WELDCUBE RELEASE 1.5

Release Description

TABLE OF CONTENTS

1 OVERVIEW: NEW FUNCTIONS

With release 1.5, a lot of new functions will be added to the software application of WeldCube. The following chart shows the 3 most important new possibilities:
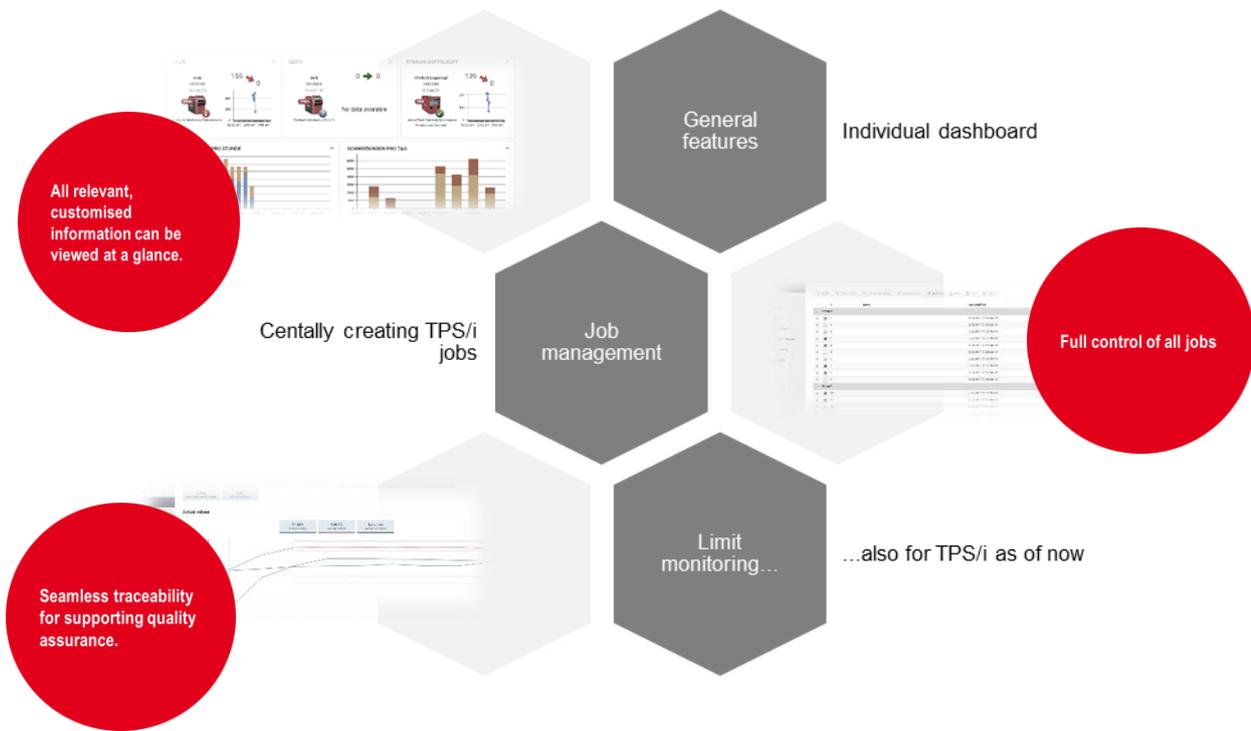
The following list provides an overview of all new functions with release 1.5:

/ General
  / **Individual dashboard**
  / Machine status: extension for TPS/i
  / Machine live view: solution proposals for errors
  / Error logbook for TPS/i
  / Italian available as new language

/ Set values / jobs
  / **Central creation of TPS/i jobs**

/ Actual values
  / Features on error / error notifications
        / Displaying errors on welding details page
        / Filtering TPS/i welding lists based on error codes
  / Adaptions for PDF export:
        / Exporting welding details for chosen seams
        / TPS/i error included within PDF export

/ Limits / limit monitoring
  / **Limit monitoring for TPS/i**

/ Statistics & analysis
  / New filter possibilities based on time domain
  / PDF export for statistics

/ Part management & reporting
  / Job number as seam number
  / Part name within part monitoring

2 GENERAL

2.1 Individual dashboard

The individual WeldCube dashboard is the new application home screen. Every user can design it individually by adding his or her most important information.

Thus, all relevant information is immediately and at a glance available for the user when starting WeldCube.
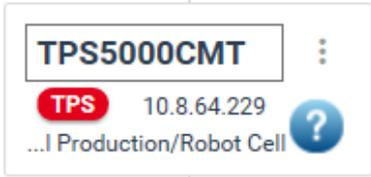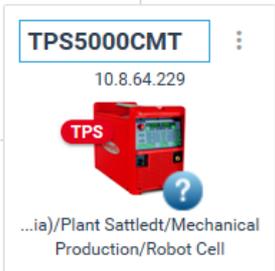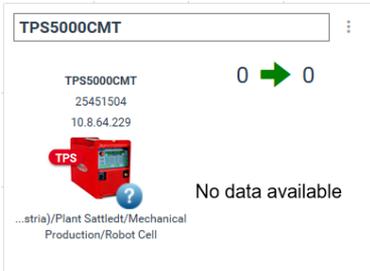
2.1.1 Widgets

Contents of the dashboard can be defined using widgets – just as everybody already knows from e.g. smartphones. Currently, the following widgets are available for designing the individual dashboard:

/ Widget for machines
/ Widget for statistics
/ Widget for welding lists

<u>Widget for machines</u>

Depending on the size chosen by the user, the machine widget provides different display options. The following table provides an overview:

| Size 2x1	Size 2x2	Size 4x3
What you can see:	What you can see:	What you can see:
/ Name / Generation / IP address / Location / Status	/ Name / Generation / IP address / Product picture / Location / Status	/ Name / Generation / IP address / Product picture / Serial number / Location / Status / Seams welded (left hand = number of the last hour, right hand = expected seam number of the current hour)

Widget for statistics

Depending on the size chosen by the user, the statistics widget provides different display options. The following table provides an overview:

Single value widget	Sizes 4x3 / 6x3 / 6x4
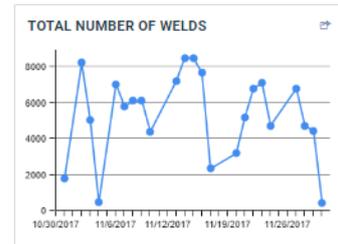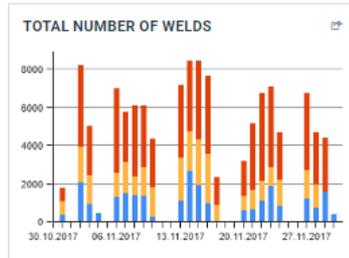
If there is no grouping used for statistics, the widget will only provide a single value – including the unit, if available.

These display options differ on the size only and not on the content when used at the dashboard. All chart variants can be used for the dashboard:

/ Bar chart
/ Line chart
/ Matrix chart

Widget for welding lists

In order to always having the latest welding lists available, a suitable list (including a filter) can be added to the dashboard. Via this list the user can directly open the detailed view of those welding seams that are interesting for him / her.

Size 4x3	Size 6x4	Size 6x6

What you can see:

/ Time of the welding
/ Duration of the welding
/ Seam number

What you can see:

/ Time of the welding
/ Duration of the welding
/ Seam number, item number, serial number

Concerning the content, there is no difference between the size options 6x4 and 6x6 – only the number of welding seams shown within the list, differs between those two visualization options.

2.1.2 How to get the widgets to the dashboard?

Within the WeldCube application areas

/ machines,

/ welding seams,

/ statistics

a menu providing the command is available.
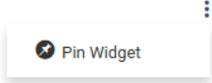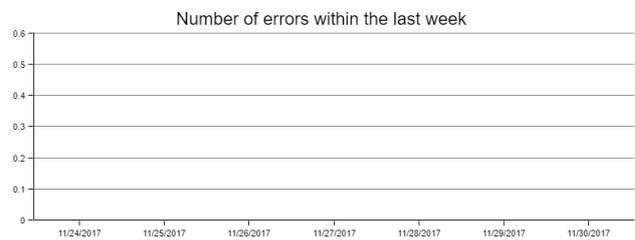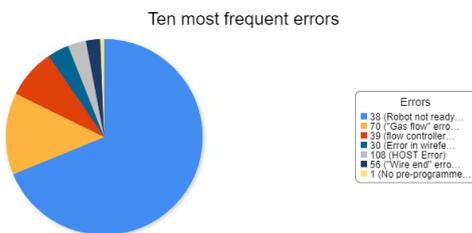
As soon as the user has used this command on a page, the widget is added to the dashboard. Afterwards, the user can place and size the widget individually there.

2.1.3 How to design the individual dashboard?

As soon as the user as placed all important widgets on the dashboard, he can start designing it. In order to do so, the [⌁ Edit] button is available at the right bottom of the dashboard.
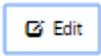
During the editing mode the user will have reference lines for established screen resolutions. They serve as an aid to orientation when positioning the widgets:

2.2 Machine status: extension for TPS/i

The machine status given within the machine overview distinguishes between
- / Online
- / Offline
- / Error
- / Welding.

If a device has the status "error", the error is displayed including an error description in the set user language as of now.

This function is available for: TPS/i

2.3 Machine live view: solution proposals for errors

If there is an error shown within the live view of a power source, the user can click this error. Afterwards, he will receive (a) possible solution(s) for the problem given within a speech bubble.
If there is no solution proposal available, the user will receive a corresponding information.

This function is currently available for TPS/i only!

2.4 Error logbook for TPS/i

As already available for TPS machines, an error logbook will be recorded and provided with WeldCube for TPS/i as well as of now. Currently, only error events are recorded.

2 different display options
- / Option „all": lists all recorded events
- / Option „error": lists all errors including further information. The error description will always be provided in the set user language for any view / display option.

3 SET VALUES / JOBS

3.1 Central creation of TPS/i jobs

All users with TPS/i power sources having OPT/i Jobs activated, can centrally create new jobs for TPS/i via WeldCube with release 1.5.

The [JOB New job] button opens a dialogue which
/ provides a fast possibility for job creation for experienced users but also offers
/ Assistance for beginners in order to find their welding solution.

This dialogue is a synergy of our well known dialogues from
/ the power source itself and
/ our WeldConnect app
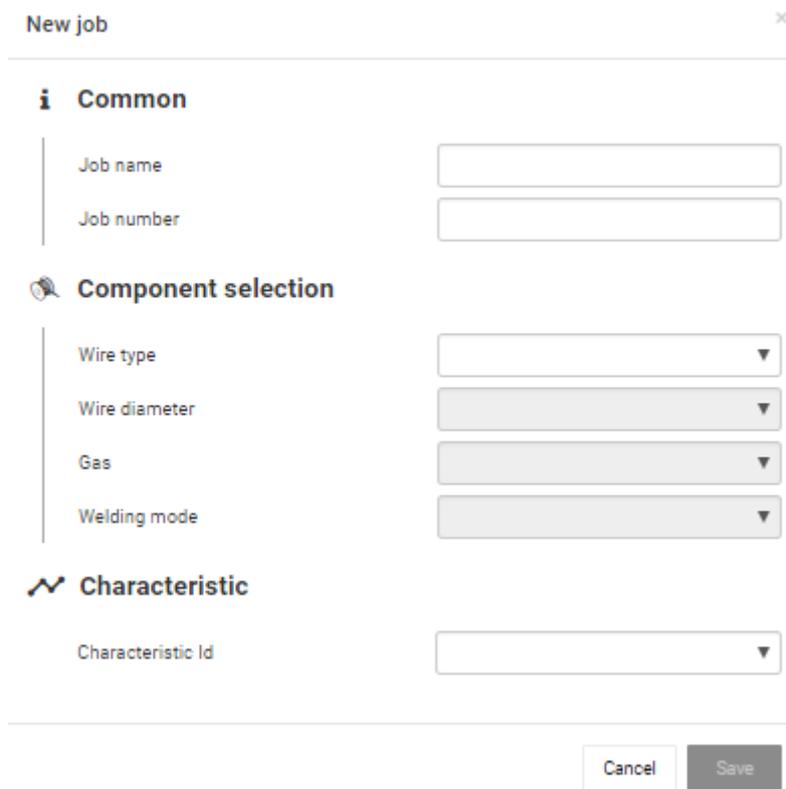
As soon as the user saves the new job, it is created within the power source and filled with default values. WeldCube only automatically sets the "documentation interval" to 0.1.

Afterwards, the power source sends the job back to WeldCube and the user is forwarded to the well-known edit page for jobs.

Important information:
/ The component selection limits the selection of available characteristics.
/ The user will only see those characteristics he owns the clearing for.

4 ACTUAL VALUES

4.1 Features on errors / error notifications

4.1.1   Displaying errors on welding details page

If an error occurs during welding, the error code is shown within the welding details view together with the corresponding error description. This is realised with a new tile. If the description is too long for the tile, it is cropped but can be easily displayed via "tooltip".

4.1.2   Filtering TPS/i welding lists based on error code

As of now, it is possible to filter welding lists for TPS/i systems based on errors. To do so, the filter wizard now contains the filter options:

/ Has errors yes or no
/ Error code

Additionally, the overview table of welding seams now contains a column for "error". Thus, faulty welds are immediately apparent:

Time stamp	Duration [s]	Limit violations	Error	Seam number	Part item number	Part serial number
11/29/2017 12:02:16 PM	3.3		-	710		
11/29/2017 12:02:11 PM	3.4		-	709		
11/29/2017 12:02:06 PM	3.3		-	708		
11/29/2017 12:02:02 PM	1.7		-	707		
11/29/2017 12:01:57 PM	3.0		-	706		
11/29/2017 12:01:51 PM	3.6		-	705		
11/29/2017 12:01:48 PM	0.7		-	704		
11/29/2017 12:01:46 PM	0.8		-	703		
11/29/2017 12:01:43 PM	0.8		-	702		
11/29/2017 12:01:40 PM	0.7		-	701		
11/29/2017 12:01:36 PM	0.9		-	700		
11/29/2017 12:01:33 PM	0.7		-	699		

4.2 Adaptions for PDF export

4.2.1   Exporting welding details for chosen seams

Every welding details view now provides the possibility for PDF export. Thus, even welding details of single welds can now be exportet without having to create a part in order to do so.

Additionally, even welding lists (based on defined filters) can be exported as single PDF files. They will be collected within a .zip file which is created automatically.

Available for:

/ TPS/i
/ TPS
/ DeltaSpot

4.2.2 TPS/i errors included within PDF export

If a user exports faulty TPS/i welds, error code and error descriptions are provided within the PDF file. The seam status is therefore marked in colour in order to provide an easy and fast overview. Additionally, also a text mark is given for the status of the weld.

Welding seams with error	vs.	Welding seams without error

Processing step number: 12045 Error

Seam

Weld details	Details
Weld date	8/24/2017 2:12:41 PM
Error	13 - One or more process-relevant system components are missing.
Duration	8.5 s
Wire consumption (length)	1.015 m
Wire consumption (weight)	6.22 g

Processing step number: 709 Ok

Seam

Weld details	Details
Weld date	11/29/2017 12:02:11 PM
Duration	3.4 s
Welder	admin
Wire consumption (length)	0.308 m
Wire consumption (weight)	1.89 g

5 LIMITS / LIMIT MONITORING

5.1 Limit Monitoring für TPS/i

TPS/i limit monitoring is implemented within the WeldCube application as of now.

Requirements:

/ OPT/i limit monitoring is activated at the TPS/i power source
/ A reaction (warning or error) for limit violation is defined (otherwise, the charts will <u>not</u> show limit lines)

Starting basis is the power source job

It is now possible to enter basic limit monitoring values for current, voltage and wire feeder for TPS/i Jobs:

/ Desired values
/ Upper limit
/ Lower limit

As already known from TPS, the user can define an additional time period for required limit violation duration, before a reaction <u>of the power source</u> takes place.
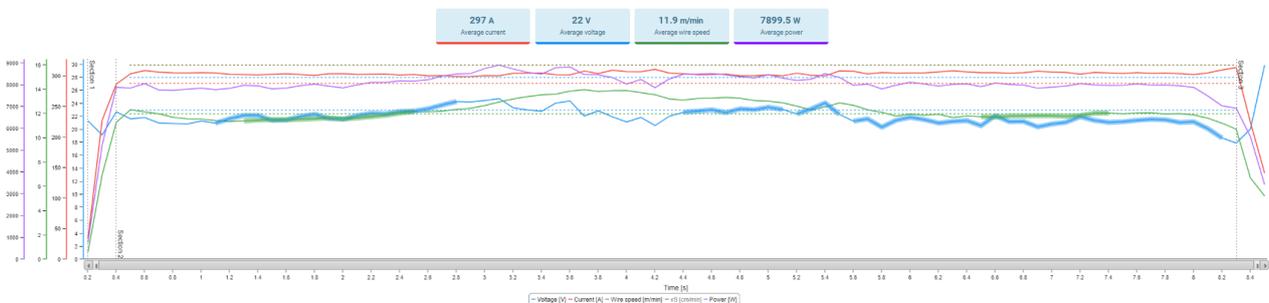
Welding details view of WeldCube

The welding details view of TPS/i now also contains the well-known tiles for limit violation:
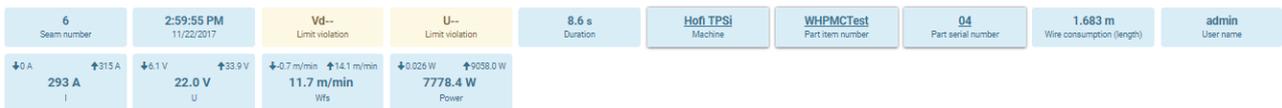
Line charts for actual values were extended as well:
/ Dashed lines visualizing limits
/ Thick lines within the diagram if there was a limit violation

WeldCube statistics

WeldCube statistics now contain information on limit violation. Filter possibilities were extended with a search option for limit violation.

Part reports

Faulty TPS/i welding seams are displayed in red within part reports as of now.

PDF

For PDF exports for welding seams, all required amendments are implemented in order to ensure that all details of a welding seams are available.

6 STATISTICS & ANALYSIS

6.1 New filter possibilities based on time domain

The statistics tool now provides the possibility to define a time domain based on

/ starting time and

/ duration

Thus, it is possible to e.g. do an analysis for chosen shifts during a day.

This filter provides the following options:

/ Entering a starting time: statistics from the defined starting point for the rest of the chosen day.

/ Entering starting time and duration: statistics fort he defined period of time. With this approach it is possible to define evaluation periods that last longer than one day.

6.2 PDF export for statistics

The statistics tool of WeldCube now provides a PDF export function. With this function, statistics can now easily be printed.

If the user chooses "display values in chart" when starting the export, the PDF will provide the values directly within the diagram.

Total number of welds
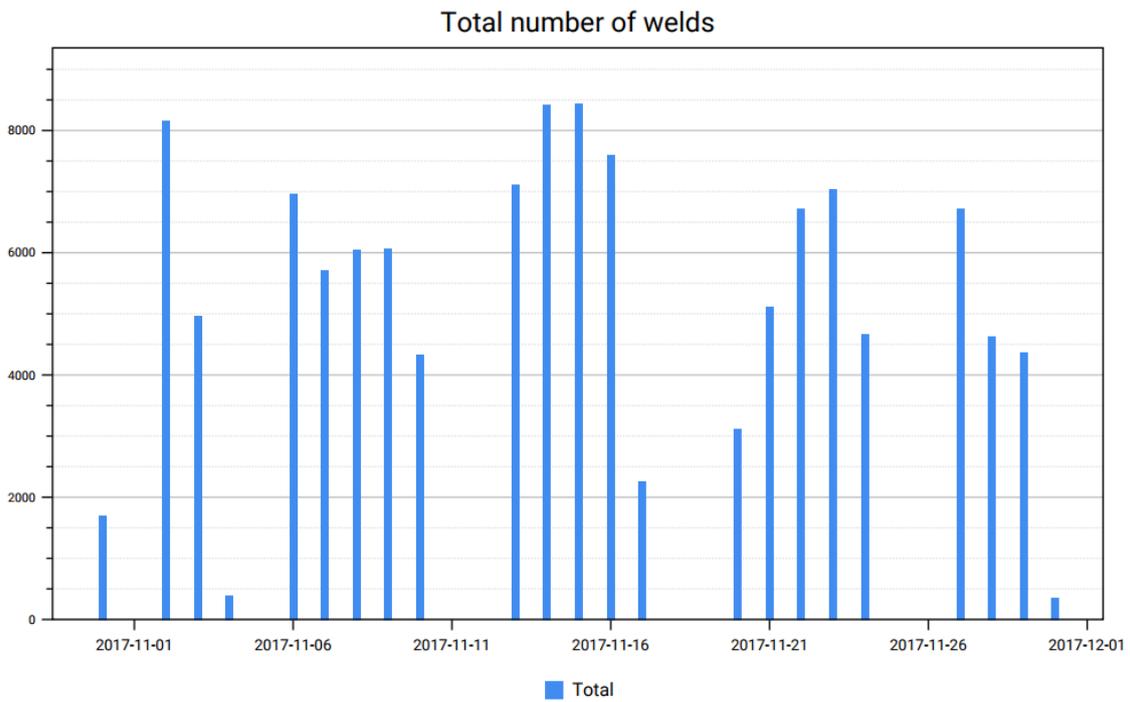
The PDF export also includes a page with details ensuring traceability on the values given within the diagrams. This page also provides a link to the original statistic report within the WeldCube application.

Details

Show in WeldCube	Show
Value to be displayed	Total number of welds
Start date	10/31/2017
End date	11/30/2017
grouped by	Day

7 PART MANAGEMENT & REPORTING

7.1 Part name within part monitoring

Part monitoring will now show the name of the currently welded part – for simple identification & orientation.

7.2 Job number as seam number

It is now possible to define, that a job number should be used as seam number for TPS applications. This takes place at the settings for part identification.

If the user activates this function…

/ …the job of the first seam section is used as seam number within WeldCube for robotic applications.
/ …the "real" seam number is used for manual applications (without job mode) – this means that WeldCube uses the internally counted number.