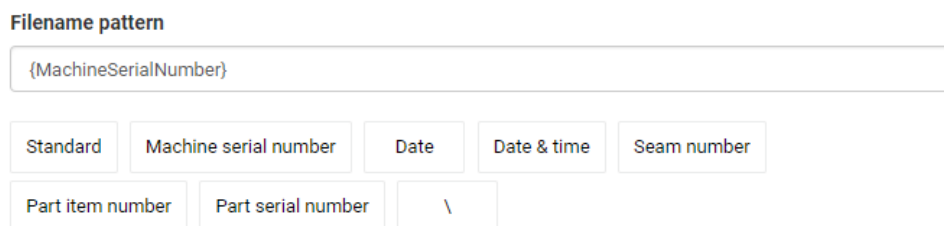
It is possible to define a separate storage location (network drive) as well as a separate pattern for storage per export format.

5.2 REST-API

The following functions are now available via web API ("REST" format) of WeldCube Premium:

/ List of all welding devices including device data

/ Jobs of welding devices and job details

/ Welds and weld details

5.2.1 Welding devices and device data

The following information is available per welding device:

/ Name ("Name")

/ Model – e.g. TPS 500i ("Model")

/ Type – e.g. TPS/i ("MachineType")

/ Serial number ("Serialnumber")

/ IP address ("IpAddress")

/ Location ("Location")

[Route("api/v1/Machine/")]

Attention: only visible machines will be provided via the API. Visability of devices is defined using the configuration menu → "machines" → „machine visability":

5.2.2 List of all jobs per welding device

Based on providing the serial number of a welding device, all jobs of this serial number including revision number are available with the following information range:

/ Job name ("Name")

/ Job number ("Nr")

/ Revision number ("Revision")

/ Date & time of the last job change ("LastModified")

/ Link to job details

[Route("api/v1/Machine/{machineSerialNumber}/Job/")]

5.2.3 Job details per Job

Based on providing job & revision number, all job parameters are available.

```
[Route("api/v1/Machine/{machineSerialNumber}/Job/{jobnumber}", Name = "JobDetails")]
```

5.2.4 List of all welds

The API provides the following information on welds:
- / Welding ID ("ID")
- / Time stamp of the weld ("Timestamp")
- / Process step ("ProcessingStepNumber")
- / Part serial number ("PartSerialNumber")
- / Part item number ("PartItemNumber")

```
[Route("api/v1/Weldings}", Name = RouteHelper.WeldingList)]
```

Further information:
- / Using "from" and "to" it is possible to define the period for the request.
- / A maximum of 200 welds is loaded at once
- / Details on the welds are separately requested using the Welding ID (see 5.2.5)

5.2.5 Weld details

Based on providing the Welding ID, data on welds are provided via several linked functions[1]. The following data is available:
- / Welding ID ("ID")
- / Part item number ("PartItemNumber")
- / Part serial number ("PartSerialNumber")
- / Process step ("ProcessingStepNumber")
- / Serial number of welding device ("WeldingSystemSerialNumber")
- / Welder ("Welder")
- / Time stamp of the weld ("TimeStamp")
- / Duration of the weld ("Duration")
- / Information on
    - / jobs,
    - / sections and
    - / actual values

    is provided as link for separate calls ("WeldingData")

```
[Route("api/v1/Weldings/{weldingId}", Name = RouteHelper.WeldingDetails)]
```

---

[1] Links to weld details are provided.

Using this call, weld details are provided on a section basis.

```
[Route("api/v1/Weldings/{weldingId}/Section/{sectionNumber}", Name =
RouteHelper.WeldingSectionDetails)]
```

Actual Values

This call provides actual values for the weld based on the ID. A sampling range of up to 100 ms is available depending on the configuration of the welding device itself (FS Doku / RCU / OPT/i Documentation required).

```
[Route("api/v1/Weldings/{weldingId}/ActualValues", Name = RouteHelper.WeldingActualValues)]
```

5.2.6 Versioning

In order to support our customers' mode of operation at the best, we decided for a versioning of our API. This means that changes of existing API functions are only provided with a new API version.

Thus…
/ …customers can keep on using the existing functions.
/ …customers can decide by themselves if and when they want to use the new version of a function.

5.2.7 API in general

/ Times are always given in UTC via the API
/ Units are always given using the metric format via the API

5.2.8 Swagger documentation for REST API

A Swagger documentation is available for WeldCube Premium's REST-API. It is available at the configuration menu via "WeldCube" → "Web API settings":

/ Selecting documentation

/ Look & Feel of the documentation:

WeldCube Premium API version 1

This is an interactive documentation of the web API on the WeldCube Premium.
An API call requires an authorization key which can be generated at the Web API page in the WeldCube Premium configurations.

Machine
Show/Hide | List Operations | Expand Operations

GET	/api/v1/Machine	Lists all Machines known by the WeldCube
GET	/api/v1/Machine/{machineSerialNumber}/Job	Lists all actual Jobs of a specific machine
GET	/api/v1/Machine/{machineSerialNumber}/Job/{jobNumber}	Gets the current details including values of a specific job

Part
Show/Hide | List Operations | Expand Operations

| GET | /api/v1/Part/{partItemNumber}/{partSerialNumber}/Export/Pdf | Enqueues part report generation |

ProductionDiagnosis
Show/Hide | List Operations | Expand Operations

| GET | /api/v1/ProductionDiagnosis/Get | Provides production information about this WeldCube |

User
Show/Hide | List Operations | Expand Operations

| POST | /api/v1/User | Creates a new WeldCube User |

Weldings
Show/Hide | List Operations | Expand Operations

GET	/api/v1/Weldings	Lists all Weldings known by the WeldCube
GET	/api/v1/Weldings/{weldingId}	Gets the welding details
GET	/api/v1/Weldings/{weldingId}/Section/{sectionNumber}	Gets the section details
GET	/api/v1/Weldings/{weldingId}/ActualValues	Gets the actual values of a welding

5.2.9   WeldCube Premium REST-API – customer benefits

/ 1 standard data interface for all Fronius devices connected to WeldCube
  / One "contact" for the customer's system/s.
  / Standardized communication for different welding devices.
/ All information on welds & set values are available via the interface which the customer can then use individually.
/ Continuous further development of the functional range.
/ No additional costs (covered by the Maintenance Subscription).

6 NOTE: WELDCUBE PREMIUM & MCU EXCHANGE TPS/I

Whenever TPS/i welding devices are connected to WeldCube Premium for documentation purposes it is essential to consider that there are automated rules applying at WeldCube Premium if the MCU of such a TPS/i is exchanged.

As a result it is required to update WeldCube Premium to version 2.2 PRIOR to exchanging the MCU. Afterwards the MCU exchange can take place.

If the WeldCube Premium version is 2.1 or lower instead when exchanging the MCU, there will not be any welding data transfer from TPS/i to WeldCube Premium afterwards any more.
Subsequently updating WeldCube Premium to version 2.2 will NOT fix this problem!