# GUI Graphical User Interface

**Option for the P4-P6 power sources**

## User's manual PN-0908080



POLYSOUDE
THE ART OF WELDING

**Révision du document**

| | |
|---|---|
| Ind. 0 | Original version |
| Ind. 1 | Update after proofreading, p.4, p.9, p.76 |
| Ind. 2 | Update further to GUI enhancement. |
| Ind. 3 | Update of graphic charter (SBR - 10/2009) |
| Ind. 4 | Update following change of GUI for 6-axis version (PLE - 04/2010) |
| Ind. 5 | Update further to GUI enhancement. (SBR - 08/2010) |
| Ind. 6 | Update following change of GUI for P6 HW power source (PLE - 10/2010) |
| Ind. 7 | Update further to GUI enhancement of password settings, security management and software adaption (PLE - 02/2011) |
| Ind. 8 | Update "Displaying a welding ticket" |
| Ind. 9 | Removal "Printing ticket" (06/2012) |
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| Ind. 11 | Removal " Company informations" |
| Ind. 12 | Addition "Choosing program Chainan" and update *"Weld layer definition" 10/2013* |

**When printing it onto paper and make it easier to understand and more legible, this user manual must be printed on both sides of the page.**

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# 1. Safety instructions

There are no special safety instructions for the use of the Man–Machine Interface (GUI).

However, it is absolutely essential that you should take note of the safety instructions in the power source user manual in order that you can perform welding via the GUI.

# 2. Introduction

## 2. 1. Presentation of the GUI

The Graphical User Interface (GUI) of the P4-P6 range of welding power sources presented in this manual is to be read in the same way irrespective of the type of machine involved.

Operation of the GUI is based on the concept of the WP (Welding Procedure). The complete production of a weld is the result of a WP consisting of:

- one or more programs when several weld layers are necessary;
- documentation that enables data on the weld for the program(s) such as preparation of the tubes, the diameter and angle of the electrode, the workpiece-electrode separation, the wire diameter and feed angle, etc. to be defined.

The GUI also assists the operator in selecting solutions for successful welding.

All of this information characterising the weld may be compiled and grouped into an HTML format file called the Dynamic WP. The documentation generated in this way enables the weld generated to be reproduced in identical conditions.

The Polysoude power source contains an integrated library of WP. These WPs have been optimised by the Polysoude welding laboratory and provide for a rapid parameter search.

The GUI also has a WP design utility: this contains a design formula which, from the diameter and wall thickness, generates the parameters for tube/stainless steel tube applications. These calculated WPs provide a good method for quickly optimising the WPs.

With regard to Programming the WPs, this is accessible using Polysoude software to be installed on a PC, or using the touch-sensitive panel if this option is present on the power source. Depending on the situation, navigation within the GUI is either by directly touching items on the touch-sensitive panel, or by clicking with your PC's mouse.

## 2. 2. Definition of pictograms

The GUI generally works in the same way both on the PC and the touchscreen. There are only a few specific differences between these two means of accessing the GUI.

Throughout the present manual, pictograms will show you the information that relates to using the GUI only with a PC or with a touchscreen.

These pictograms are as shown below:

| | |
|---|---|
|  | Information relating to using the GUI only on the **touch-screen**. |
|  | Information relating to using the GUI only on the **PC connected to the power source**. |

If there is no such pictogram, the information given applies to both media: PC connected to the power source or the touchscreen.

Some information is essential and you must give it your full attention. Such information is identified by the following pictogram:

| | |
|---|---|
|  | Essential information |

Special instructions will be given under the Comment heading.

# 3. Starting up

## 3. 1. Touchscreen

- Switch on the power source.
- Wait for a few seconds until the Home page is displayed.

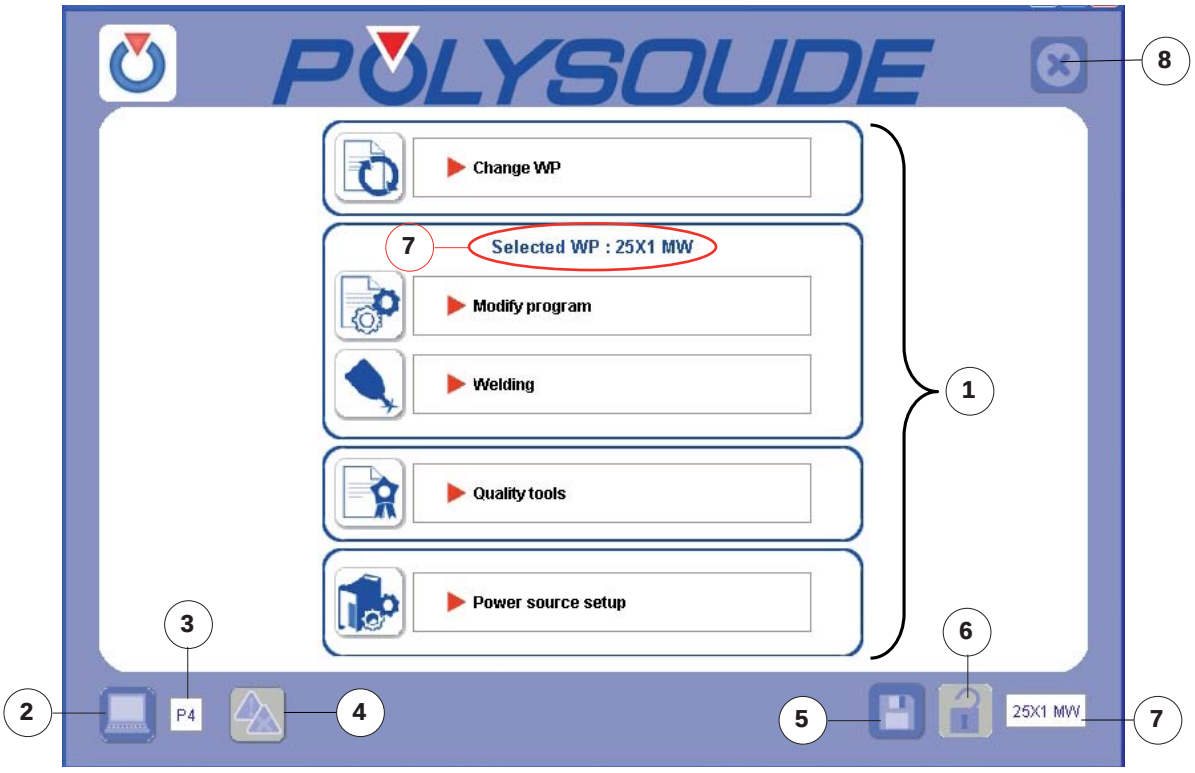
## 3. 2. PC

*Refer to Chapter **7.1. Power source setup** to install the software and to connect the PC to the power source.*

- Connect the PC to the RJ45 connector situated at the front of the power source with the Ethernet cable supplied .
- Switch the PC and the power source on.
- Start the Polysoude software on the PC.
- Connect the PC to the power source.

# 4. Prerequisites

## 4. 1. Presentation of the environment

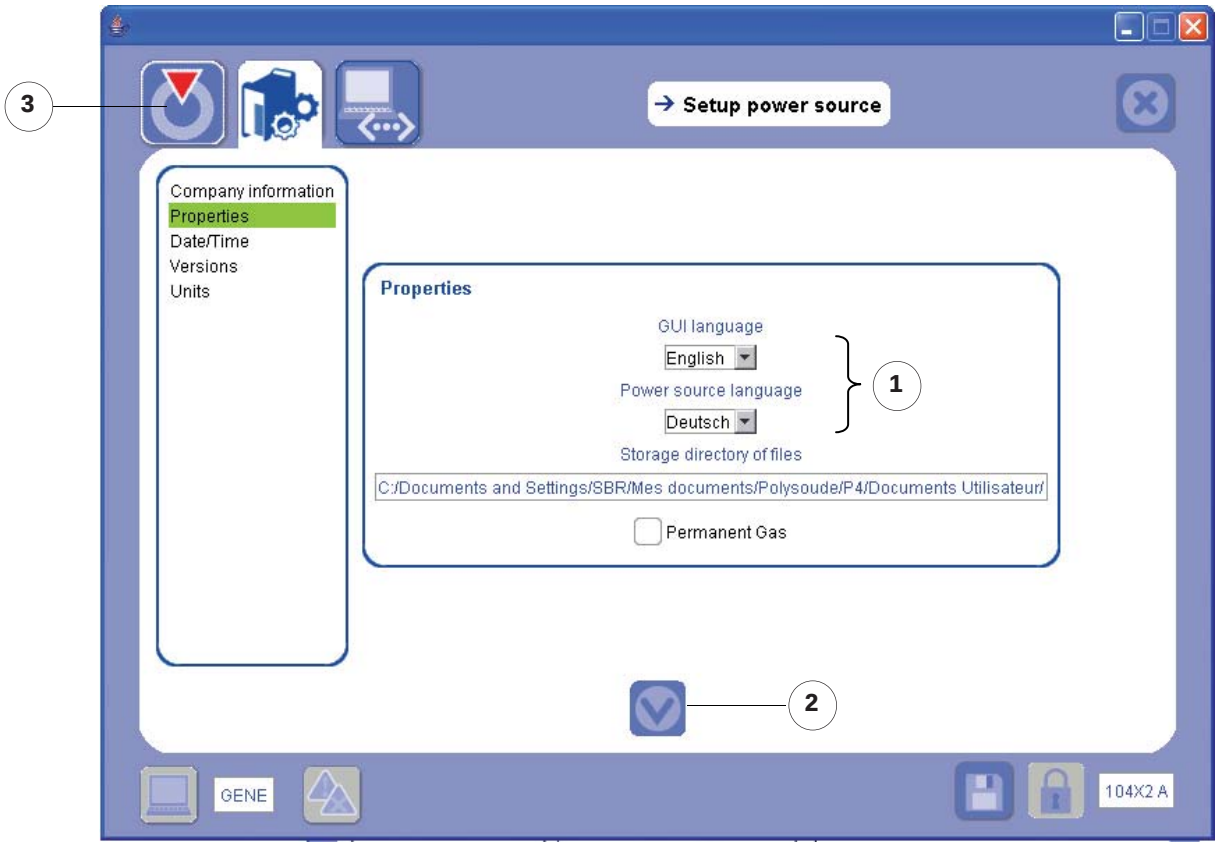



The GUI Home page appears as shown below:

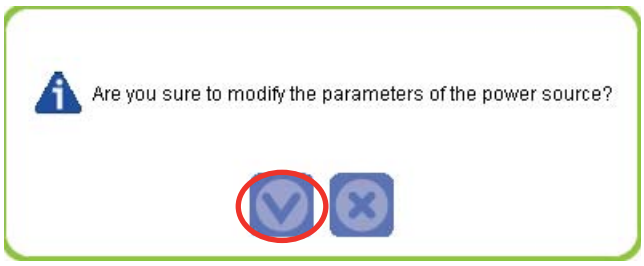
1) Main menu
2) **Host configuration** shortcut (on PC only)
3) Name of host loaded
4) Information/alert messages
5) Save
6) WP status (locked/unlocked)
7) Designation of selected WP
8) Exit (on PC only)

## 4. 2. Setting language parameters

You must configure the language for the GUI first of all (if necessary). To do this, go to **Power source setup > Properties** (direct access) from the homepage:




1) configure the language of the GUI and that of the power source;
2) confirm the parameters using the icon;
3) Confirm the following message of confirmation:



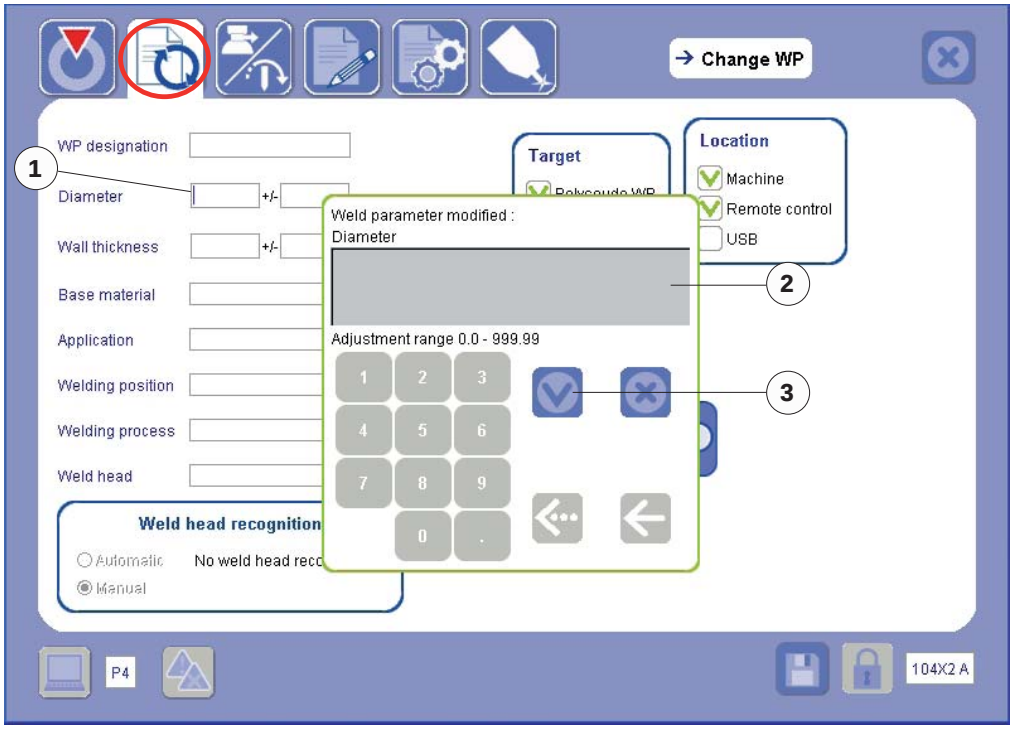

4) return to the main screen by clicking on the icon situated at the top left of the screen.

## 4. 3. Filling in forms

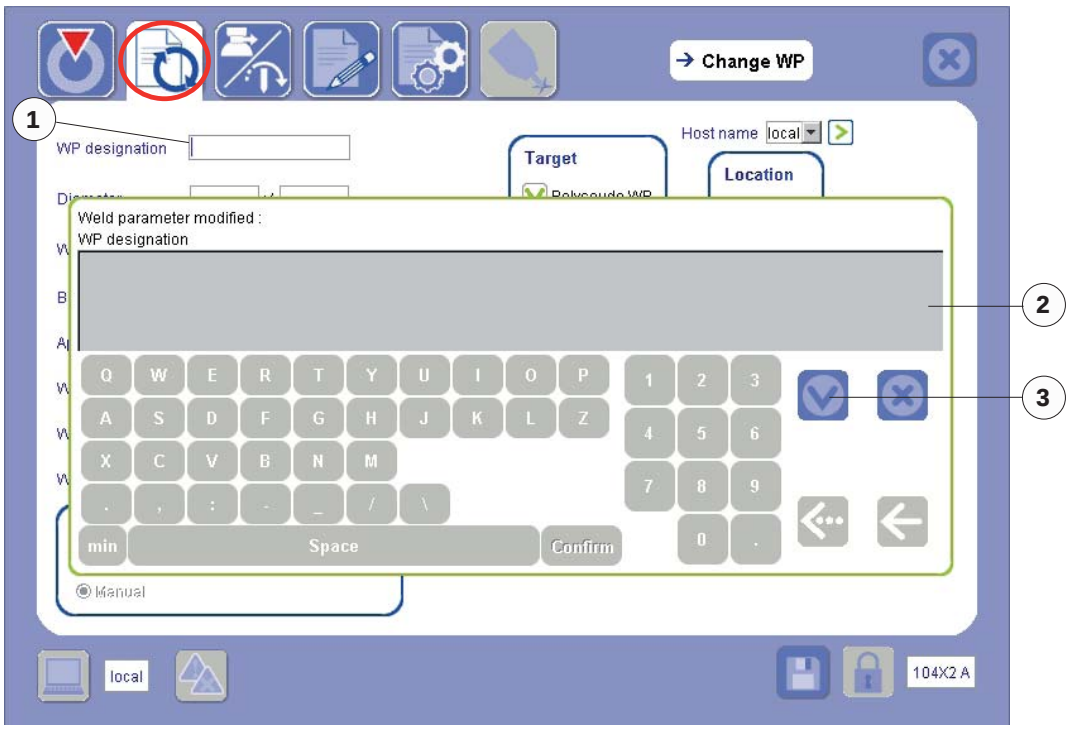
The GUI software is made up of forms to be filled in.
Where there is no scrolling menu for entering data, the information has to be input manually.

In order to do this, proceed as follows:

Ex. 1:




Ex. 2:



1) select the cell to fill out;

The GUI keyboard is displayed automatically:

◈ use the **GUI keyboard** to enter data.

◈ use the **GUI keyboard** or **PC** to enter data.

2) enter the data requested;

3) confirm the data entered using the icon  situated on the GUI keyboard.

- The icon  closes the keyboard without saving the data entered.
- The arrow  erases the characters entered, one by one.
- The arrow  erases all of the characters entered.

## 4. 4. Using the Save icon

On the bottom strip of the GUI you will see the **Save** icon: 

Use this icon when you have set all welding parameters with the aim of starting a welding cycle the next time that the power source is switched on.

When starting a welding cycle all adjustments made are automatically saved.

If you switch off the power source without having started a welding cycle and without having saved, all modifications you have made will be lost.

## 4. 5. Communication ports

The GUI uses three ports for communicating with the database of the power source and PC:

- Port 3050.
- Port 8060.
- Port 8070.

These ports must be "accessible". If not, the user will have problems when installing the software or when they try to connect to the power source.

This may be due:

- either to a Firewall or Antivirus software prohibiting access,
- or to another application that uses the same port.

***The ports 3050, 8060 and 8070 must be accessible.***

## 4. 6. Control of units

The GUI software enables you to select the units to be used during welding applications.
Access control of units via the "**Power source set-up**" tab. The new window gives access to the "**Units**" tab.
Select the units desired. When you have chosen, confirm your selection.

**Rotation speed:**

- mm/min
- tr/min
- in/mn

**Other speeds:**

- mm/min
- in/min

**Temperature:**

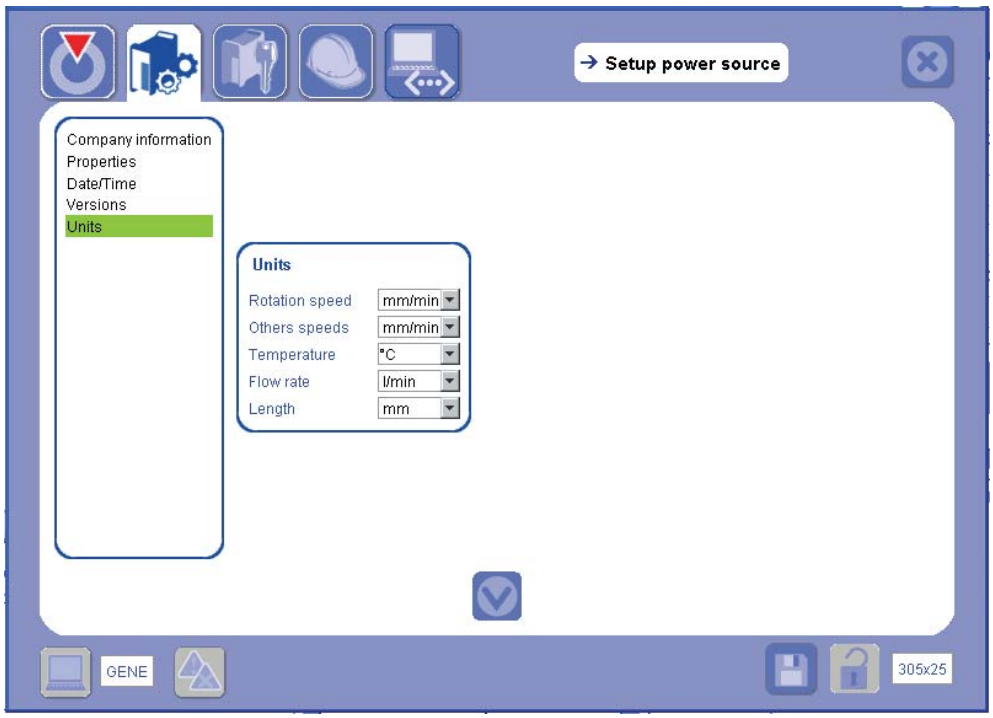
- °C
- °F

**Flow rate:**

- l/min
- cfh

**Length:**

- mm
- in



## 5. Quick use

> ***Comment:*** *the present chapter has a brief description of the various stages to be followed in order to be able to* ***weld as quickly as possible****. It just gives you a glimpse of how easy it is to use the GUI.*
>
> *This is not a fully comprehensive description: you will find detailed explanations of the various elements in later chapters.*

In order to weld, a WP must be loaded that is appropriate for the welding to be carried out.

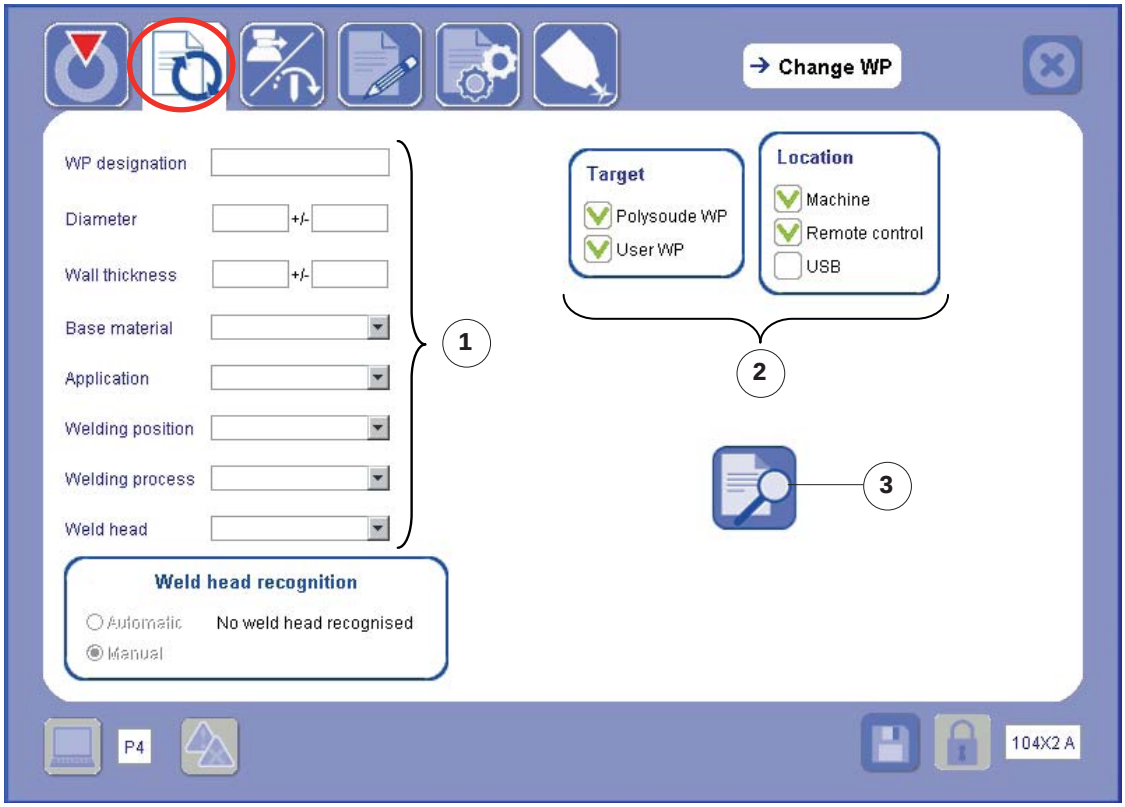
There are two tools for helping you to find a suitable WP.

- The integrated design formula: a tool for generating what we call a **calculated WP** using the tube wall thickness and diameter in the case of a stainless steel tube/tube application, **diameter < 170 mm and thickness between 0.7 and 3.2 mm**.
- The Polysoude WP library: a series of WPs generated by Polysoude and adapted to various welding cases: **tube / tube** and **tube / tubesheet** in **stainless steel carbon** and **titanium**.

At the very first time of starting the application, the WP which is loaded by default is the first WP in the Polysoude WP library.

In order to search for a WP, go to **Change WP** from the GUI Home page:

The **Change WP** screen appears as shown below:

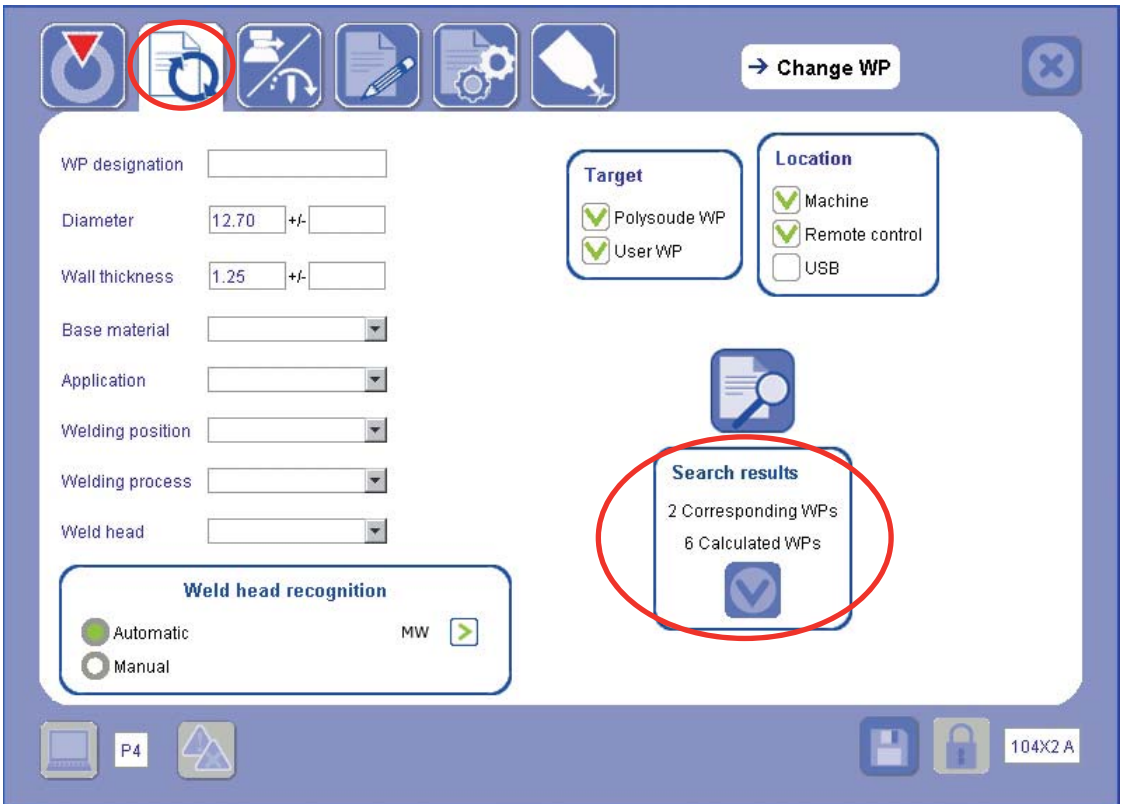



## 5. 1. For a tube / stainless steel tube application

### *5. 1. 1. Fill in the search page*

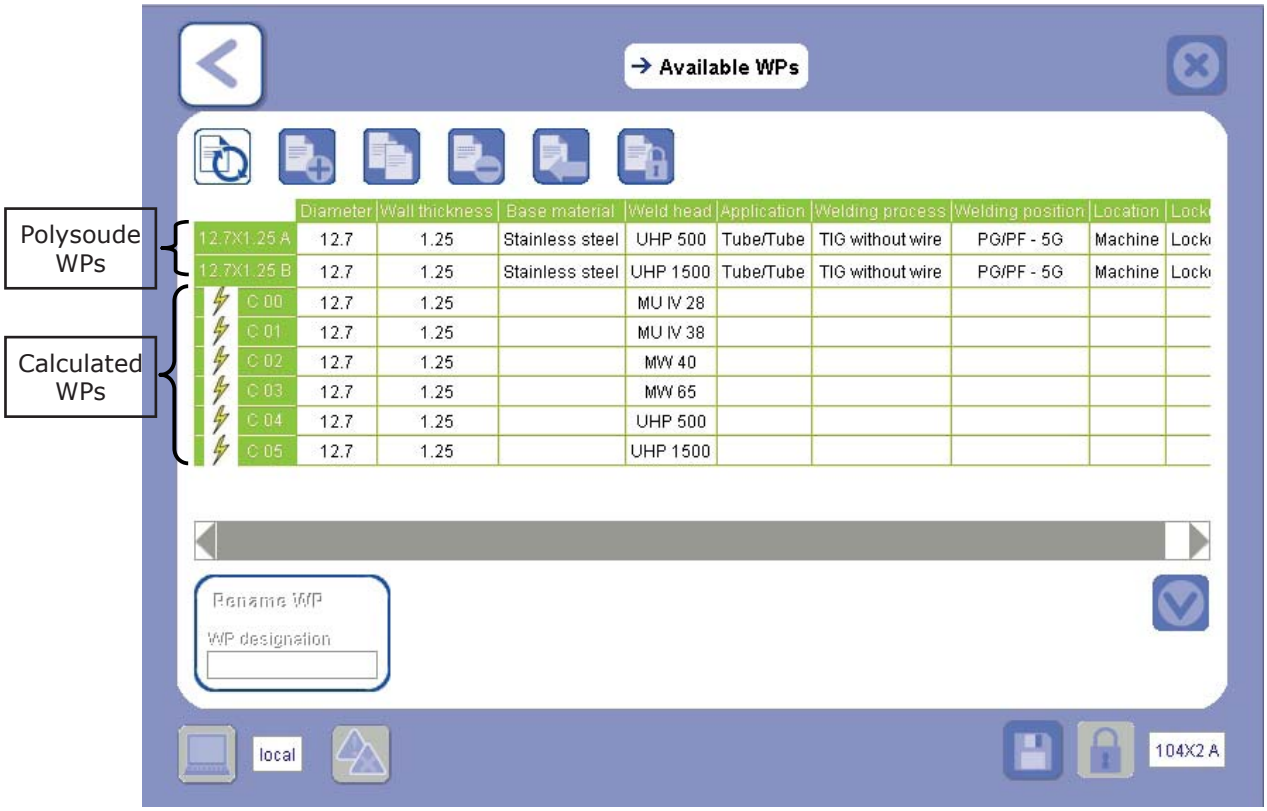
1) Fill in only the **diameter** and **wall thickness** of the tube without stating tolerance (+/- boxes);
2) Leave the search location and target parameters at the default values;
3) Start the search.

The number of corresponding Polysoude WPs and calculated WPs is displayed (in **Search results**).
In the example below, you can see the results found for a diameter of 12.70 mm and wall thickness of 1.25 mm:




*5. 1. 2. Display results*

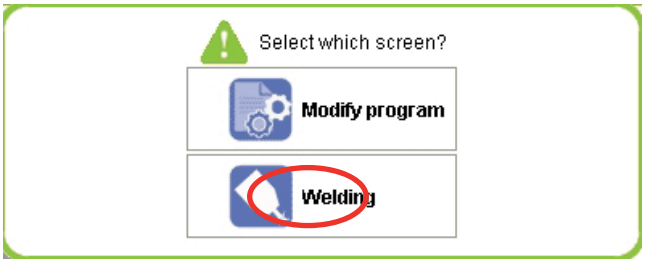
Click on the Confirm icon of the Search results box for access to the list of results.
For this example, the page displaying the results appears as below:



### *5. 1. 3. Load a WP*

- **Load a Polysoude WP**
  1) Select the line for the WP you want;
  2) Confirm you choice by clicking the Confirm icon .
- **Load a Calculated WP**
  1) Select the line for the WP you want;
  2) Enter the designation of the calculated WP (refer to Chapter *4.3 Filling in forms* to use the keyboard);
  3) Confirm you choice by clicking the Confirm icon .
  4) Confirm the following message of confirmation:

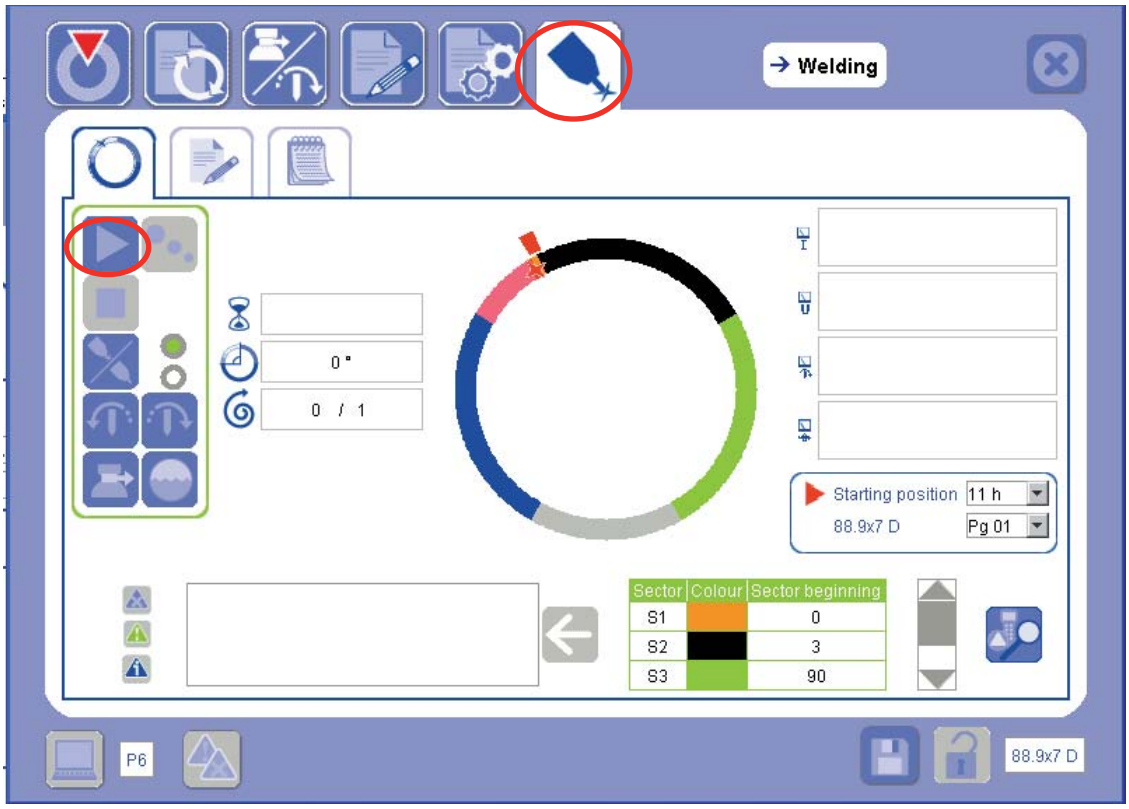

The following screen appears:




Select the **Welding** screen.

### *5. 1. 4. Welding*

The **Welding** screen appears as shown below:




When you are at the **Welding** screen (refer to *Chapter 6.5 Welding*), you can start the welding cycle by clicking on the icon  .

## 5. 2. For an application other than tube / stainless steel tube

For different applications, you have two options. You can:

- establish a new WP (refer to Chapter *6.1.2.2. Establish a WP*);

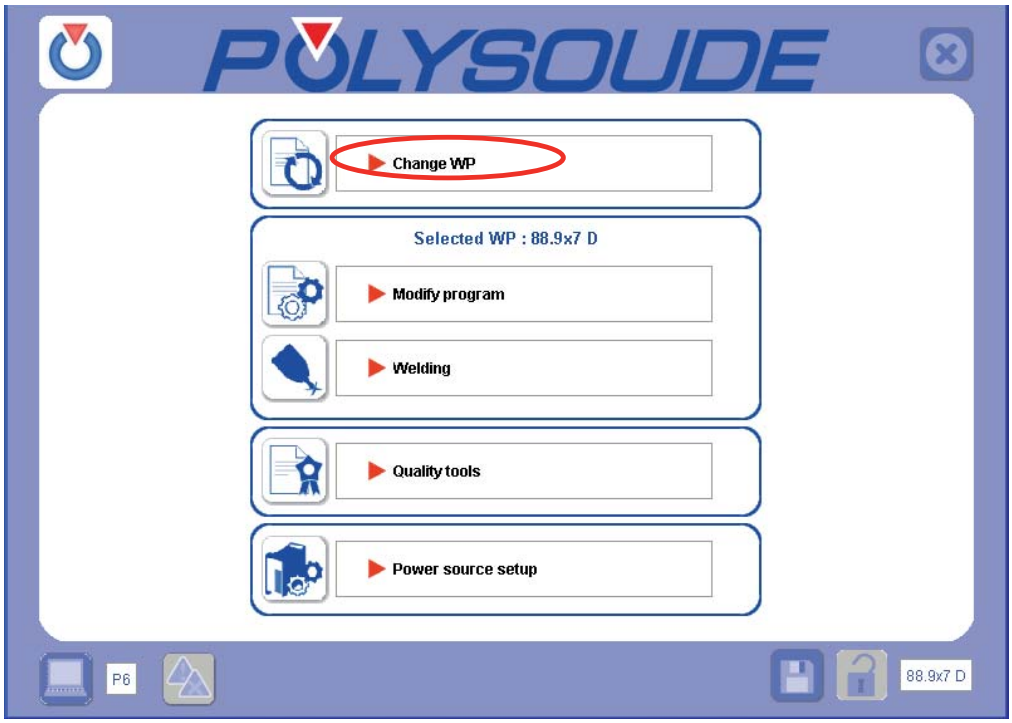
or

- duplicate an existing WP and then proceed to make the necessary changes (refer to Chapter *6.1.2.3. Duplicate a WP*).

# 6. Basic functions

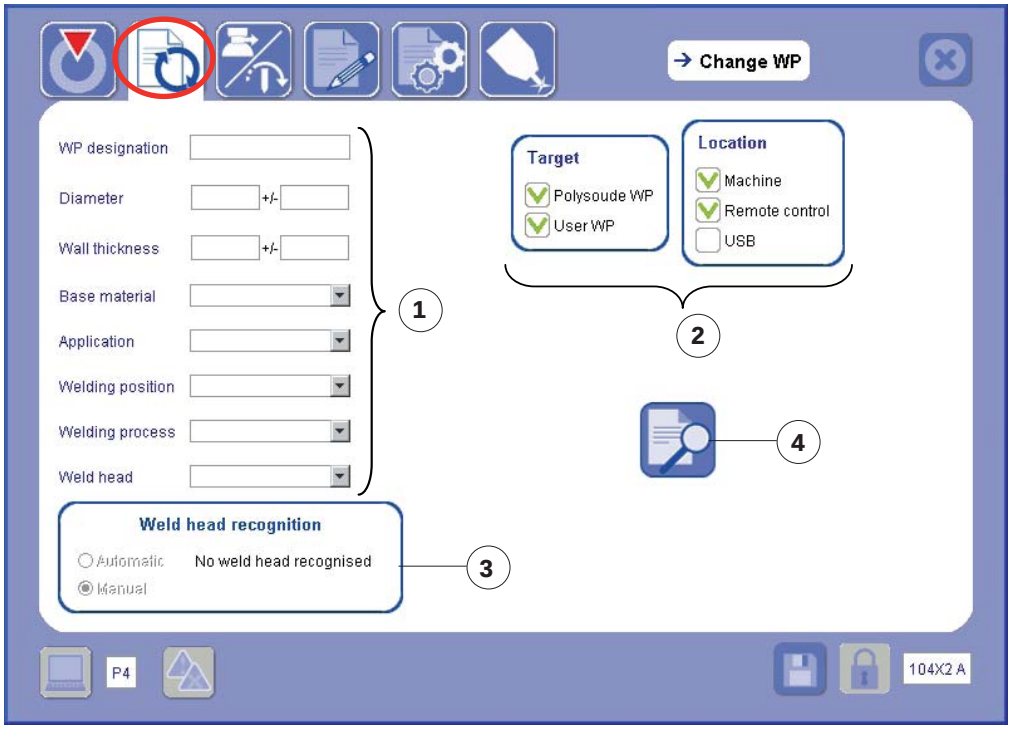
## 6. 1. Change WP

Each time the GUI is started, the last WP used is loaded automatically.
In order to search for or to manage a WP, go to Change WP from the Home page:




### *6. 1. 1. Search for a WP*

The **Change WP** screen appears as shown below:



The **Change WP** screen is a WP search page composed of the following elements:

1) **Search criteria form**: none of the criteria on this form is obligatory but search results will be more accurate if more criteria are filled in.

To assist you in your search for a WP, two tools are available:

➢ *The calculated WP*

The GUI has an integrated calculation formula which generates what is called a **Calculated WP** from the **wall thickness** and **diameter** of the tube for a **stainless steel tube to tube** application with **diameter < 170mm** and **thickness between 0.7 and 3.2 mm**.

The calculated WP provides a good starting point after which you can refine parameters in order to obtain the final program.

For example, the Calculated WPs do not contain sectors and you will have to create these if they are necessary (refer to Chapter *6.4.2.1. Advanced Programming*).

To obtain a calculated WP, all you have to do is to enter at least the **diameter** and the **wall thickness** of the tube then start your search.

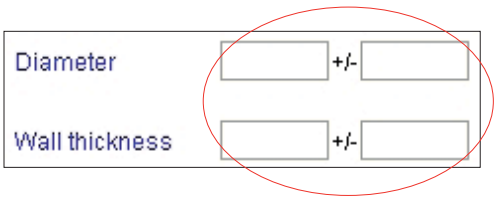
➢ *The Polysoude WP library*

The P4-P6 power source has a library of predefined WPs. These WPs have been **tested** then **validated** by Polysoude and apply to various **tube to tube** and **tube to tubesheet** welding scenarios for both **stainless steel** and **titanium**.

In contrast to the calculated WPs, the parameters of the Polysoude WPs have already been refined.

Depending on the search criteria entered, there are likely to be several Polysoude WPs that correspond to the application concerned.

In order to widen your search and to have greater chances of finding an existing WP whose parameters are close to the welding to be performed, indicate a tolerance for the criteria **Diameter** and **Wall thickness**. This may enable you to find an existing WP whose values are close to the required application, to duplicate it and then to modify its parameters (refer to Chapter *6.1.2.3. Duplicate a WP*):




If no criteria have been entered at the moment that the search starts, the results will consist of:

- Polysoude WPs (WPs for tube/tube and tube/tubesheet, stainless steel and titanium);
- WPs established by the user.

For different applications, you have two options. You can:

- establish a new WP (refer to Chapter *6.1.2.2. Establish a WP*);

or

- duplicate an existing WP and then proceed to make the necessary changes (refer to Chapter *6.1.2.3. Duplicate a WP*).

**2) Search targets and locations**

➢ *Targets*

The two targets available are:

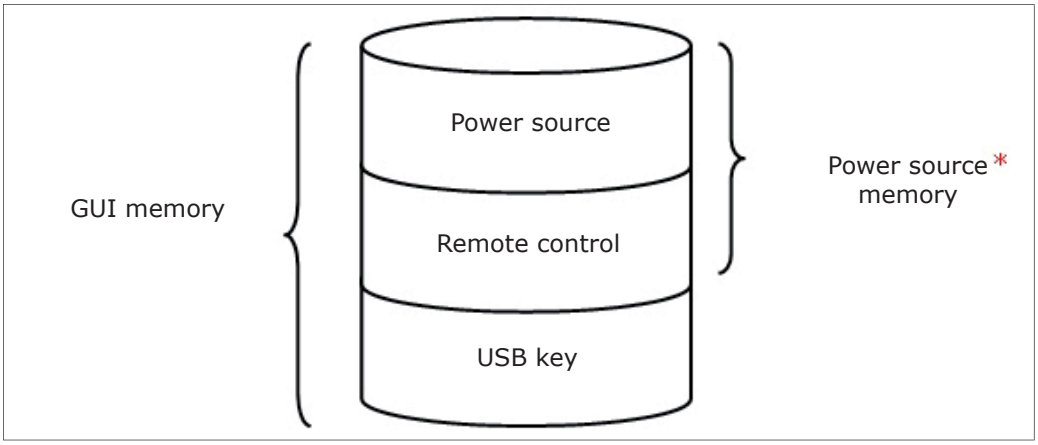

- the **Polysoude WPs**, i.e. the WP library integrated into the GUI;
- the **client WPs**, that is the library of WPs established by the user.

Select the target(s) in which you want to search for WPs by ticking the box situated in front of the required target.

➢ *Locations*

The locations represent the different "memories" in which the WPs may be "stored": the machine, remote control and USB key.

The various locations available within the GUI may be represented as follows:




*Except on a non-connected PC, see chapter *7.2 Special PC features*

- The **Machine** location contains WPs which are only accessible from the GUI and not via the remote control.
- The **Remote control** is like a folder in which you can move WPs you have selected from the WPs contained in the **Machine** location so you only have a limited selection of WPs in the **Remote control** location.

The **Remote control location is not a storage location** because the remote control has no memory. The WPs stored in the Remote control location are not physically there but are accessible to the remote control when it is connected.

There is no need to connect the remote control to the power source in order to transfer WPs to the Remote control location.

- The **USB** location contains all of the WPs that are present in the USB key that is connected. When you disconnect the USB key from the power source, the WPs situated in the **USB** location are no longer accessible from the GUI.

To summarise:

- Via the connected remote control, you have access to the WPs stored in the location **Remote control**, but not to the WPs stored in the location **Machine**;
- There is no point in connecting the remote control in order to transfer WPs to/from the location **Remote control**;
- The WPs stored in the location **USB** are accessible only when the USB key is connected to the power source.

***Comment:***

The first time that the GUI is used on the touchscreen, the Polysoude WP library is stored by default in the location **Remote control**.

In order to conduct a search in the Polysoude WP library, tick the location **Remote control** even if you do not have this remote control.

The first time that the GUI is used on a computer not connected to the power source the Polysoude WP library is stored by default in the location **Machine**.

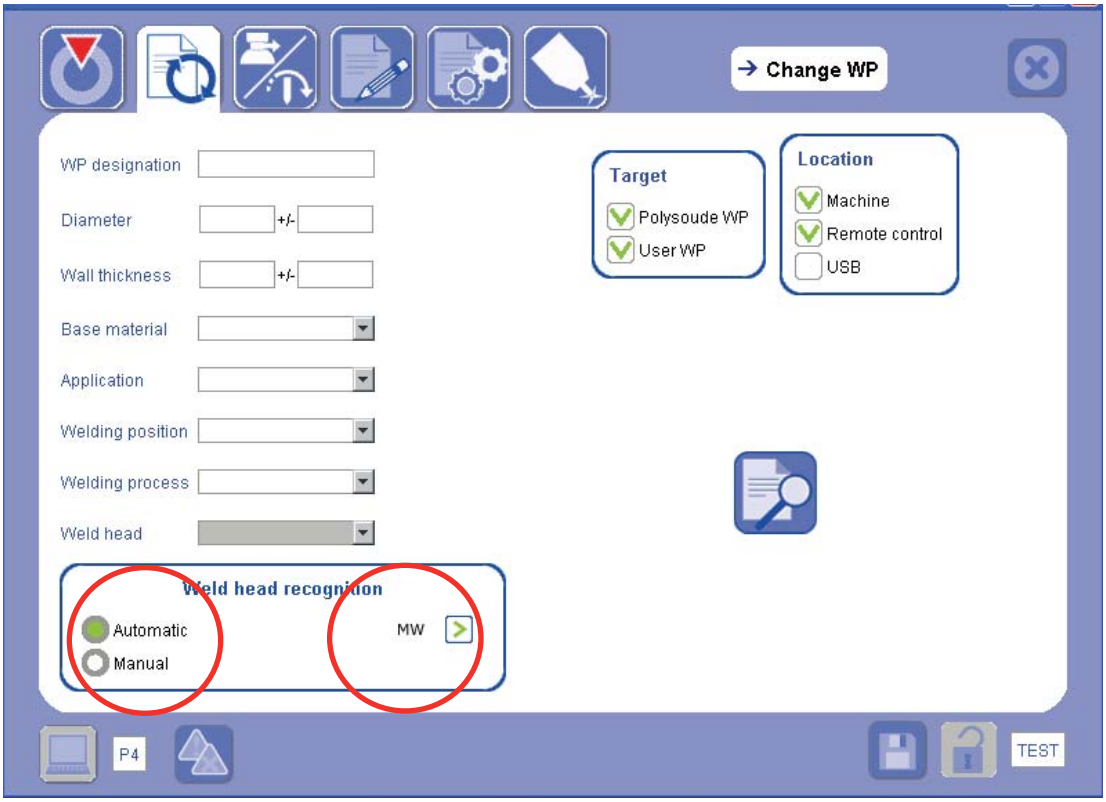
In order to conduct a search in the Polysoude WP library, tick the **location** Machine.

### 3) Detecting the head

The operator can select automatic or manual weld head recognition.

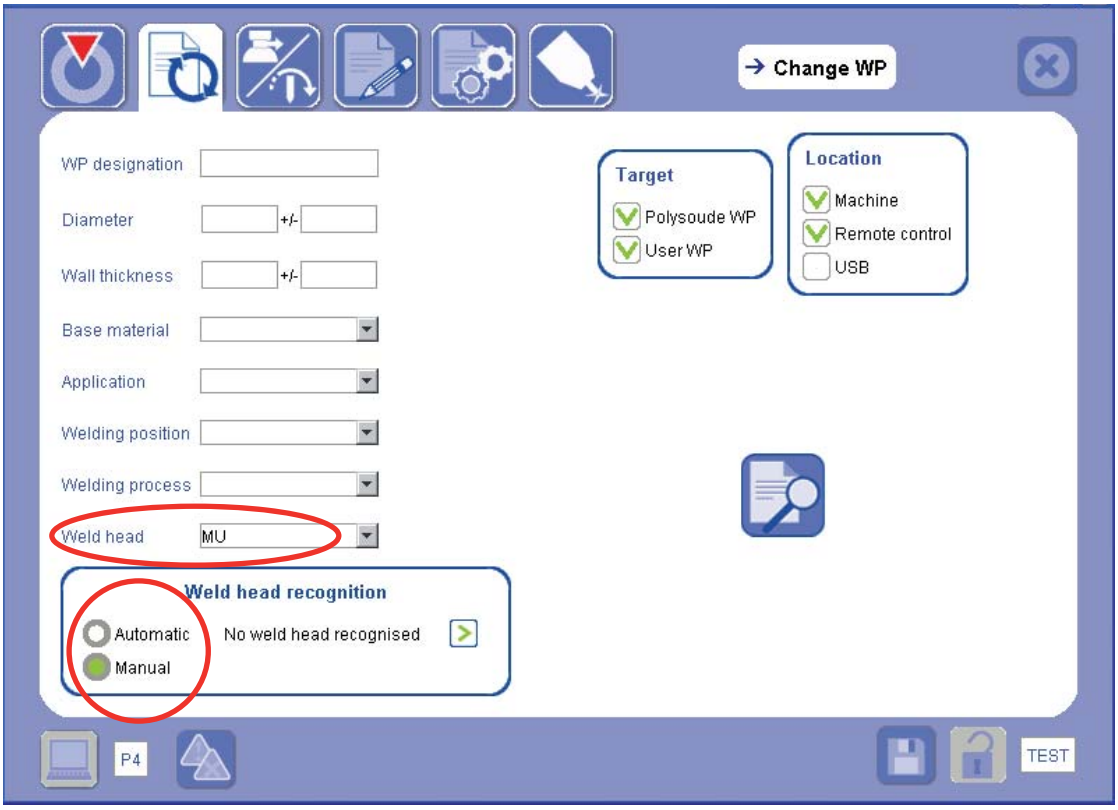
Selecting the "**Automatic**" key in the "**Weld head recognition**" area then pressing the icon identifies the head connected to the power source. The name of the head is displayed in the "**Weld head recognition**" window to the side of the icon. The search then displays the WPs using the detected head. Furthermore, only calculated WPs which use this head are shown.

If an extension lead is used, weld head recognition is considered as being carried out in "**Manual**" mode.



If the weldhead (or wire feeder) connected differs from the one selected in the WP, the cycle is prevented from starting.

The selection of the "**Manual**" key in the "**Weldhead recognition**" area displays the message "No weld head recognition" and a search will be launched with the selected welding head if the box has been entered.




**4) Start the search**

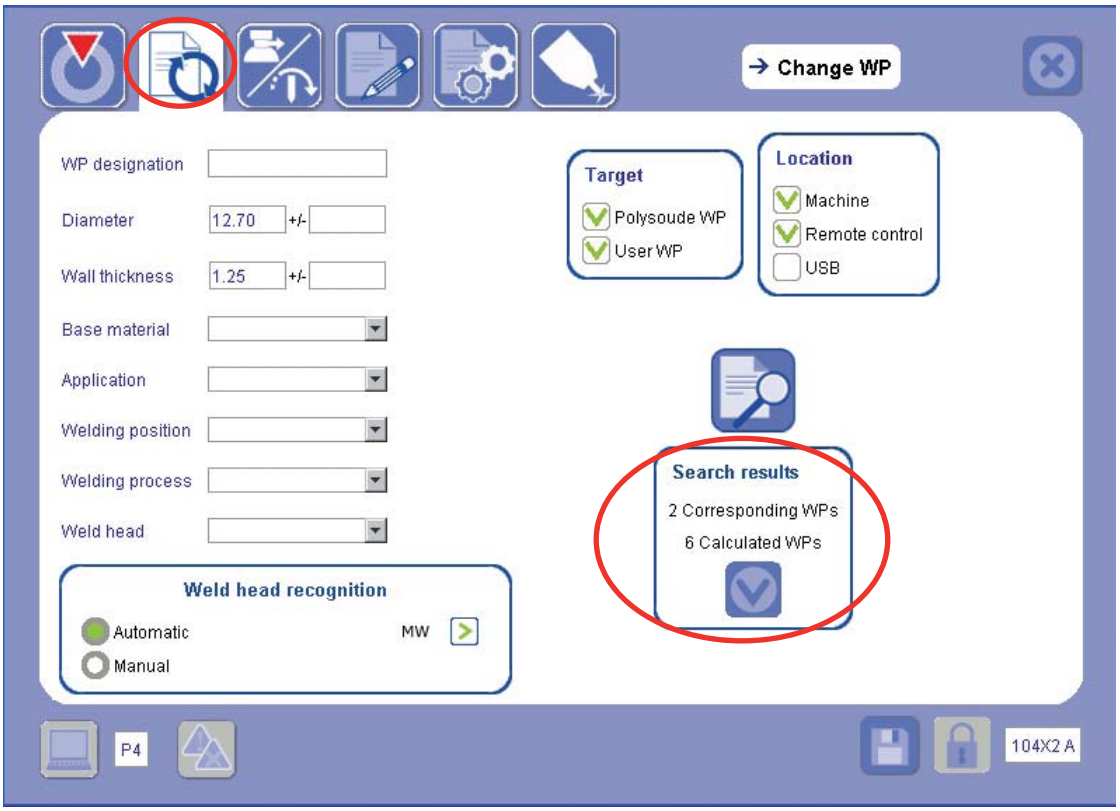
When all conditions have been set (criteria filled in, targets and locations selected), start the search by clicking on the "Start the search" icon:  .

**5) Display results**

After the search has started, the **Search results** box appears and shows:

- the number of existing WPs (Polysoude/Client WPs) corresponding to the criteria entered; and/or
- the number of calculated WPs generated.

**For example**: for a diameter of 12.7 cm and a wall thickness of 1.25 mm

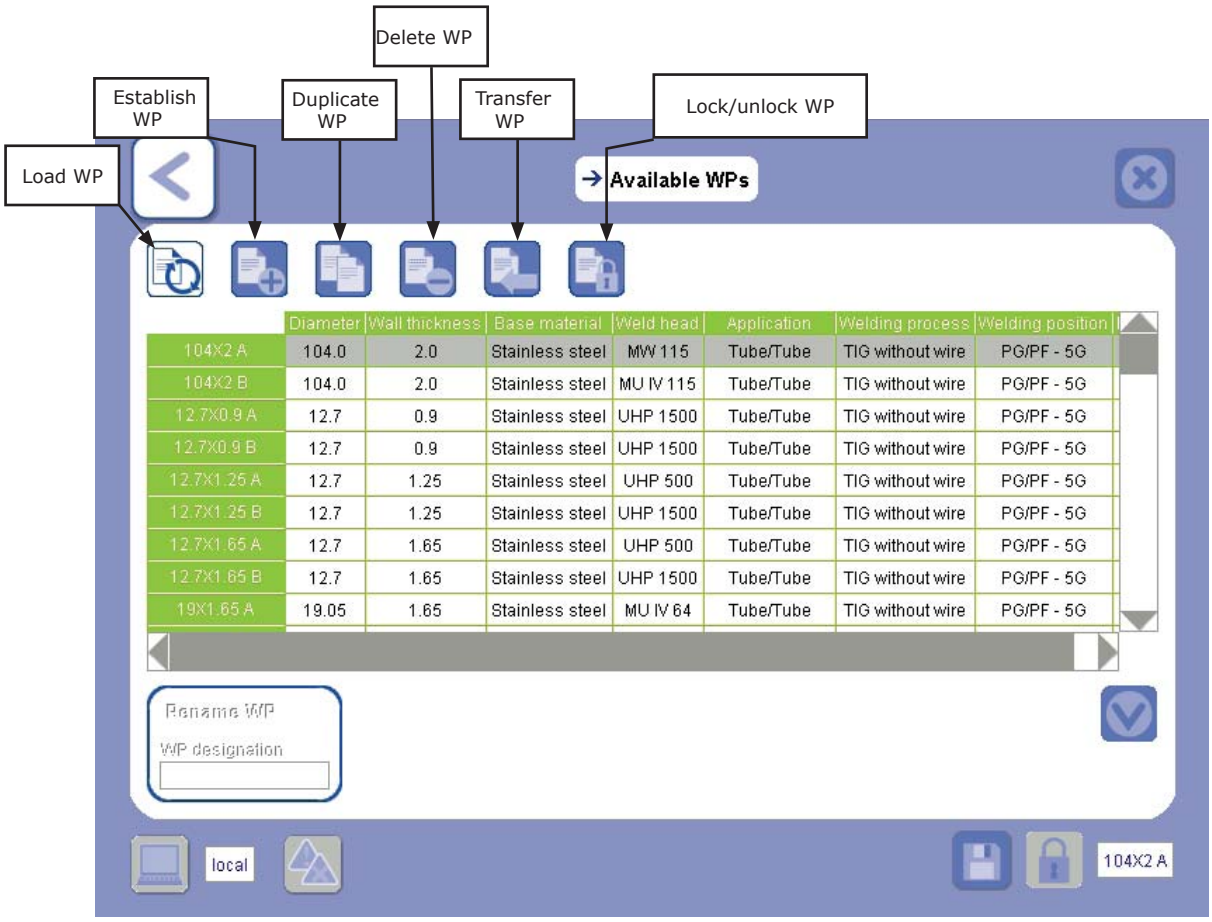



Click on the Confirm icon  of the **Search results** box for access to the list of results.
The page displaying the search results appears.

### 6. 1. 2. WP management

Running a WP search is an essential step in carrying out any **load**, **establish**, **duplicate**, **delete**, **transfer** or **lock / unlock** operation on a WP: these operations can be performed only from the **Available WPs** page displayed after conducting a WP search.

The Available WP page appears as shown below:



#### 6. 1. 2. 1. Load a WP

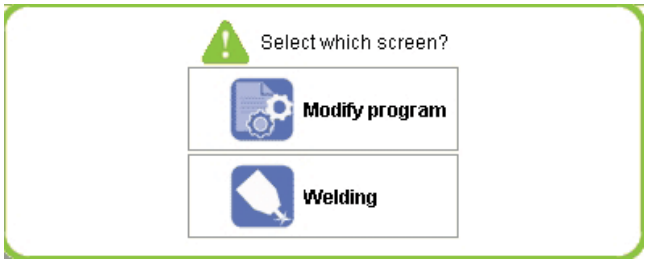
The Available WP page contains the list of WPs corresponding to the search criteria entered. It is from this list that you can load the WP that is suitable for the welding to be performed.

➢ *Load an existing WP*

In order to load an existing WP (Polysoude WP or Client WP) proceed as follows:


1) select the line for the WP to be loaded;
2) confirm you choice by clicking the Confirm icon .
3) Confirm the following message of confirmation:


The following screen appears:

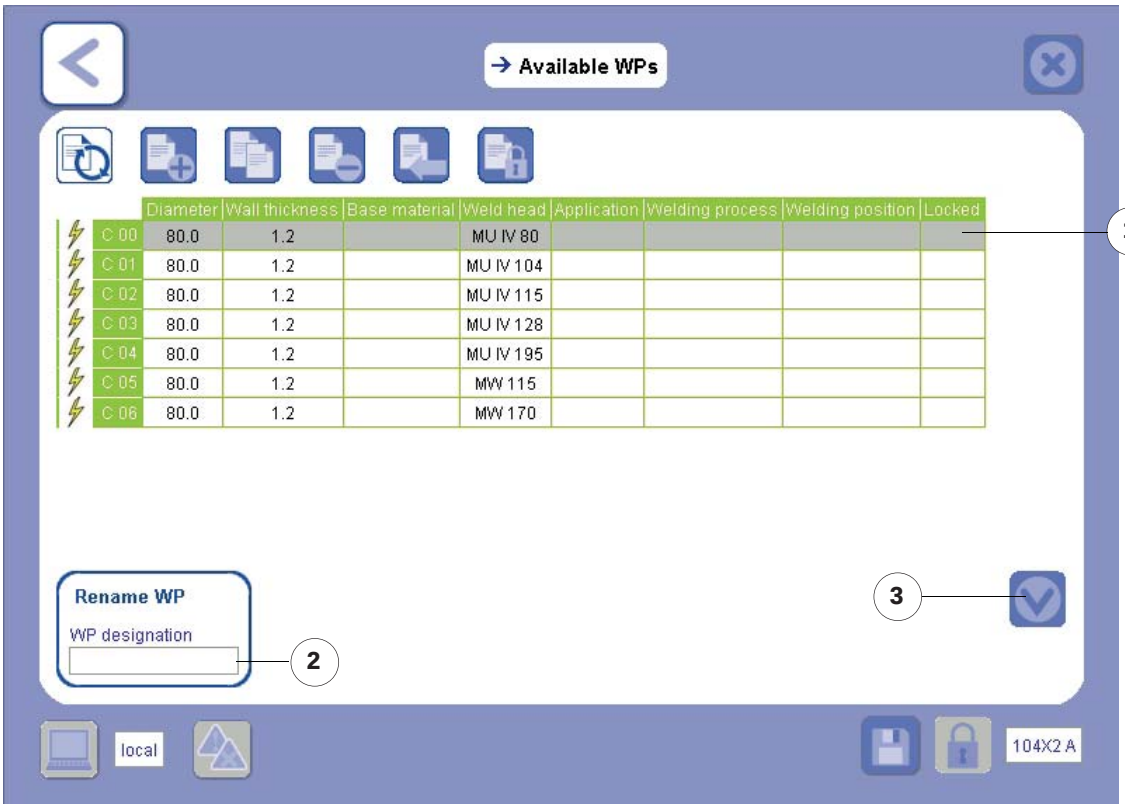


From this, you can choose to access the **Modify program** or **Welding** screen as required (refer to the sections dealing with these two screens).

> ***Comment:*** *in order to have the same conditions as those during development of the Polysoude WP parameters, refer to the information available in the documentation (e.g. electrode/workpiece separation).*
> *Refer to Chapter 6.3. Document WP.*

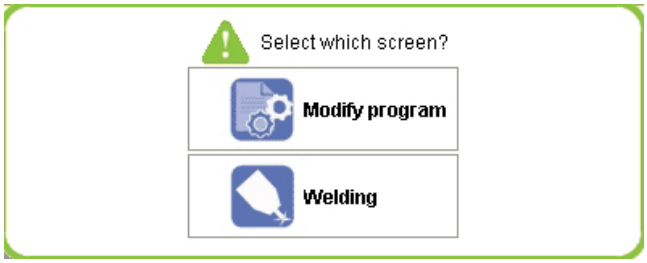
➢ *Load a Calculated WP*

On the **Available WPs** page, the calculated WPs are indicated by the symbol .
In order to load a calculated WP, proceed as follows:




1) select the line for the Calculated WP to be loaded;
2) enter a designation for this calculated WP (refer to Chapter 4.3 Filling in forms to use the keyboard);
3) select the Confirm icon .
4) Confirm the following message of confirmation:

The following screen appears:




From this, you can choose to access the **Modify program** or **Welding** screen as required (refer to the sections dealing with these two screens).

The calculated WPs that you have loaded are added to the **Client WP** library and will appear in the list of results the next time that a search is conducted.

> ***Comment:*** *in order to have the same conditions as those during development of the Polysoude WP parameters, refer to the information available in the documentation (e.g. gas flow rate).*
>
> *Refer to Chapter 6.3. Document WP.*

#### 6. 1. 2. 2. Establish a WP

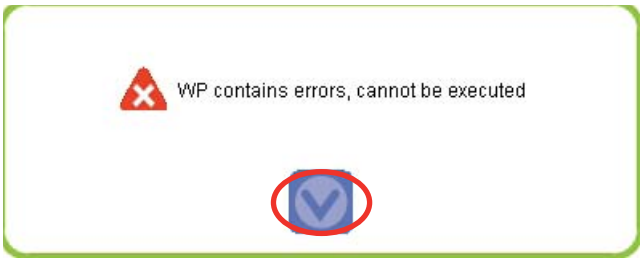
If there is no existing or calculated WP that is suitable for the welding to be performed, you can establish the WP that you need.

In order to establish a WP, proceed as follows:


1) select the **Establish WP** icon;
2) enter the designation of the new WP (refer to Chapter *4.3 Filling in forms* to use the keyboard);
3) select the Confirm icon .

Confirm the message of confirmation for establishing a WP:

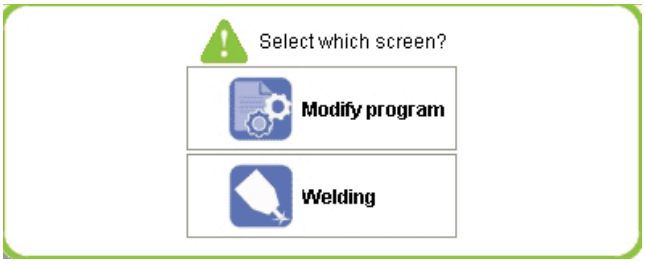

The following warning message appears in order to inform you that the rotation axis has not been specified:




The operation to establish a WP is completed.

**The WP established is loaded automatically.**

The following window is displayed:




When the WP establishment process has completed, select the **Modify program** or **Welding** screen.

Then go to **Select equipment** in order to choose axes that are consistent with the equipment used (see chapter 6.2.).

The WPs established by the user are added to the **Client WP** library and will appear in the list of existing WPs the next time that a search is conducted.

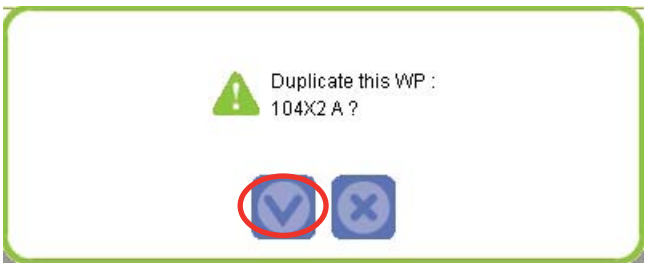
### 6. 1. 2. 3. Duplicate a WP

The duplication function duplicates an existing WP (Polysoude WP or Client WP) in order to adapt it to the welding to be performed.

In order to duplicate a WP, proceed as follows:


1) select the line for the WP to be duplicated;
2) select the **Establish WP** icon;
3) enter the designation of the new WP (refer to Chapter *4.3 Filling in forms* to use the keyboard);
4) select the Confirm icon .

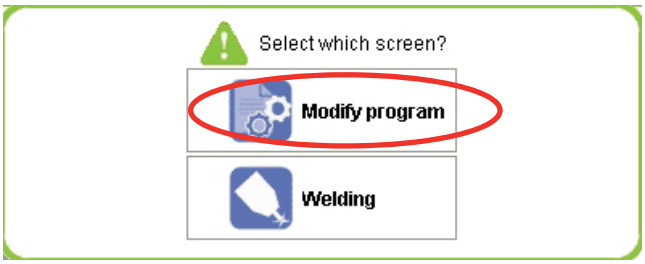
Confirm the message of confirmation for WP duplication:




The WP duplication operation is completed.

**The duplicated WP is loaded automatically.**

The following window is displayed:




Select the **Modify program** screen to make the necessary modifications before starting the welding cycle.

When you duplicate a WP for welding an application with a different diameter from that entered into this WP, you must change the equipment if the welding head used is different (refer to Chapter *6.2 Selection of equipment*).

#### 6. 1. 2. 4. Delete a WP

In order to delete a WP, proceed as follows:


| | Diameter | Wall thickness | Base material | Weld head | Application | Welding process | Welding position |
|---|---|---|---|---|---|---|---|
| 104X2 A | 104.0 | 2.0 | Stainless steel | MW 115 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 104X2 B | 104.0 | 2.0 | Stainless steel | MU IV 115 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 104x2 C | 104.0 | 2.0 | Stainless steel | MW 115 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 12.7X0.9 A | 12.7 | 0.9 | Stainless steel | UHP 1500 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 12.7X0.9 B | 12.7 | 0.9 | Stainless steel | UHP 1500 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 12.7X1.25 A | 12.7 | 1.25 | Stainless steel | UHP 500 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 12.7X1.25 B | 12.7 | 1.25 | Stainless steel | UHP 1500 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 12.7X1.65 A | 12.7 | 1.65 | Stainless steel | UHP 500 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 12.7X1.65 B | 12.7 | 1.65 | Stainless steel | UHP 1500 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 19X1.65 A | 19.05 | 1.65 | Stainless steel | MU IV 64 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 19X1.65 B | 19.05 | 1.65 | Stainless steel | UHP 1500 | Tube/Tube | TIG without wire | PG/PF - 5G |

1) select the line for the WP to be deleted;
2) select the **Delete WP** icon;
3) select the Confirm icon .

Confirm the message of confirmation for deleting the WP:


**The deleted WP disappears from the list of WPs.**

***Comment:***

- *You can **delete several WPs at the same time** by selecting several WP lines. The different WPs selected will be ticked in the left-hand column.*
- *In order to **deselect a WP**, click once again on the line for this WP to uncheck the box.*
- *You cannot delete **the selected WP nor a locked WP.***

#### 6. 1. 2. 5. Transfer a WP

WP transfer allows you to:

- organise the distribution of WPs between the **Machine** and **Remote Control** locations;
- transfer WPs to/from other power sources using a USB key;
- transfer WPs to/from the WP libraries contained in your PC and on your power source (refer to Chapter *Transfer WP – PC/Power Source*).

Using this function you can select the WPs you need via the WP Search page, and then transfer them to the Remote Control or USB key. These locations will therefore "contain" only a limited selection of WPs and not all existing WPs, which will facilitate management and use of your WPs.

➢ *Transfer between the Machine and Remote Control locations*

During a transfer between the **Machine** and **Remote Control** WP transfer, the transferred files are moved from the original location and not copied: a WP transferred into the **Remote Control** location no longer appears in the list of WPs contained in the **Machine** location, and vice versa.

➢ *Transfer between the Machine and USB locations*

Whether you have a touchscreen or a PC, the WP transfer between the **Machine** and the **USB** locations is carried out by connecting your USB key **to the power source**.

You can retrieve the selected WP onto your USB key very simply.

To do this:

a) connect your USB key to the power source;

b) press the **Write command** situated on the front panel of the power source (refer to P4 manual)

In this way, you will retrieve onto your USB key:

- the selected WP (.wpo file in the WP folder);
- all of the welding print-outs (.txt files in the print-out folder);
- the maintenance print-outs (in the log folder);
- the documentation (.html file in the WPS folder).

**To transfer a Dynamic WP must retrieve the html file + xx-files (containing images of Dynamic WP). It is recommended to open the html file and make a pdf file for a Dynamic WP in printable format.**

In order to transfer a WP other than the selected WP onto your USB key, use the GUI to select the required WPs from the **Available WPs** screen.

If a WP is transferred from the power source to a USB key, the WP is **copied directly to the USB** and is not erased from the source location.

➢ *Transfer between a PC and a USB key*

See section *Transfer by a USB key*.

➢ *Transfer between the Remote control and USB locations*

By connecting the USB key to the power source and then pressing the **Read command** situated on the front panel of the power source (refer to the manual for the power source), all of the WPs contained on the USB key are copied into the **Remote Control** location and are therefore accessible via the Remote Control.

In order to transfer a WP to/from the various locations, proceed as follows:


1) select the line for the WP to be transferred;
2) select the **Transfer WP** icon;
3) select the location for transfer;
4) select the Confirm icon .

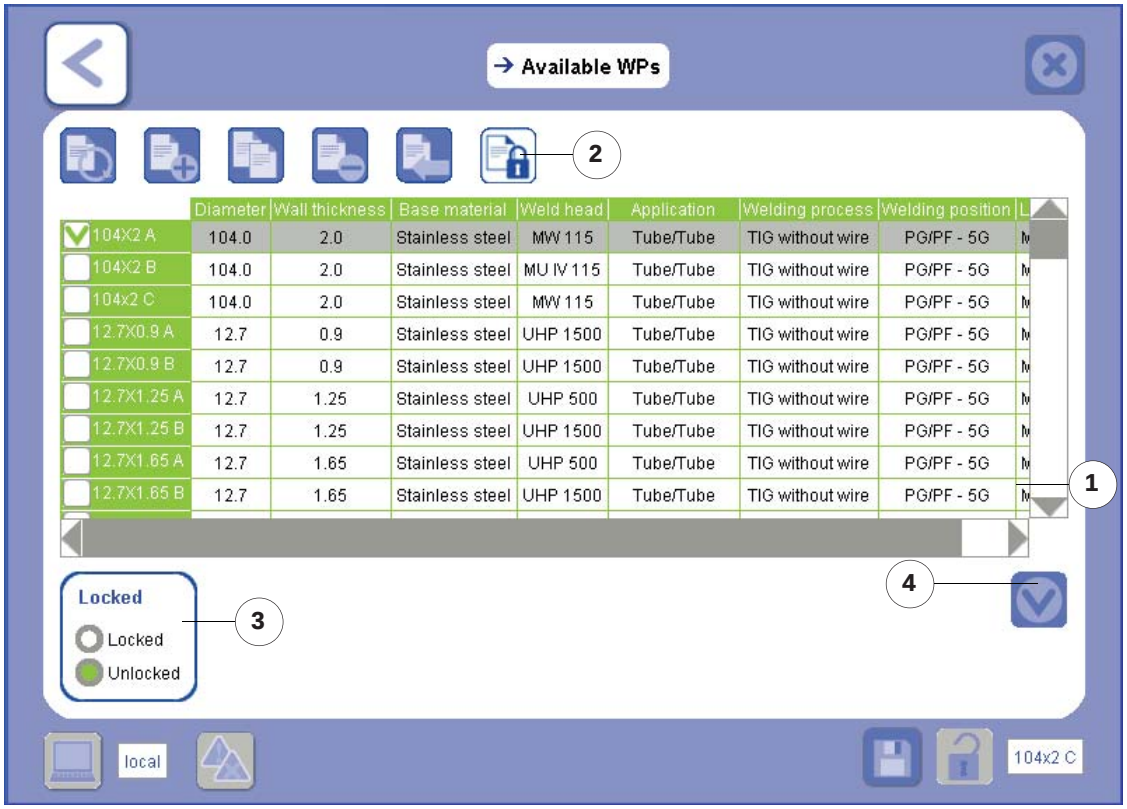
Confirm the message of confirmation for WP transfer:

**The transfer operation is complete.**

> ***Comment:***
>
> * *You can **transfer several WPs at the same time** by selecting several WP lines. The different WPs selected will be ticked in the left-hand column.*
> * *In order to **deselect a WP**, click once again on the line for this WP to uncheck the box.*

#### 6. 1. 2. 6. Lock / Unlock a WP

You can choose to lock or unlock your WPs in order to block or permit modifications to the parameters. In order to do this, proceed as follows:




1) select the line containing the WP to be locked/unlocked;
2) select the **Lock / Unlock WP** icon;
3) use the radio buttons to lock/unlock the selected WP;
4) select the Confirm icon .

5) Confirm the following message of confirmation:


The new status of the selected WP(s) is updated in the **Locked** column.

***Comment***

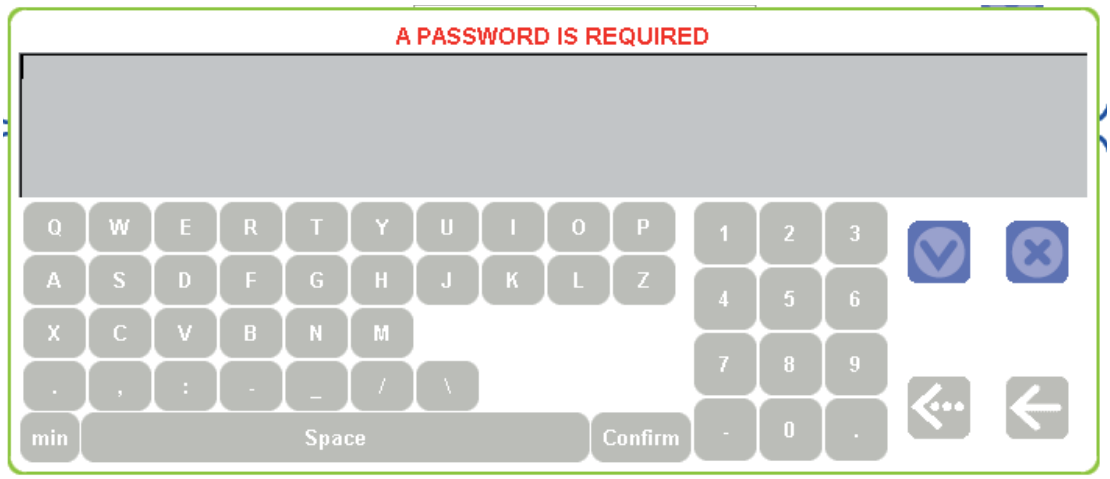
- *You can **lock / unlock several WPs at the same time** by selecting several WP lines. The different WPs selected will be ticked in the left-hand column.*
- *In order to **deselect a WP**, click once again on the line for this WP to uncheck the box.*

***Comment***

- *The icon or situated at the bottom right of the screen shows the status of the selected WP (locked/unlocked);*
- *The Polysoude WPs are locked and their status cannot be modified: they cannot therefore be subjected to any modification.*

#### 6. 1. 2. 7. Working on password-protected WPs

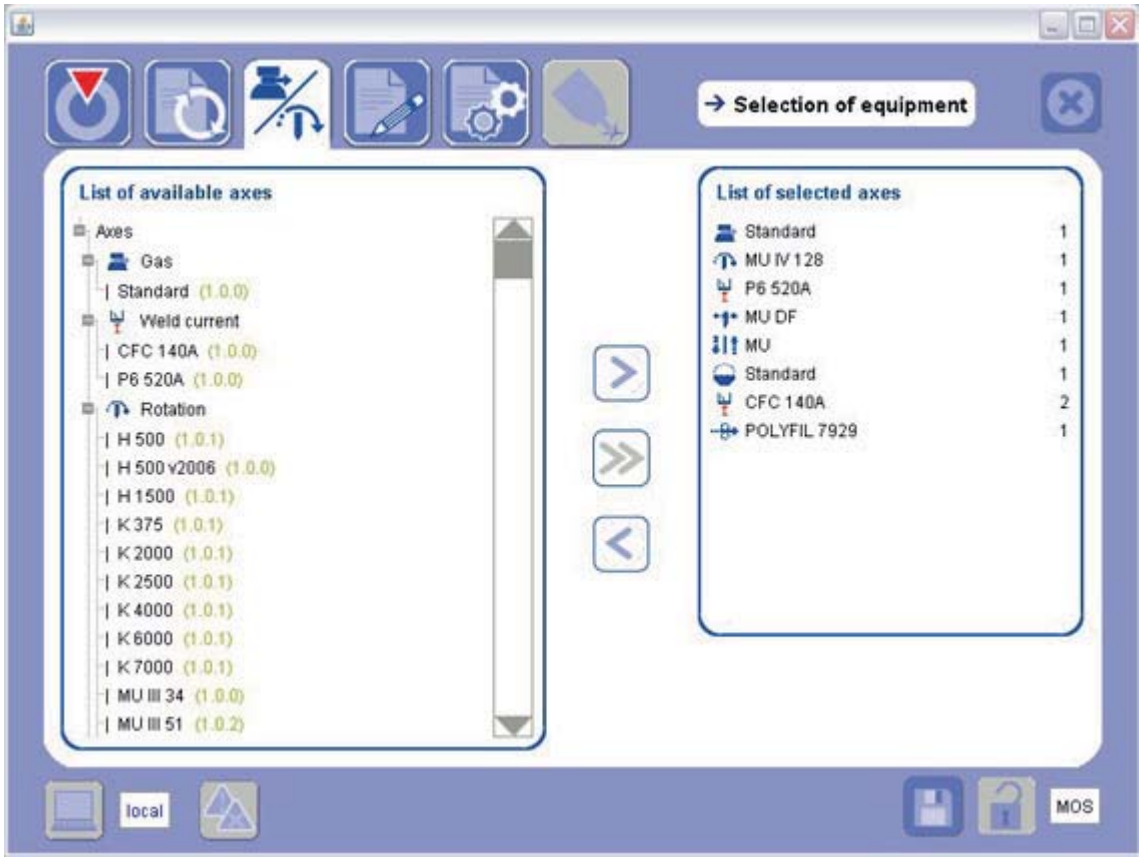
It is possible to allow only authorized staff to carry out some of the before described WP operations by using a password (see § 7.2.). If the WPs affected by the operation to be carried out are selected the following screen appears.




1) Enter the password
2) select the Confirm icon and continue with the current procedure.

## 6. 2. Selection of equipment (for the WP)

The **Selection of equipment** screen allows the user to select the gas, current, rotation, wire, AVC (option), Oscillation (option) and coolant axes required for establishing or changing a WP.




The list on the left shows the various types available for the gas, current, rotation, wire, AVC, oscillation and coolant axes for Polysoude equipment.

The list on the right shows the axes chosen for the selected WP. To create this list, proceed as follows:

Select the desired equipment from the column on the left and use the arrow > to transfer it to the column on the right.

The arrow < allows the user to **delete** the items in the **List of selected axes.**

The removal (deletion) of an axis **cancels any parameters entered** for it.
To change it while keeping the parameters entered, exchange the **existing axis** by **the desired axis without deleting it.**

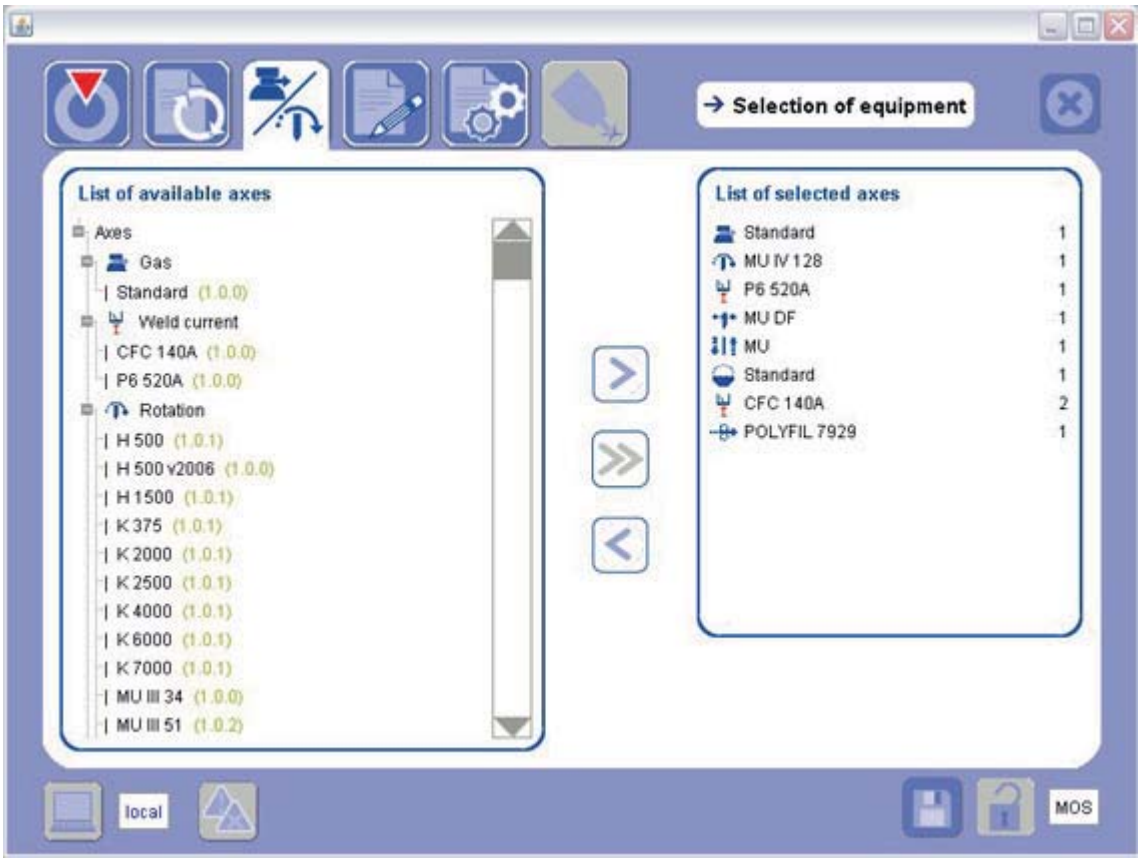
To exchange an axis, select the desired axis then the axis to be replaced, then validate it using the double arrow >>.

Example: *To change the "MU" AVC axis to "MU DF", select the "MU DF" axis in the **List of available axes**, then select the "MU" axis **to be changed** in the **List of selected axes**, then use the arrow >>. The "MU" axis is immediately replaced by the "MU DF" axis.*

***Comment***

- *At least one **gas** axis, one **current** axis and one **coolant** axis are set by default and cannot be deleted from the **List of selected axes**.*

For P6 power sources with a **hot wire option** (P6 HW), the **Selection of equipment** screen appears as follows, showing a second current axis for the hot wire:



## 6. 3. Document WP

The **Document WP** screen appears as shown below:


The documentation is a traceability tool that makes it possible to preserve all of the mechanical and electrical parameters characterising each of the existing WPs.

Polysoude WPs are provided with complete documentation. In the documentation, you will find all of the adjustments and parameters used in their development.

**ALL DOCUMENTATION INFORMATION IS OPTIONAL**

but WP search results will be more accurate if more criteria are filled in.

The **Document WP** screen has the following headings:

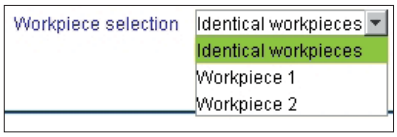
| | |
|---|---|
|  | **Kind of workpieces**<br>General information about the workpieces and choice of workpiece preparation. |
|  | **Mechanical adjustments**<br>Information per program of parameters and adjustments, addition of comments relating to the program. |
|  | **Weld layer definition**<br>Select the weld layer definition diagram that corresponds to the welding to be performed. |
|  | **Comments**<br>Addition of comments relating to the WP. |
|  | **Generation of the documentation**<br>Centralisation of all information entered into the documentation into one and the same document (Dynamic WP). |

### *6. 3. 1. Kind of workpieces*

The documentation page relating to the kind of workpieces has 2 tabs:

➢ *General Information Tab*

In the top section of this page you will find the following scrolling menu:

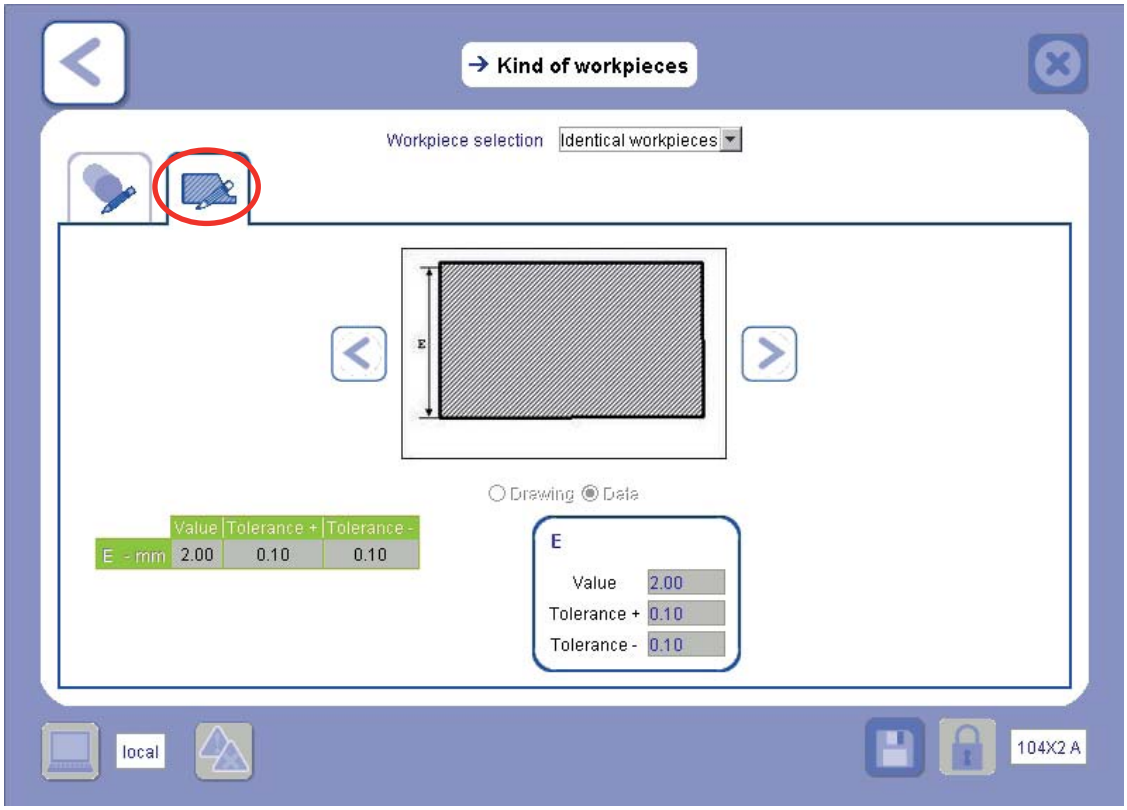



This menu lets you specify whether the weld you are working on is uniform or non-uniform and to enter the appropriate information.

> ***Comment:*** *irrespective of which workpieces are selected, the general information form remains identical. Even in the case of a tube/tubesheet application, the* ***"Diameter"*** *will be shown for both workpieces 1 and 2. Ignore it when entering data for the tubesheet.*

➢ *Workpiece Preparation Tab*

The **Workpiece preparation** tab enables you to select the preparation corresponding to your application.




By selecting the **Drawing** radio button, you can scroll through all of the types of preparation available.

Once the corresponding preparation has been selected, use the radio button to return to **Data** in order to enter the values.

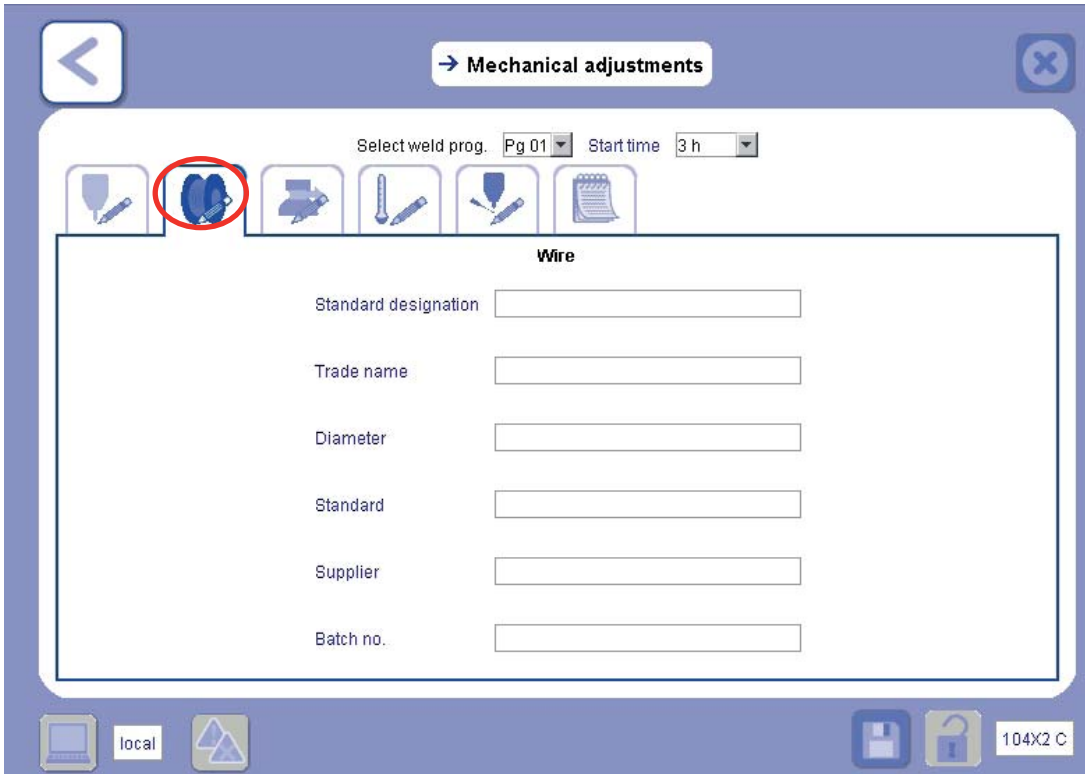
**This information will appear in the documentation.**

### *6. 3. 2. Mechanical adjustments*

The documentation page for the various adjustments has 6 information tabs per program to be filled in:

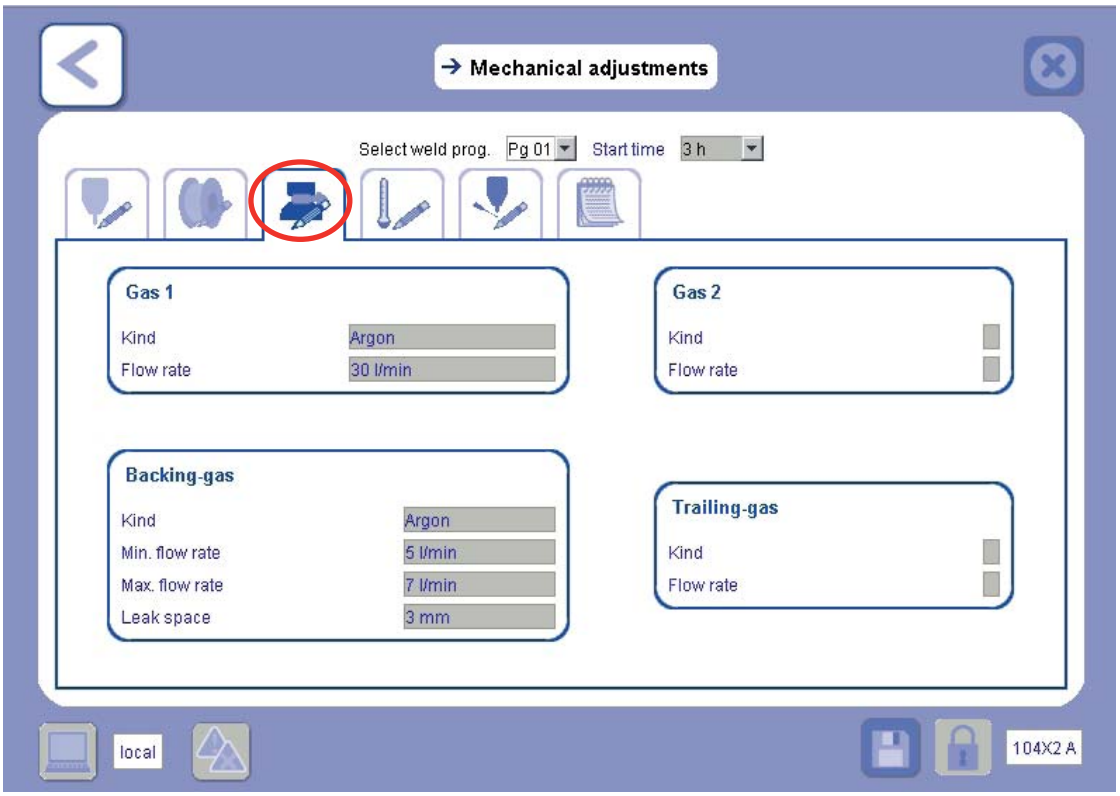
- *Electrode/Torch Tab*


- *Wire Tab*




**Note**: The Wire axis is only available if the WP contains a Wire axis.

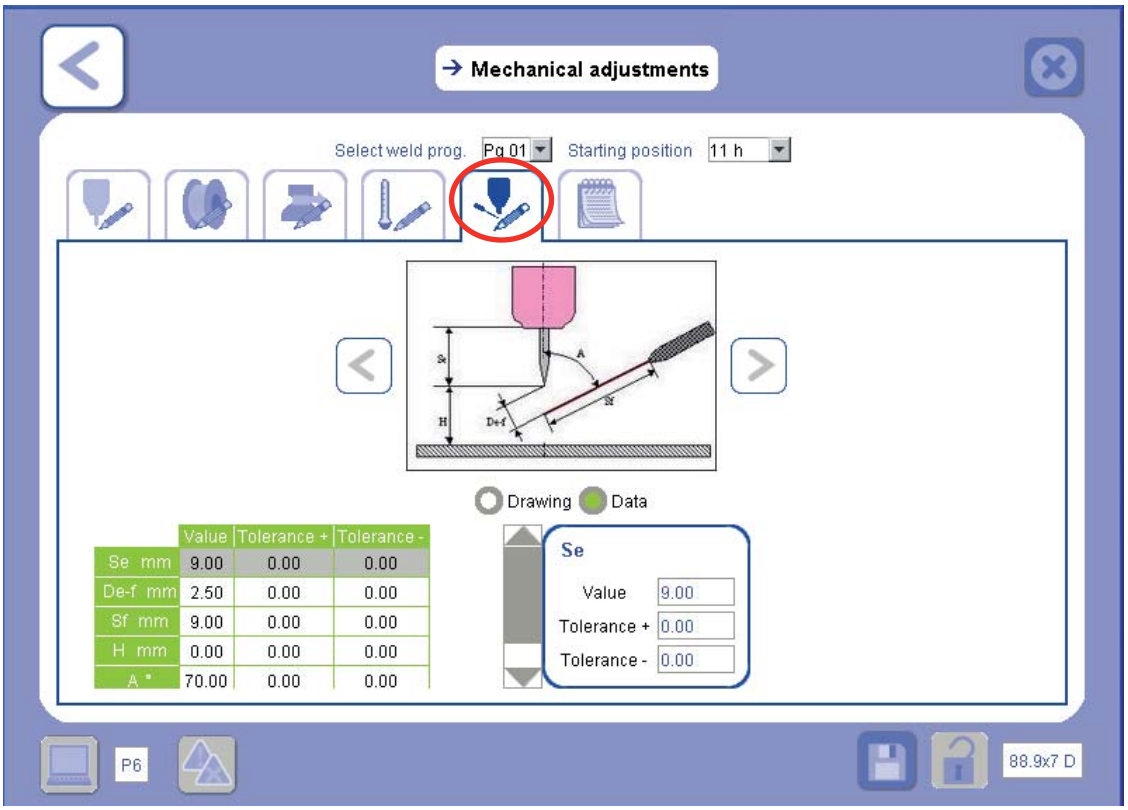
➢ *Gas Tab*




➢ *Thermal Conditions Tab*

➢ *Mechanical Adjustments Tab*

The **Mechanical Adjustments** tab lists all of the parameters needed for positioning the equipment.

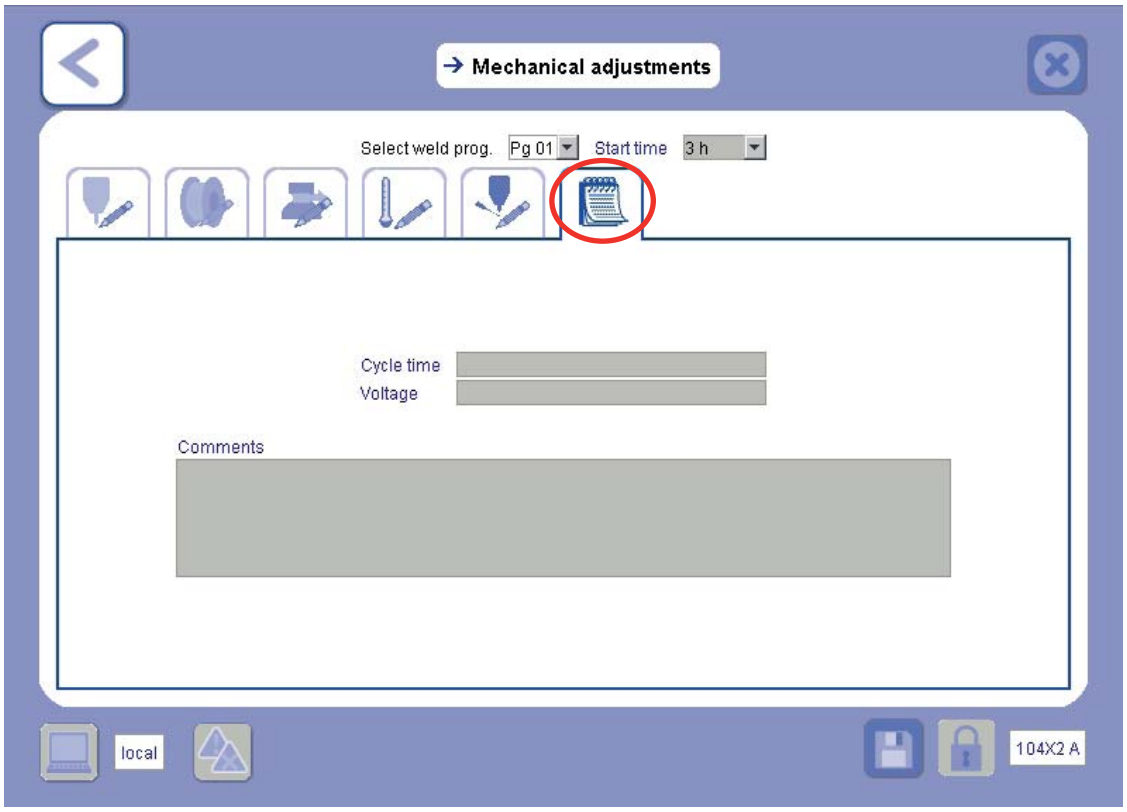



By selecting the **Drawing** radio button, you can scroll through all of the types of mechanical adjustment available.

Once the mechanical adjustment corresponding to the welding to be performed has been selected, use the radio button to return to **Data** in order to enter the values.

**This information will appear in the documentation.**

➢ *Comments Tab*

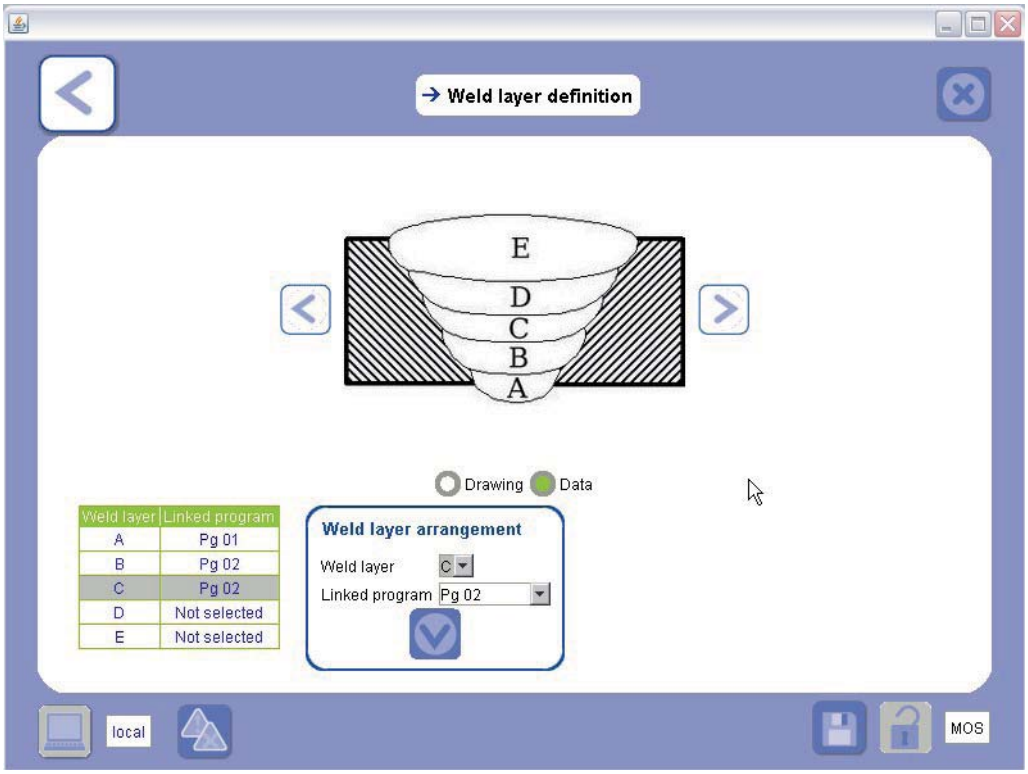



This comments tab enables you to enter any additional information relating to the program.

The "Cycle time" and "Voltage" values can only be entered after the welding ticket has been read. The "Voltage" field does not show on the screen if an AVC axis is present in the program.

### *6. 3. 3. Weld layer definition*

The weld layer definition page appears as shown below:




By selecting the Drawing (**Dessin**) radio button, you can scroll through all of the types of weld layer available. Scroll using the and arrows. Select the weld layer that corresponds to the welding to be performed. Once the weld layer style has been selected, use the radio button to return to Data (**Données**) in order to enter the values.

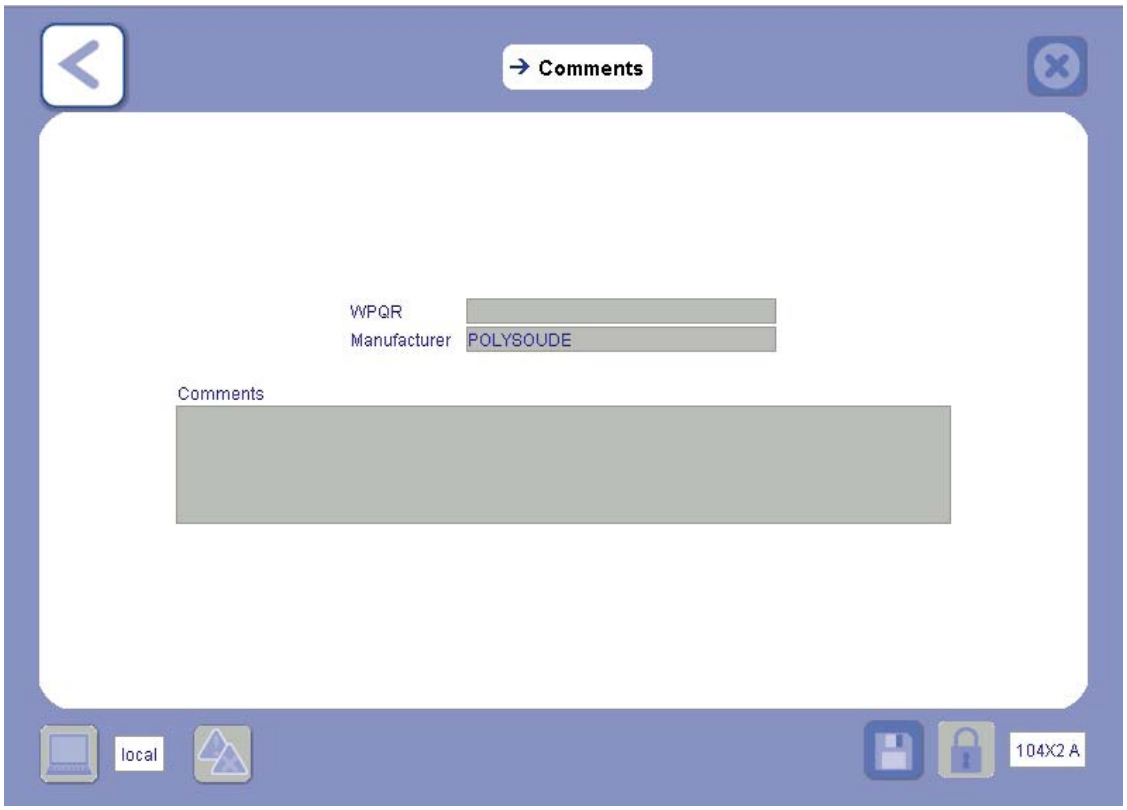
Now choose the program associated with each weld layer:

Click on the required weld layer. Choose the associated program in the "**Weld layer arrangement**" drop-down menu. Then validate. Proceed in this way for each weld layer. The same program can be associated with several weld layers.

This information will appear in the documentation.

### 6. 3. 4. Comments

The page of comments intended for WP appears as shown below:




This screen enables you to provide additional information to the WP documentation.

### 6. 3. 5. Generation of the documentation

The **documentation generation** icon makes it possible to collect all of the information you have entered into the various headings of the **Document WP** screen in one and the same document.

Thus, by clicking on this icon, you obtain an HTML file containing all of the data belonging to the desired WP. This will give you all of the information you need to enable you to reproduce the weld in identical conditions.

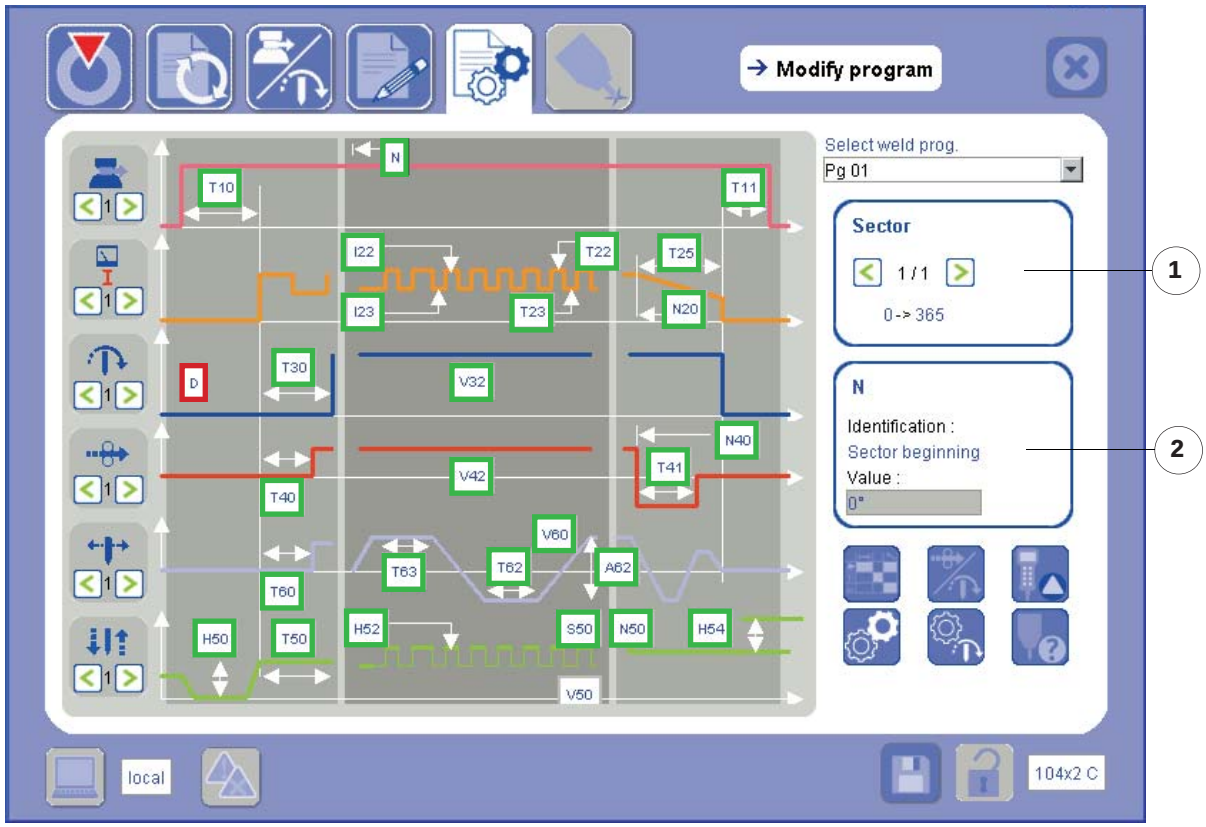
This HTML documentation file constitutes the **Dynamic WP** (refer to example in *Annex 2*).

➢ *Saving the documentation by default*

| | |
|---|---|
|  | By default, the documentation file generated is saved on the USB key. If, when the documentation is generated, the USB key is not connected to the power source, an error message appears. |
|  | By default, the file of the documentation generated is saved in the **My documents** folder for the current user.<br>This path for the documentation can, however, be modified (refer to Chapter *7.1. Power source setup*). |

## 6. 4. Modify program

### *6. 4. 1. Block diagram*




The **Modify program** screen is a block diagram page for all welding parameters.

The block diagram is drawn in accordance with the WP and program setup and conditions.

To change the parameters, select the ones visible directly on the diagram (they are circled in green in the screenshot) or click on the menu  (see 6.4.2.) and enter the new values in the Programming box.

The scrolling menu **Select weld program** lists all of the WP programs and allows you to select the current program.

1) The sector navigation box

A sector is a zone marked out in degrees that contains all of the parameter data for a program (refer to Chapter *6.4.2.1. Advanced Programming*).

The sector navigation box indicates:

- the number of the sector you want to display;
- the range of this sector;
- the number of sectors in the program.

2) The Programming box

The Programming box displays the parameter selected on the block diagram. This parameter can be modified from this box.

**Entering the diameter of the workpiece, parameter D in the diagram (circled in red), has an impact on the welding parameters.**

If the power source is fitted with the **Hot wire option** (P6 HW), the parameters for the current source can be changed by selecting the axis using the axis scroll bars.

To change the parameters, select the ones visible directly on the diagram (they are circled in green in the screenshot) or click on the menu  (see 6.4.2) and enter the new values in the programming box.

In the example below, axis 1 is the welding current axis and axis 2 is the hot wire axis.

Axis 1 → Welding current


Axis 2 → Hot wire current


### *6. 4. 2. Programming parameters*

The Programming parameters can be accessed from the following headings:

| | |
|---|---|
|  | **Advanced Programming** |
|  | **Override setup** |
|  | **Functions and axes setup** |
|  | **Program management** |
|  | **Selection of equipment** |

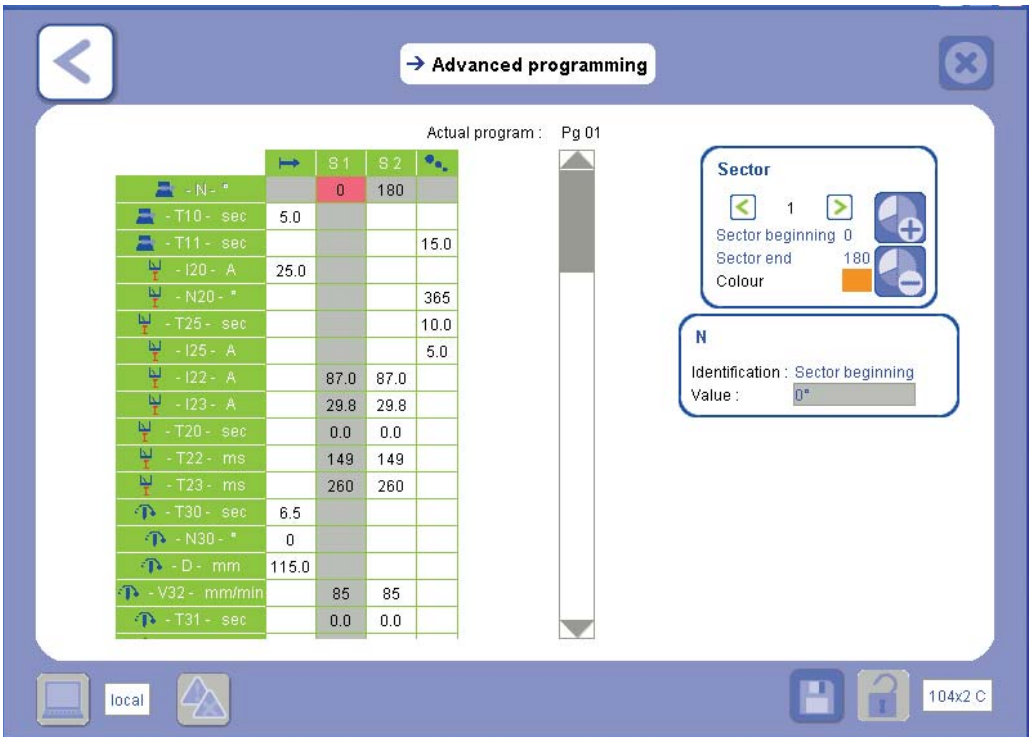
### 6. 4. 2. 1. Advanced Programming

The **Advanced Programming** screen repeats the elements from the block diagram of the **Modify program** screen in a table in order to provide an overview of all parameters (lines) and sectors (columns).

This screen also enables **sectors to be created**.

➢ *Create a sector*

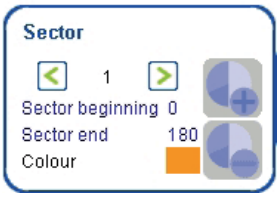
Creating a sector makes it possible to vary each parameter in the zones marked in degrees. During a sector, the parameters remain fixed. The P4-P6 power source permits 99 sectors to be provided per program.




In order to create a sector:

- select the column before the one to be created;
- select the icon ;
- Go to the column for the new sector and indicate the values in the Programming box. To do this, select the line for the parameter to be entered so that it is displayed in the Programming box.

The **Sector** box provides the following information:

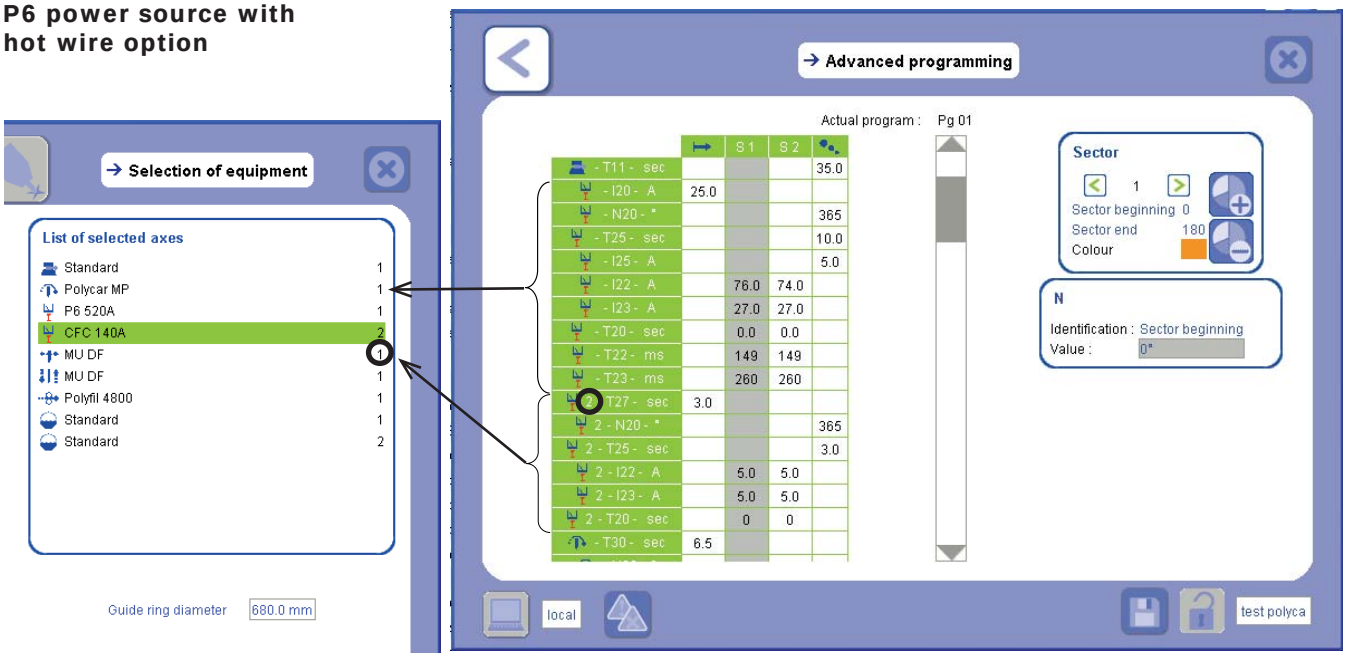



with

| | |
|---|---|
| and | Arrows for scrolling through sectors |
| Start of sector/ End of sector | Start and end of the sector in degrees |
| Colour | Colour corresponding to the sector on the tube representation on the **Welding** screen |
| and | Create/Delete sector |

If the P6 power source is fitted with the **Hot wire option** (P6 HW), the current sources are distinguished by the order number appearing in front of the parameter, as shown in the following screen (circled in black). This order number is allocated automatically when the equipment for the WP are selected (see 6.2.2).

**P6 power source with hot wire option**




***Remarque***

- ✱ *If the* **hot wire current** *is to be used, the* **welding current** *axis must always be in* **position 1**.

➢ *Delete a sector*

In order to delete a sector proceed as follows:

1) go to the column of the sector to be deleted;

2) select the icon  .

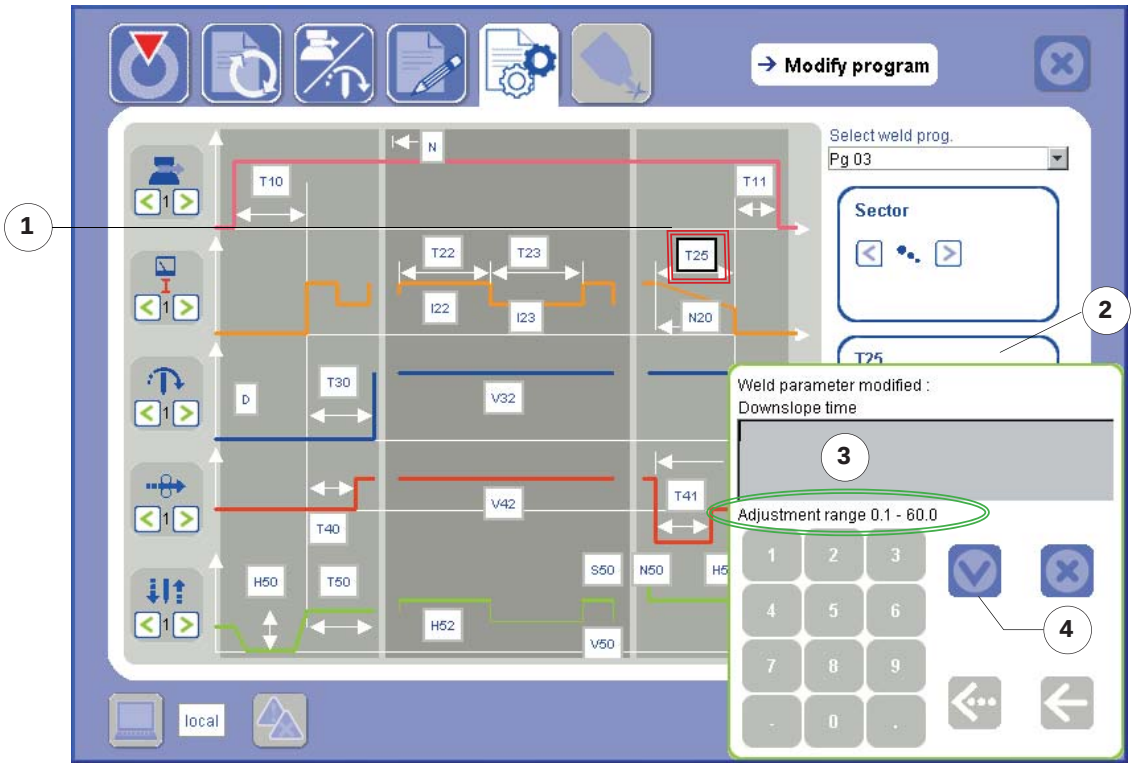
1) Confirm the following message of confirmation:


The deleted sector disappears from the program.

➢ *Change the value of a parameter*

As seen previously, the value of a parameter can be changed in a Programming box either directly from the diagram or from the **Advanced Programming.**

Modification from the diagram

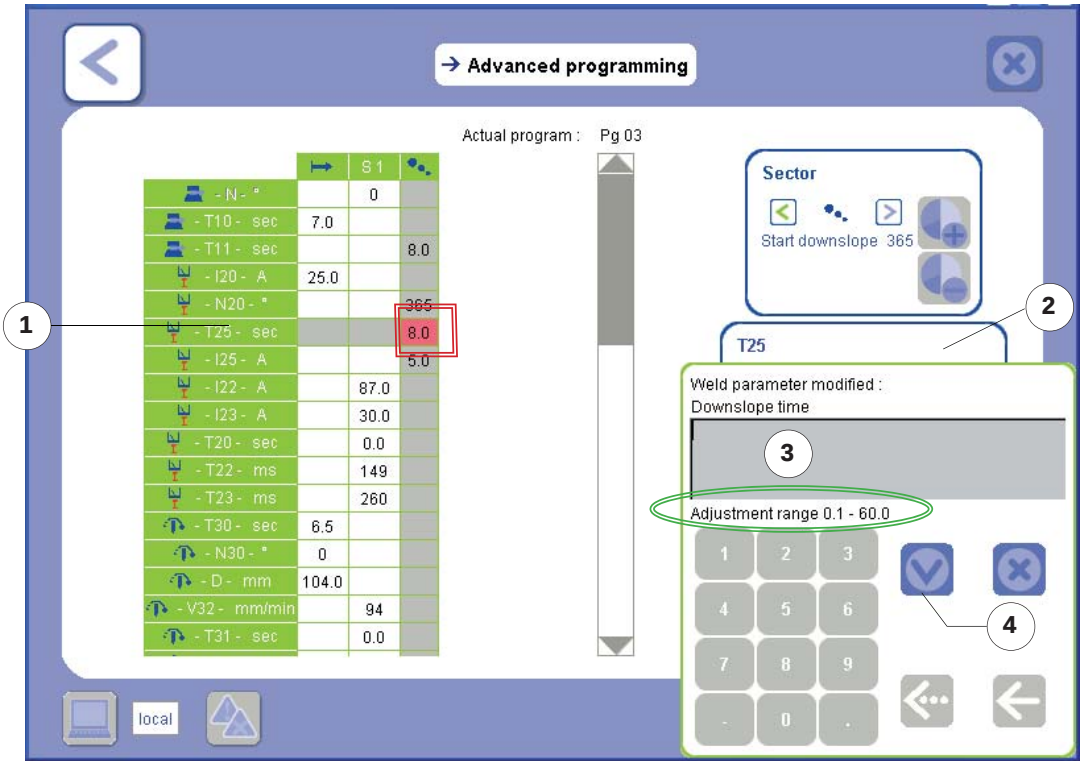



To change the value of a parameter, proceed as follows:

1) select the parameter to be changed - a black frame identifies the selection;
2) select the **Value** box in the Programming box;
3) enter the new value;
4) select the Confirm icon  .

**Note**: the range of allowed values for the current application is shown under the input screen (it is circled in green on the screenshots).

Modification from the **Advanced Programming** screen




To change the value of a parameter, proceed as follows:

1) select the parameter value to modify - the box selected turns red;
2) select the **Value** box in the Programming box;
3) enter the new value;
4) select the Confirm icon  .

### 6. 4. 2. 2. Override setup

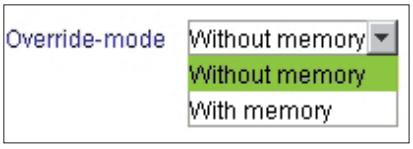
An override is a variation of parameters effected during a welding cycle by remote control.
The value, number and mode of the override can be programmed before the cycle begins.
Overrides enable welding parameters to be adjusted in real time.

The **Override adjustment** screen shows a table containing:

- the axes for the current program;
- the parameters (speed and current, etc);
- the override increment, i.e. the modification made to the value each time the remote control button (+ and -) is pressed;
- the number of overrides authorised per parameter.

This screen appears as shown below:


In the **Override mode** dropdown menu, select whether you want to store (**With memory**) or not (**Without memory**) the override modifications carried out on the welding cycles:




**With memory**: the overrides are automatically reflected in the program.

**Without memory**: the overrides are not reflected in the program.

In order to modify the data of an override:

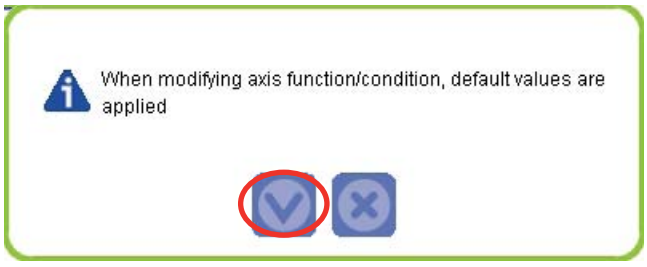
1) select the line of the override to be modified;
2) enter the new values into the table.

### 6. 4. 2. 3. Functions + axes setup

The **Functions + axes setup** screen shows a table of axes available for the WP (Rotation, Current, AVC, Oscillation and Wire if appropriate and according to the power source model) and associated functions linked to the program.

This screen appears as shown below:


For each function, select the condition by using the radio button situated on the corresponding line.
The following information message is then displayed:




This message indicates that if a function/condition is changed, the default values for the axis will be loaded. In this case, you must return to the **Modify program** screen in order to reset the adjustments suitable for the axis.

### 6. 4. 2. 4. Selection of equipment (for the program)

This screen is only accessible for P6 and P6 HW power sources.

This **Selection of equipment screen**  **differs from the other Selection of equipment screen**  **.**

The list on the left shows the various types available for the gas, current, rotation, wire, AVC, oscillation and coolant axes in the selected WP.

The list on the right shows the axes chosen for the current program. To create this list, proceed as follows:

Select the desired equipment from the column on the left and use the arrow  to transfer it to the column on the right.

The arrow  allows the user to **delete** the items in the **List of selected axes.**

The removal (deletion) of an axis **cancels any parameters entered** for it.
To change it while keeping the parameters entered, exchange the **existing axis** by **the desired axis without deleting it.**

To exchange an axis, select the desired axis then the axis to be replaced, then validate it using the double arrow  .

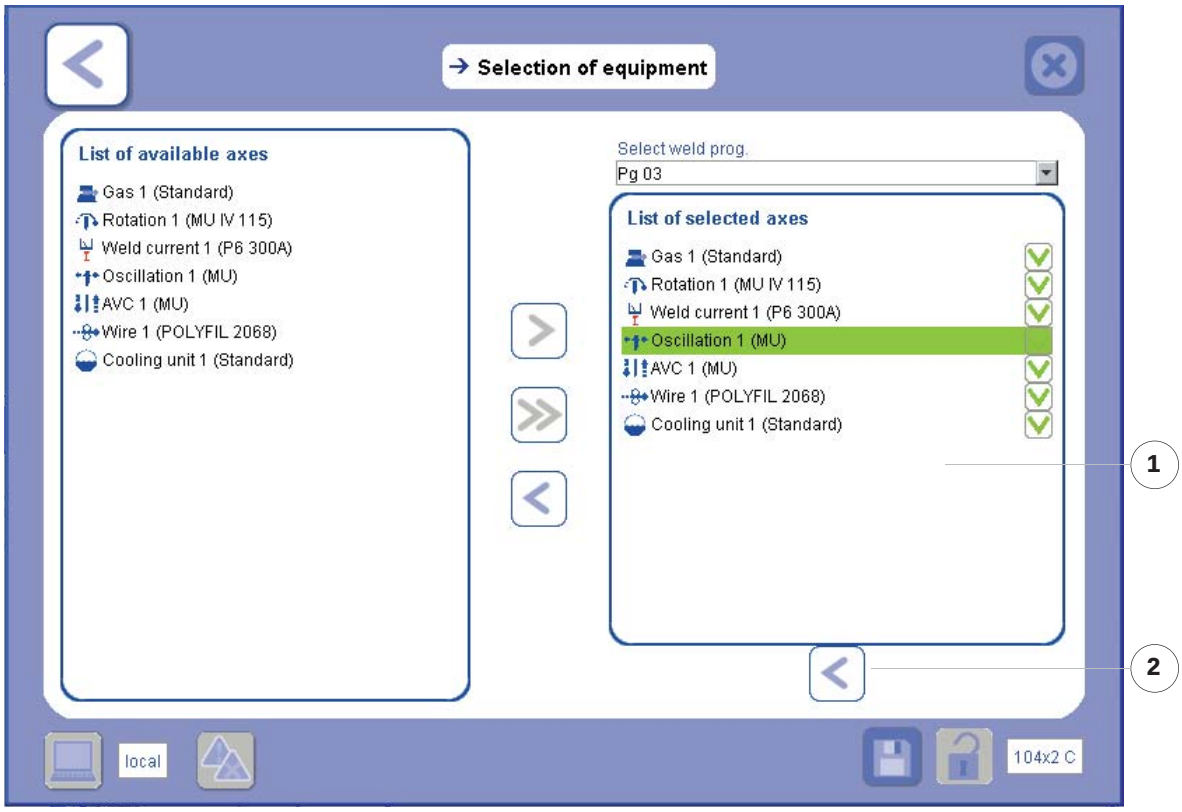
***Comment***

- *At least one **gas** axis, one **current** axis and one **coolant** axis are set by default and cannot be deleted from the **List of selected axes**.*

This screen also lets you select whether the **AVC** or **Oscillation** axes are controlled manually rather than programmed in.

This function is only available for P6/P6 HW power sources and can be useful during chained programs for example.

The screen appears as shown below:

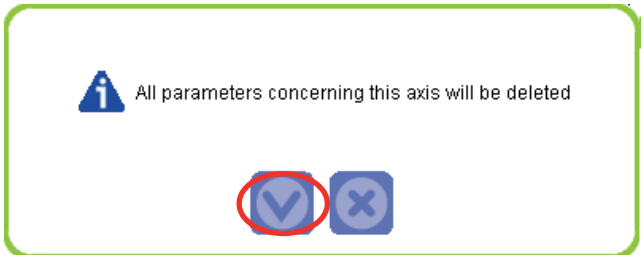



To change the control mode for the axis:

1) select the axis to be changed from the **List of selected axes**;

2) select the  icon situated under the **List of selected axes**.

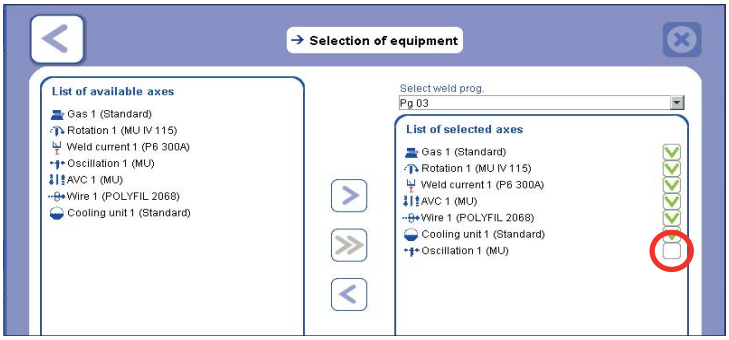
3) Confirm the following message of confirmation:




The modified axis

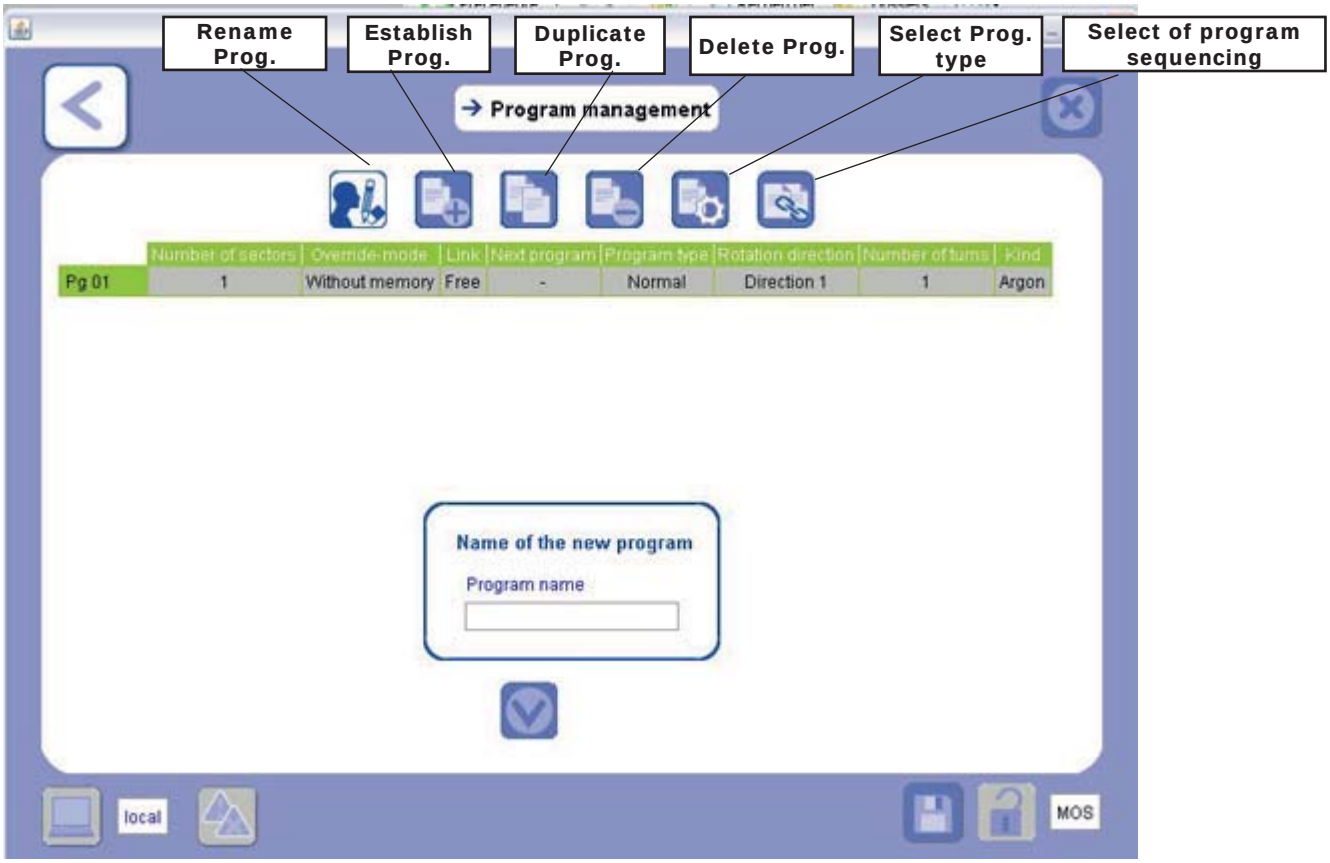
- no longer has a green tick if it has been decided to control this axis manually,

- has a green tick if it has been decided to control this axis automatically.



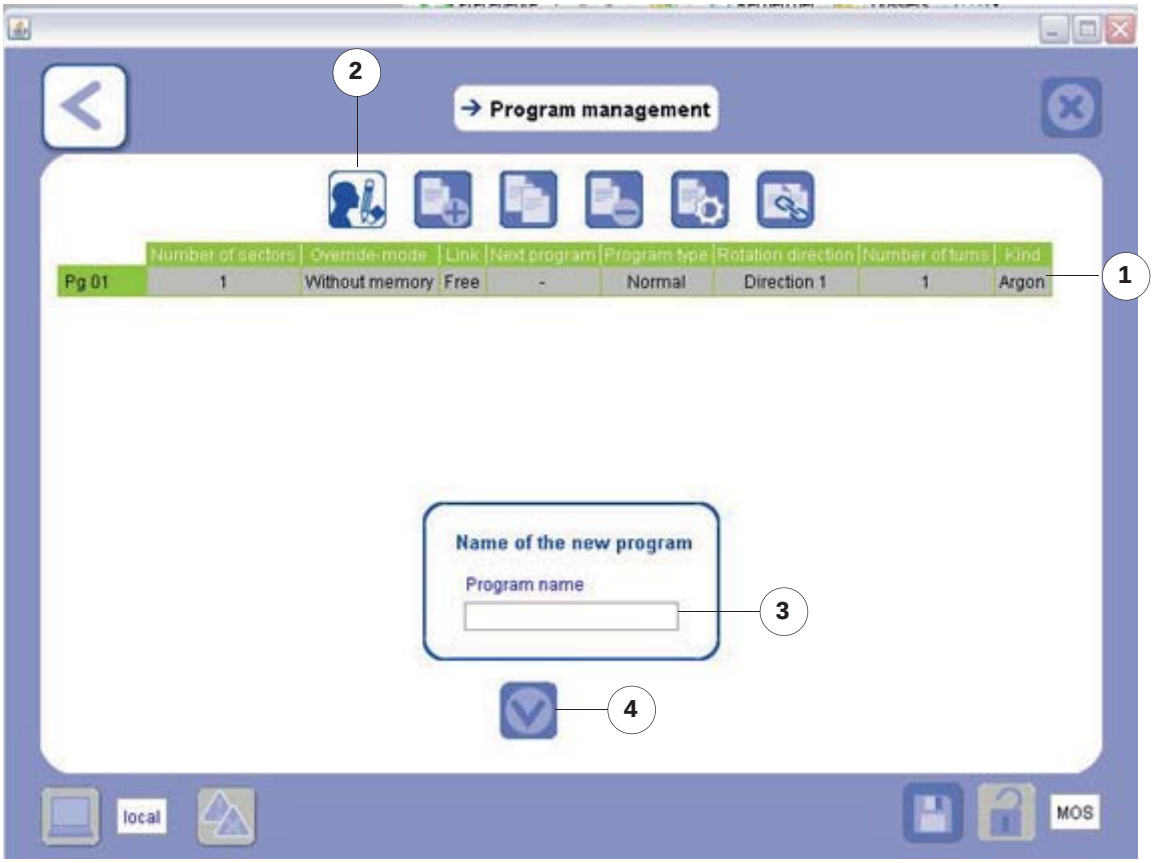
### 6. 4. 2. 5. Program management

The **Program management** screen appears as shown below:

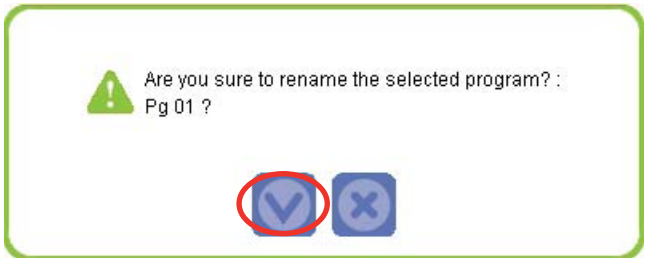


➢ *Rename a program*

In order to rename a program, proceed as follows:




1) select the line of the program to be renamed;
2) select the **Rename program** icon;
3) enter the new program name (refer to Chapter *4.3 Filling in forms* to use the keyboard);
4) select the Confirm icon .
5) Confirm the following message of confirmation:




**The required program has been renamed.**

➢ *Establish a program*

In order to establish a program, proceed as follows:

1) select the **Establish program** icon;


2) enter the name of the new WP (refer to Chapter *4.3 Filling in forms* to use the keyboard);

3) select the Confirm icon .

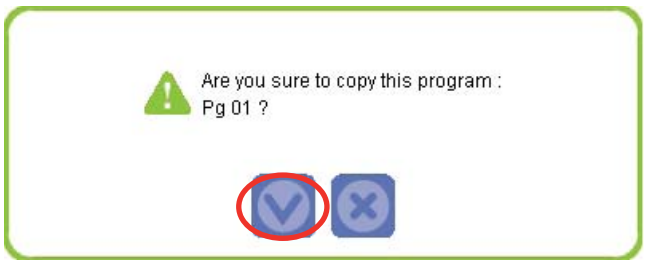
4) Confirm the following message of confirmation:


**The established program is loaded automatically.**

➢ *Duplicate a program*

In order to duplicate a program, proceed as follows:

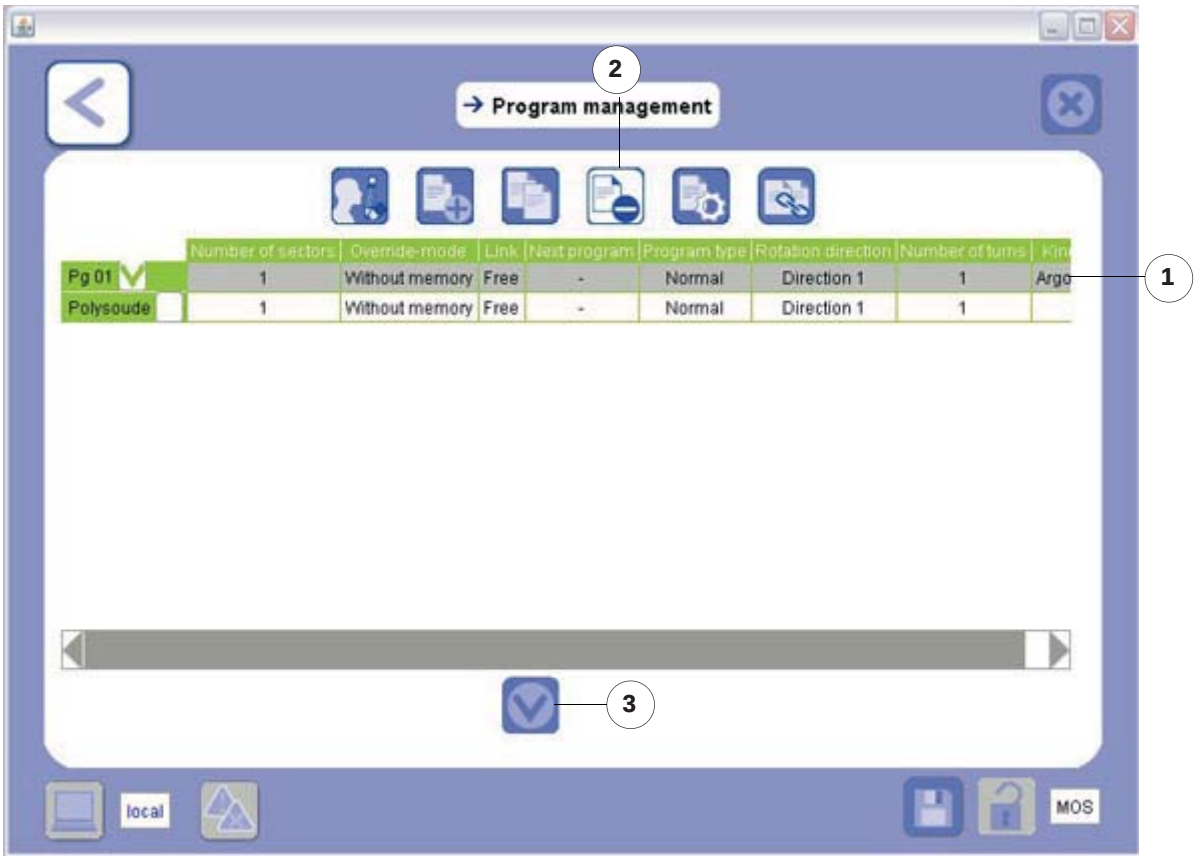

1) select the line of the program to be duplicated;
2) select the **Duplicate program** icon**;**
3) enter the name of the new program (refer to Chapter *4.3 Filling in forms* to use the keyboard);
4) select the Confirm icon .
5) Confirm the following message of confirmation:




**The duplicated program is added automatically.**

➢ *Delete a program*

In order to delete a program, proceed as follows:




1) select the line of the program to be deleted;
2) select the **Delete program** icon;
3) select the Confirm icon .
4) Confirm the following message of confirmation:

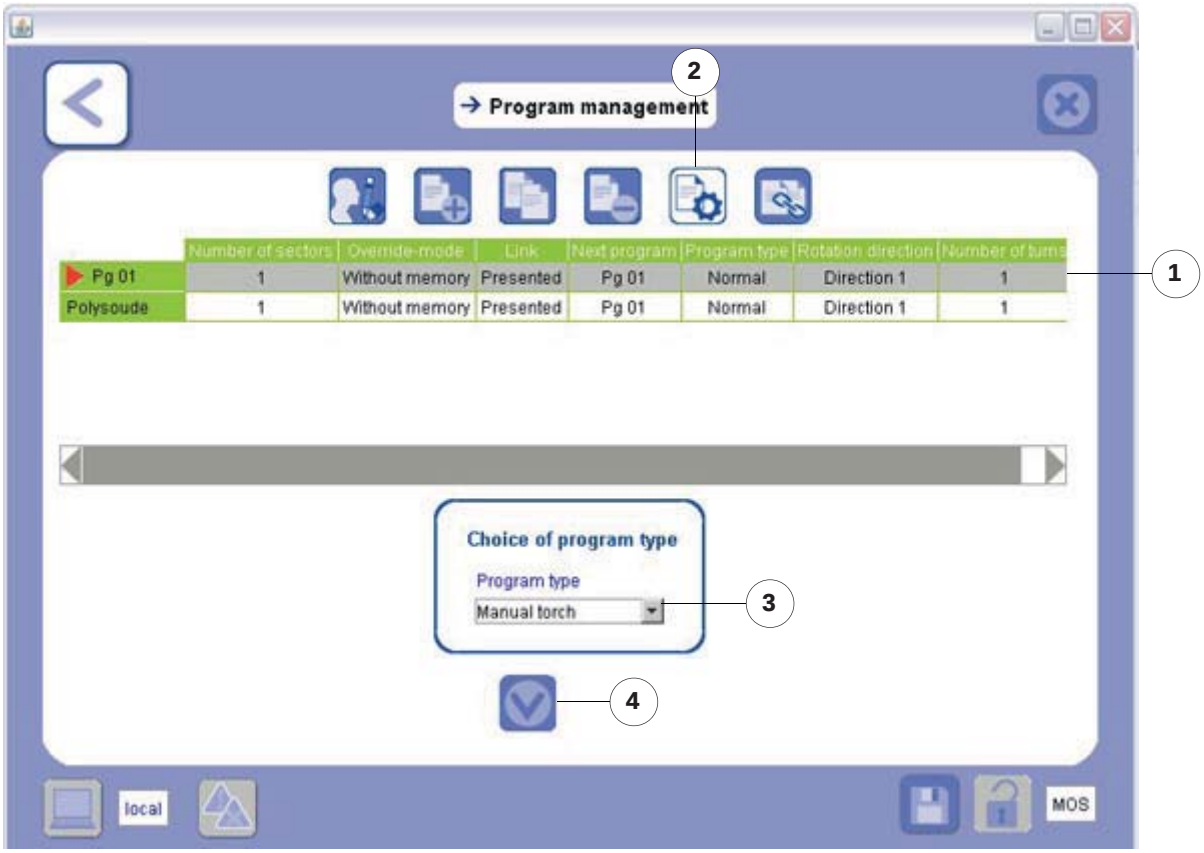

**The deleted program disappears from the list.**

***Comment:***

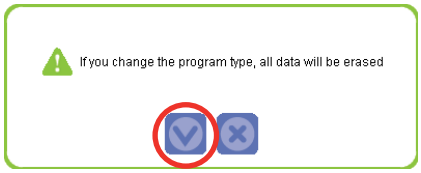
- *You can **delete several WPs at the same time** by selecting several lines from different programs;*
- *In order to **deselect a program**, click once again on the line for this program to uncheck the box;*
- *You cannot delete the **selected program.***

➢ *Select a program type (manual torch management)*

Selecting the type of program allows the user to select use of a manual torch.
Proceed as follows:




1) select the program line which is to use a manual torch;
2) select the **Choice of program type** icon;
3) select **Manual torch**;
4) select the Confirm icon .
5) Confirm the following message of confirmation:

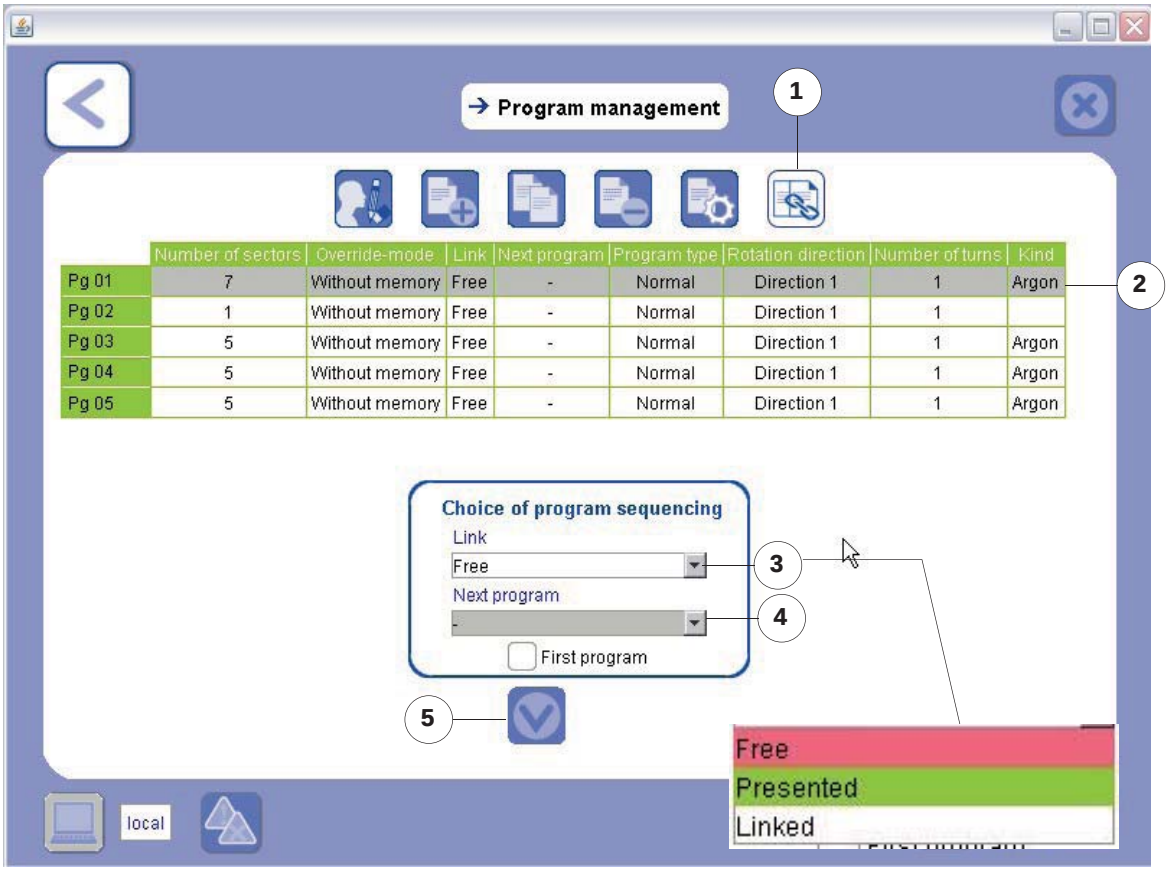



**The program linked to the use of a manual torch is loaded.**

➢ *Choosing a program chain*

Choosing a program chain enables the user to select programs and choose the type of chain between each program.

Proceed as follows :




- Select the Choose program chain icon.
- Select the program to be chained.
- Choose the type of chain ;
  There are three types of chain :
  - Free = no chain.
  - Presented = the following program is loaded, press the Start cycle button to start.
  - Linked = the following program is loaded and starts automatically

- Choose the following program :
  - If Free is selected, no program can be chosen.
  - If Presented or Linked is selected, a following program must be chosen.
  - It is not possible to chain a program with itself nor is it possible to loop back with chained programs. A program cannot be chained with a manual torch-type program

- Sélectionnez l'icône Valider .

- Validate the following message of confirmation:

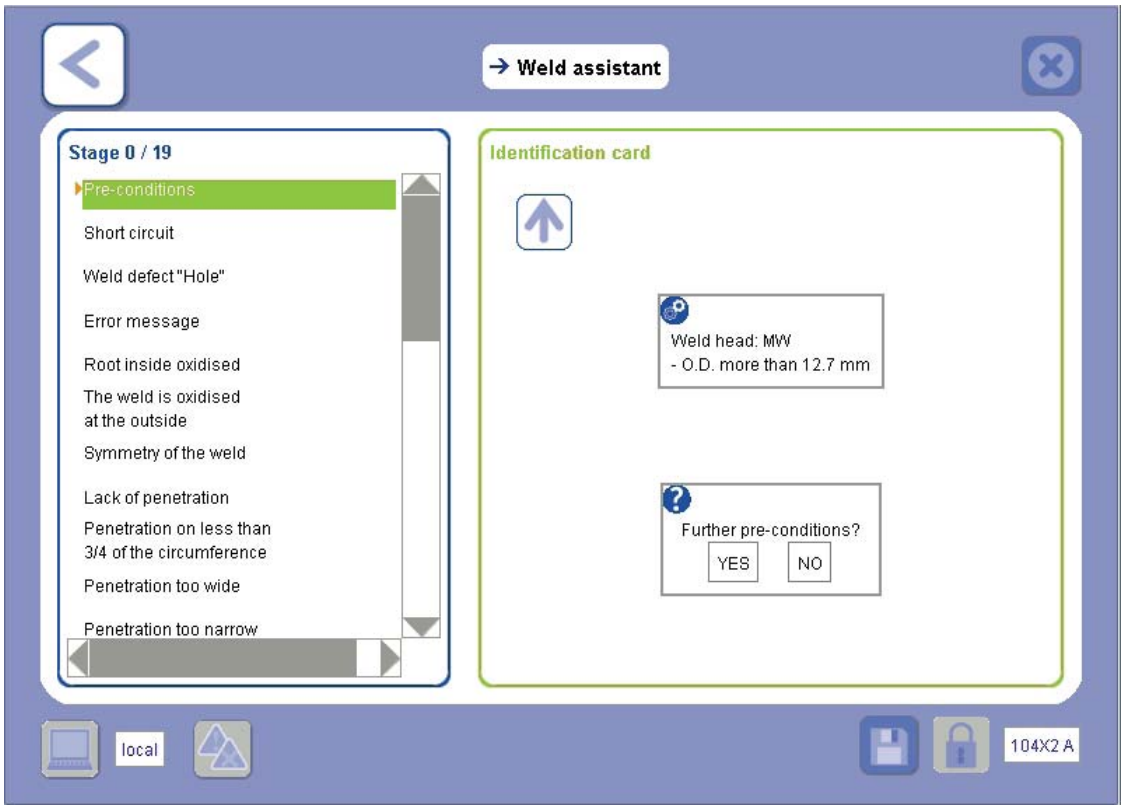

- A program can be flagged as a First program (Premier programme). To do this, select the required program, check the First program (Premier programme) box and validate.
- A red arrow appears in front of the program. This is a purely indicative function.

### 6. 4. 3. Program optimisation

➢ *The weld assistant ( )*

The **Weld Assistant** is a tool to guide and help you resolve problems encountered when optimising welding parameters.

The **Weld assistant** screen appears as shown below:




The various types of problem raised in the questions from the **Weld Assistant** are listed on the left of the screen. These questions follow a chronological sequence: the list at the left serves only to follow the development of the questions and not to select that which appears the most appropriate for the situation.

In order for this tool to give you accurate and relevant advice, you must begin at the beginning and reply to the questions until the **Weld Assistant** suggests a solution ( ).

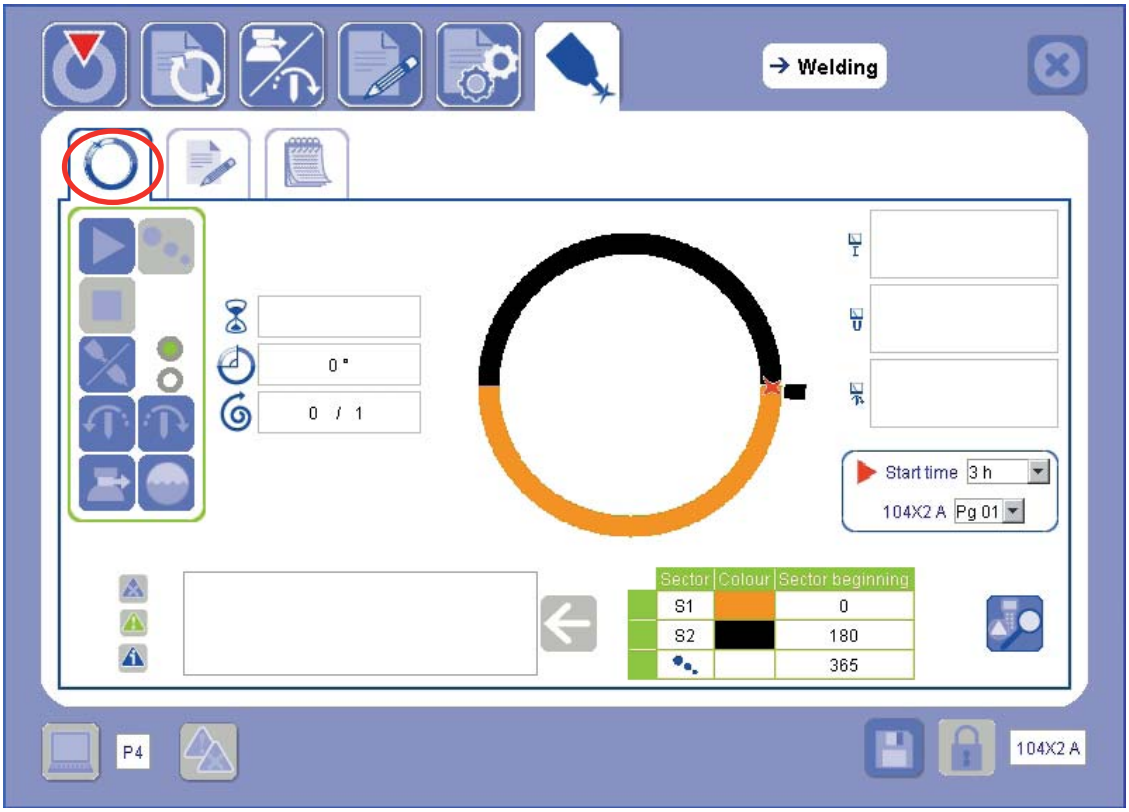
If you fail to reply to preceding questions they will be considered to have been answered and confirmed, and this may alter the relevance of the help that this tool provides.

The arrow enables you to go back to the previous question if you want to change your response.

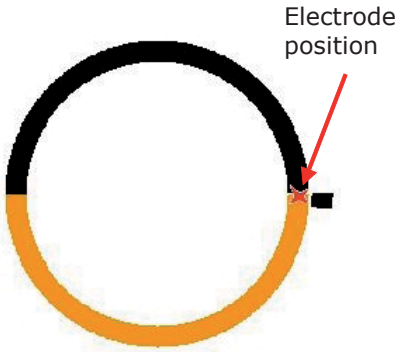
## 6. 5. Welding

The **Welding** screen has 3 tabs:

- *Control panel tab*




The control panel enables you to manage your welding cycle.
The central diagram is a representation of the tube and the red marker shows the position of the electrode in real time:



The various icons on the control panel are explained in the table below:

| | |
|---|---|
|  | Start weld cycle |
|  | Manual fading |
|  | Stop |
|  | Cycle In/Out (simulation) |
|  | Rotation direction 1/Rotation direction 2 |
|  | Gas test |
|  | Water test |
|  | Time |
|  | Position of electrode |
|  | Tour |
|  | Weld current |
|  | Arc voltage |
|  | Rotation |
|  | Override summary |

A box is provided for displaying various messages:

| | |
|---|---|
|  | Alert message |
|  | Warning message |
|  | Information message |

Click on the icons and , to activate/deactivate the display of information and warning messages:

- icons coloured: display activated
- icons greyed out: display deactivated

However, for reasons of safety, you cannot deactivate the alert messages .

The arrow lets you delete all the displayed messages.

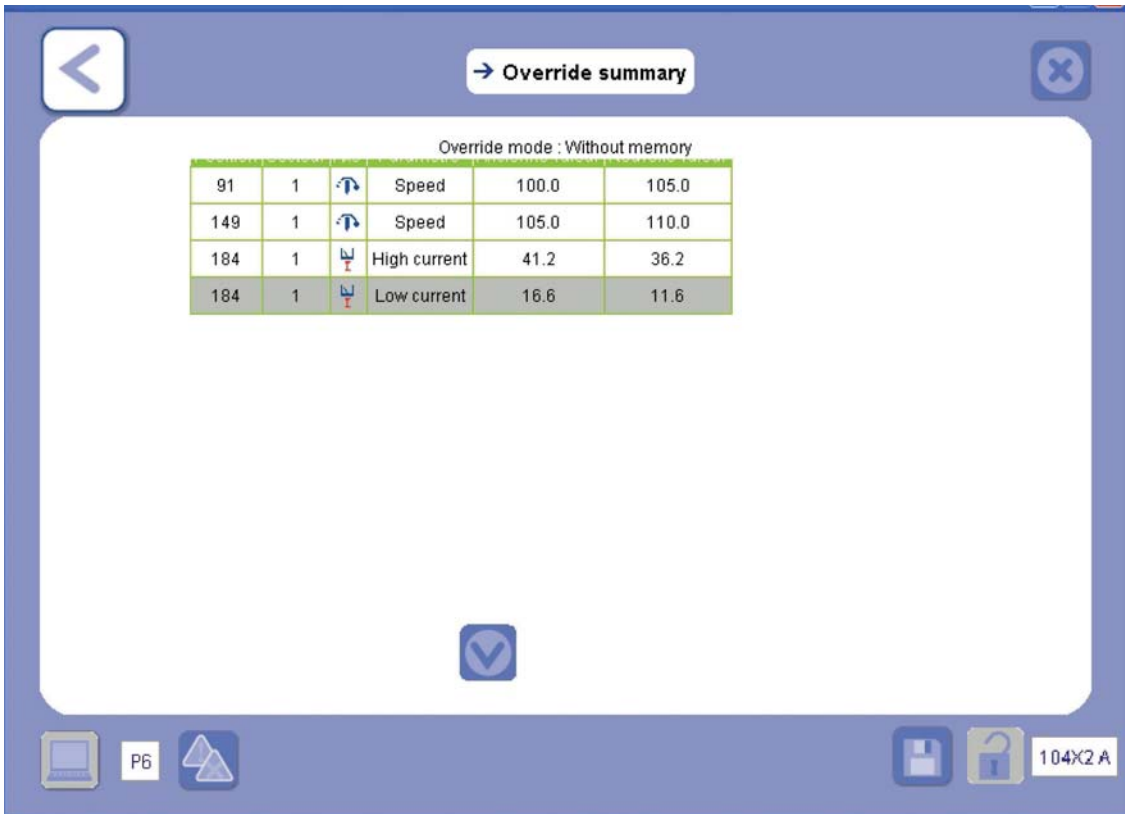
The **Welding** screen also has a summary table of the sectors in a cycle and colours corresponding to these sectors on the representation of the tube:

| Sector | Colour | Sector beginning |
|---|---|---|
| S1 | | 0 |
| S2 | | 180 |
| | | 365 |

The box below shows the time position for electrode start, and the current program:


Once you have selected the time position for electrode start and the current program, other screens on which these data appear are updated automatically (**Mechanical Adjustments**, **Modify Program**).

The icon gives you access to the **Override summary** screen. This screen summarises all the overrides carried out during the last with arc welding cycle.



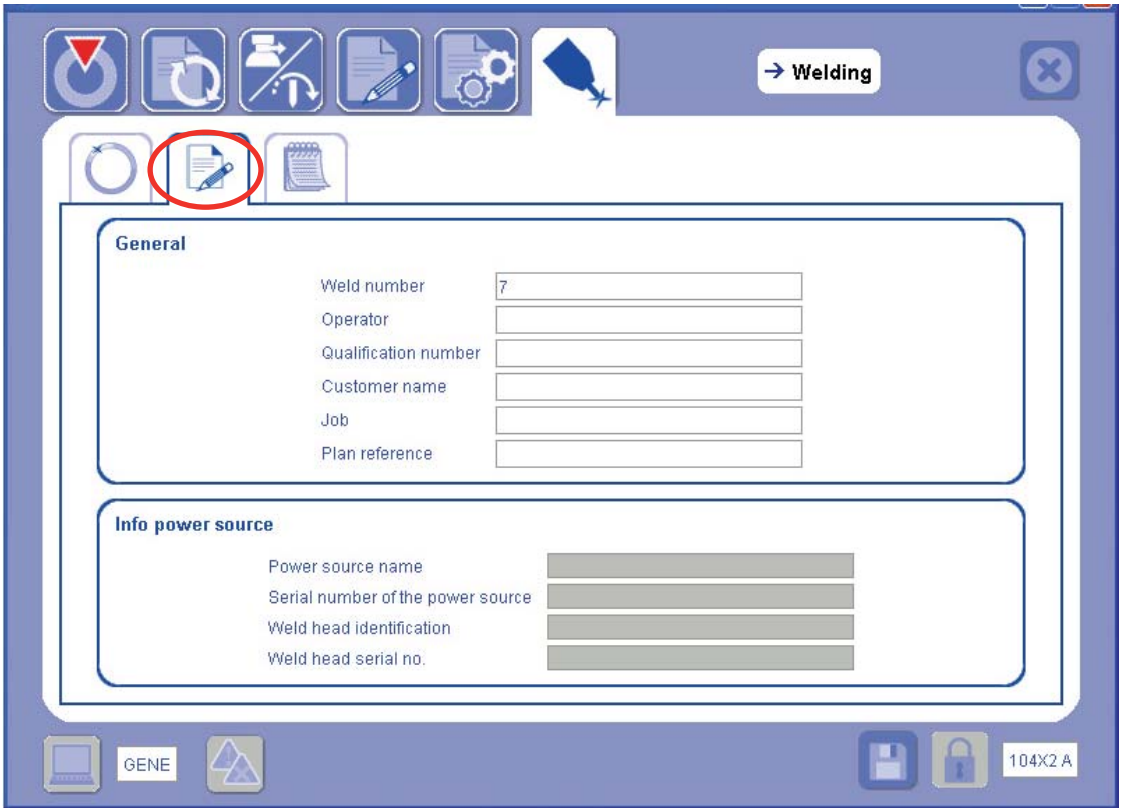
The summary shows the overrides carried out during the application at the end of the cycle. To recap, the overrides carried out in **With memory** mode are directly reflected in the program unlike those carried out in **Without memory** mode (see Override adjustments).

The **Welding** screen has two other tabs, the **Weld information** and **Weld comments** tab. Use these to indicate various data relating to the welding.

> ***Comment:***
>
> The characters "/" and "\" of the IHM or PC keyboard must not be used inside the "**Welding**" window.

**These items of information are optional but appear in the "Quality tool" and on the weld cycle report.**

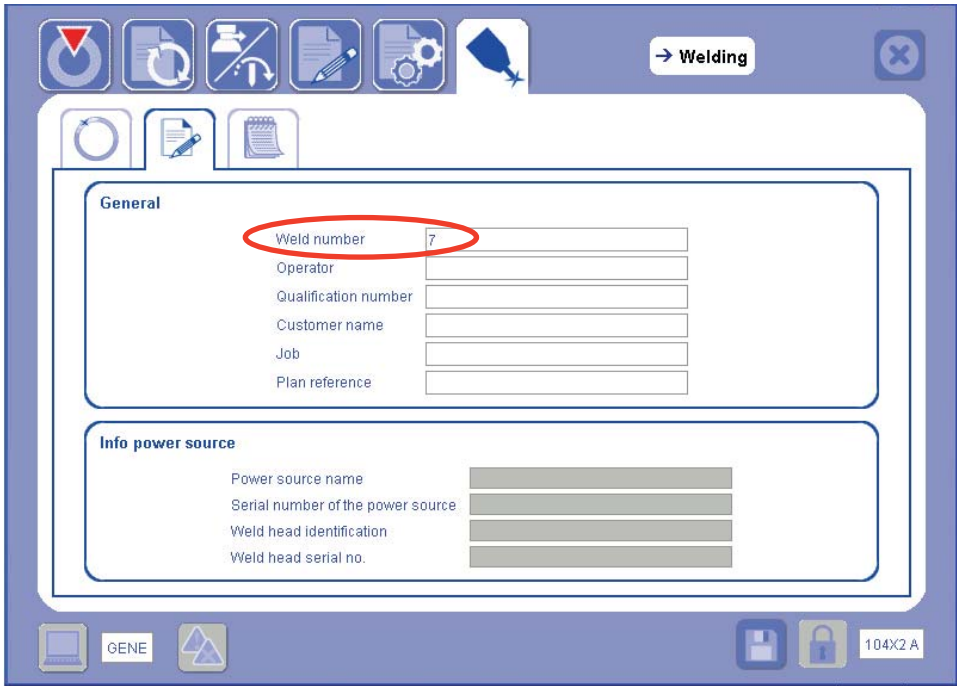
➢ *Welding Information tab*



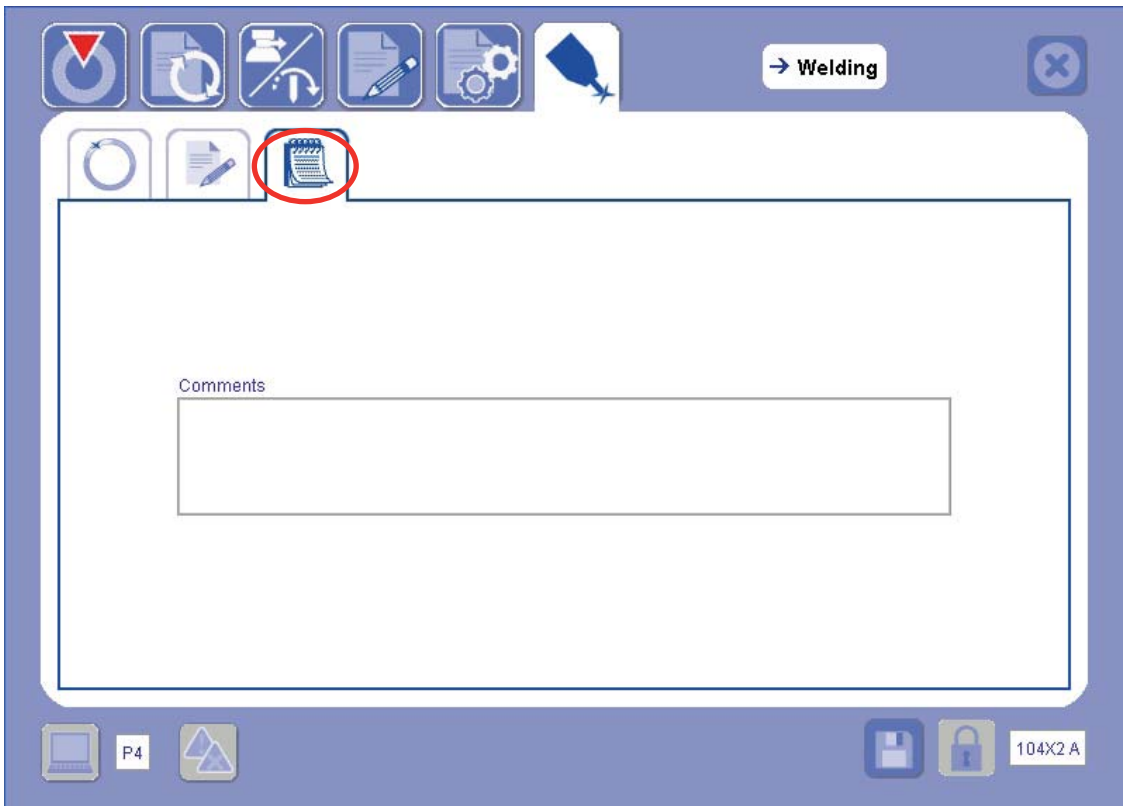

> ***Note:***
>
> This welding information will appear on the welding ticket.
>
> The welding information must be entered before the cycle starts.

**Incrementing of the weld number.**

This number can be modified and increments automatically with each welding cycle. The information entered relates to the next welding operation. It must be completed before the cycle starts.



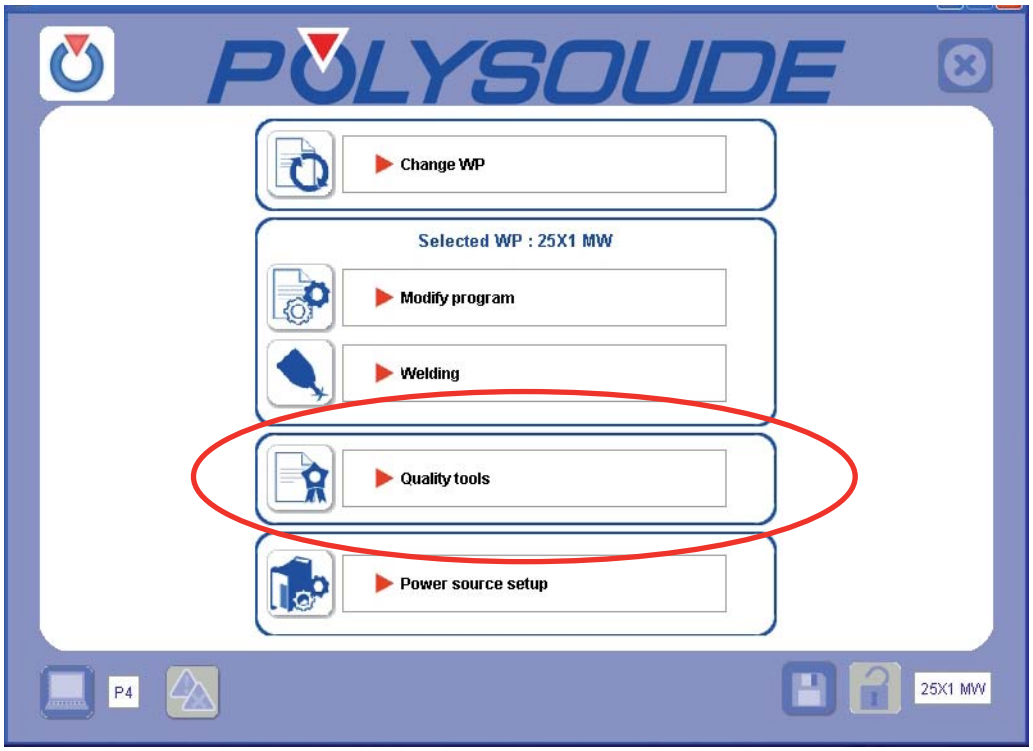
➢ *Welding Comments tab*




| ***Note:*** |
| --- |
| This comment will appear on the welding ticket. |
| The comment must be entered before the cycle starts. |

## 6. 6. Quality tools

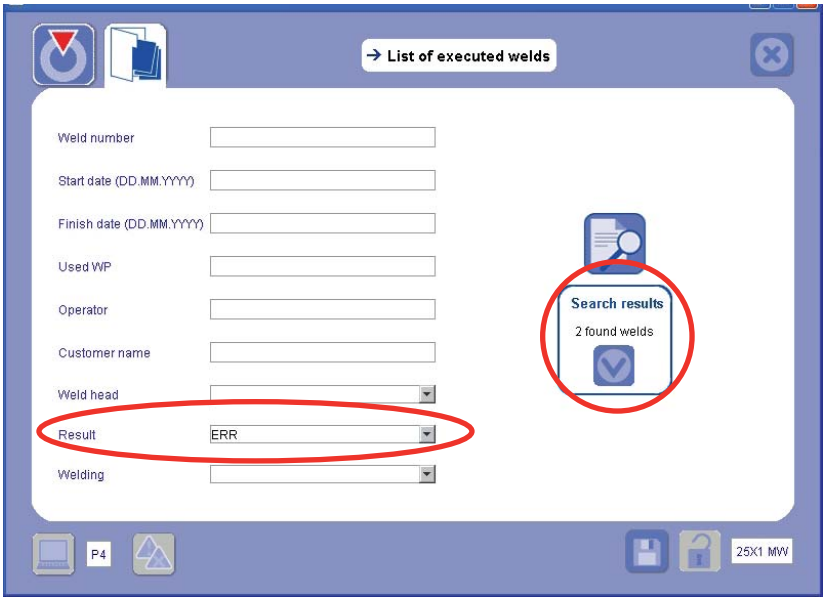
The GUI is equipped with a "quality tool". This function enables welding cycles carried out using the power source to be archived. Access to this function is only authorized from a touchscreen or from a PC connected to the generator. The archive includes a certain number of items of information (Weld N°, equipment, date, time etc.) The quality tool can be accessed from the home page.




The first screen, entitled "List of executed welds", is a welding cycle search page. This screen follows the same principle as the "Change welding procedure" screen (Search by criteria). The fields to be completed are optional but allow the search to be narrowed down.

**Example:**
With the criterion **"Result" = ERR** (error)

Search result = **2 welds**.

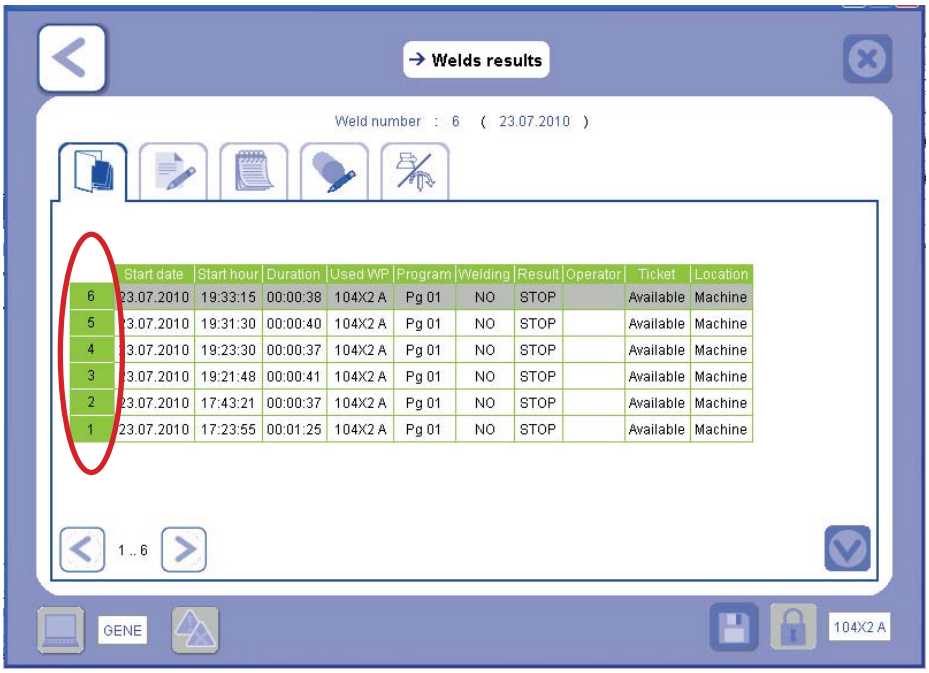


The search is started from the  icon.

Confirming gives access to the **“Weld results”** screen below. The information associated with the weld appears in the table then in the various tabs.

The weld number is displayed in the left hand column of the results table and it also appears on the weld ticket. Each welding cycle carried out (even if incomplete or a simulation) generates a number, which increments automatically. This number can be modified from the **“Welding”** screen (see next page).

None of the fields contained in the quality tool can be modified, the information appearing in these fields is completed in the various screens as each weld is carried out (documentation, modify program, welding and selection of equipment).




| | Start date | Start hour | Duration | Used WP | Program | Welding | Result | Operator | Ticket | Location |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 23.07.2010 | 19:33:15 | 00:00:38 | 104X2 A | Pg 01 | NO | STOP | | Available | Machine |
| 5 | 23.07.2010 | 19:31:30 | 00:00:40 | 104X2 A | Pg 01 | NO | STOP | | Available | Machine |
| 4 | 23.07.2010 | 19:23:30 | 00:00:37 | 104X2 A | Pg 01 | NO | STOP | | Available | Machine |
| 3 | 23.07.2010 | 19:21:48 | 00:00:41 | 104X2 A | Pg 01 | NO | STOP | | Available | Machine |
| 2 | 23.07.2010 | 17:43:21 | 00:00:37 | 104X2 A | Pg 01 | NO | STOP | | Available | Machine |
| 1 | 23.07.2010 | 17:23:55 | 00:01:25 | 104X2 A | Pg 01 | NO | STOP | | Available | Machine |

**List of screens available in the quality tool:**

The following tabs provide additional information about the weld selected.



Welds results
Weld number : 4 ( 02.12.2008 )
Workpiece information
Material
Diameter
25.00 mm
Wall thickness
1.00 mm
local
25X1 MW

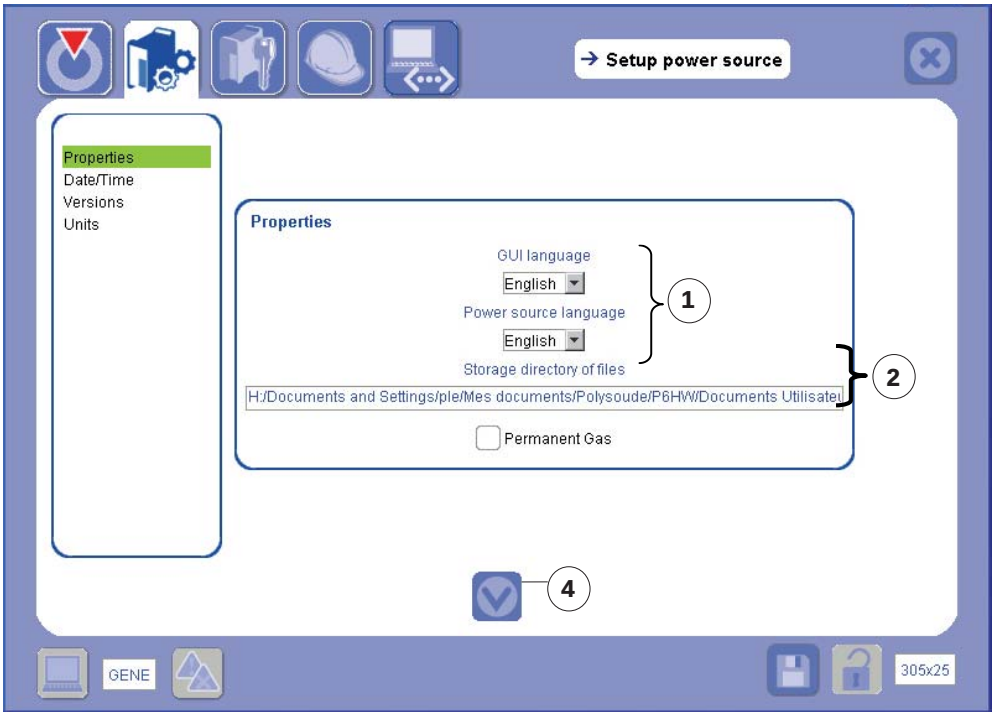

Welds results
Weld number : 4 ( 02.12.2008 )
Power source information
Power source name
Serial number of the power source
Informations about equipment
Standard
MW 65
P4 170A (25A)
Standard
local
25X1 MW

# 7. Advanced functions

## 7. 1. Power source setup

The heading **Power source setup** situated on the Home page of the application leads directly to the **Properties** screen (left-hand menu) where you can set the languages:


The **Properties** screen appears as shown below:




Item 2 – Field specific to the use of the GUI on a PC.

Item 1 – Field specific to the use of the touchscreen or connected PC.

1) Select the language of the GUI and of the power source if applicable.

2) Confirm the default location of the **Storage directory of files** linked with the application such as **generated documentation and the WPs transferred to the USB key**.

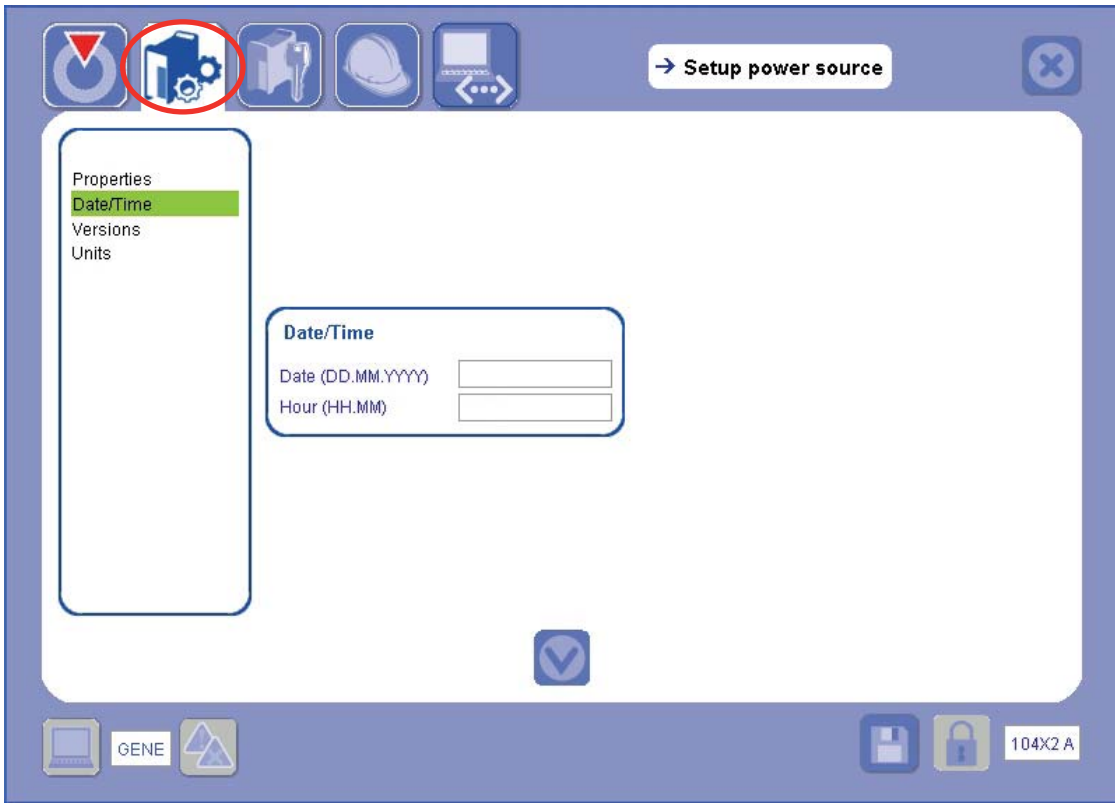
To change it, enter the new access path using the keyboard (of the GUI or the PC).

3) Tick the box if you want to be in permanent gas mode.

Untick it if you want to stop the flow of gas.

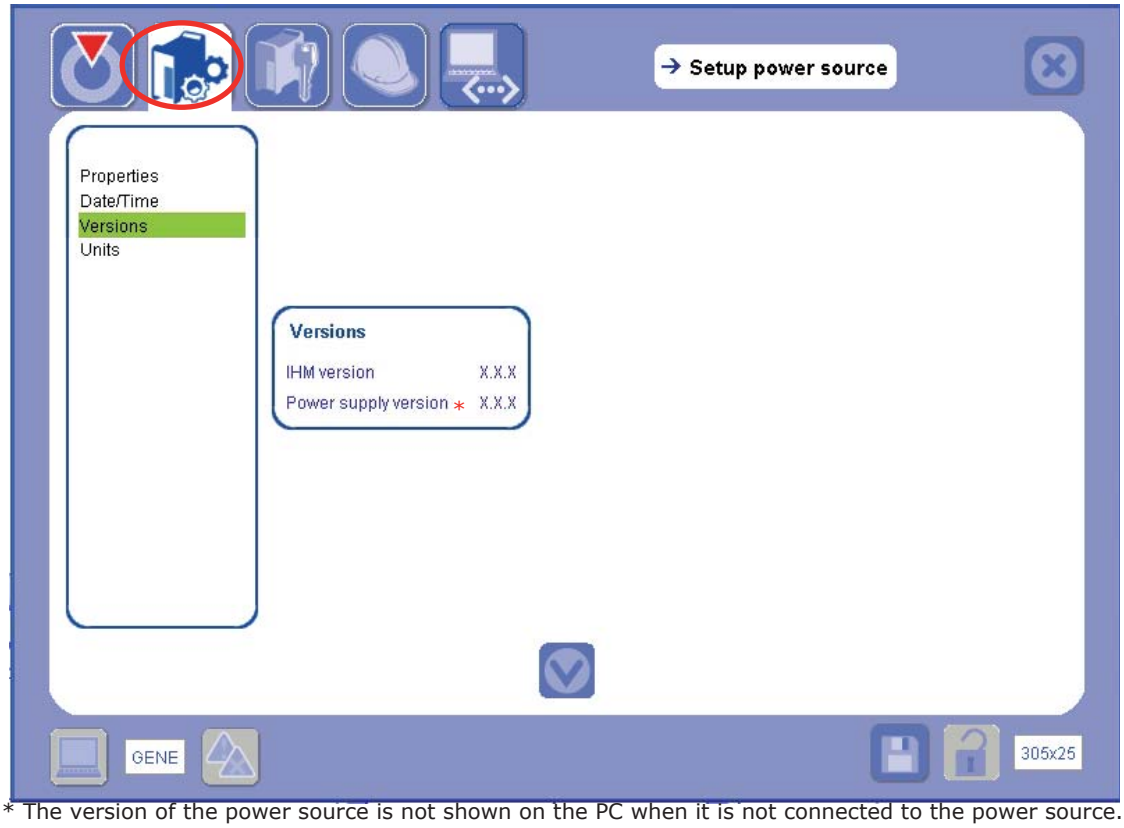
4) Select the Confirm icon .

➢ *Date/Time*




* Screen not available on the PC when it is not connected to the power source.

➢ *Versions*



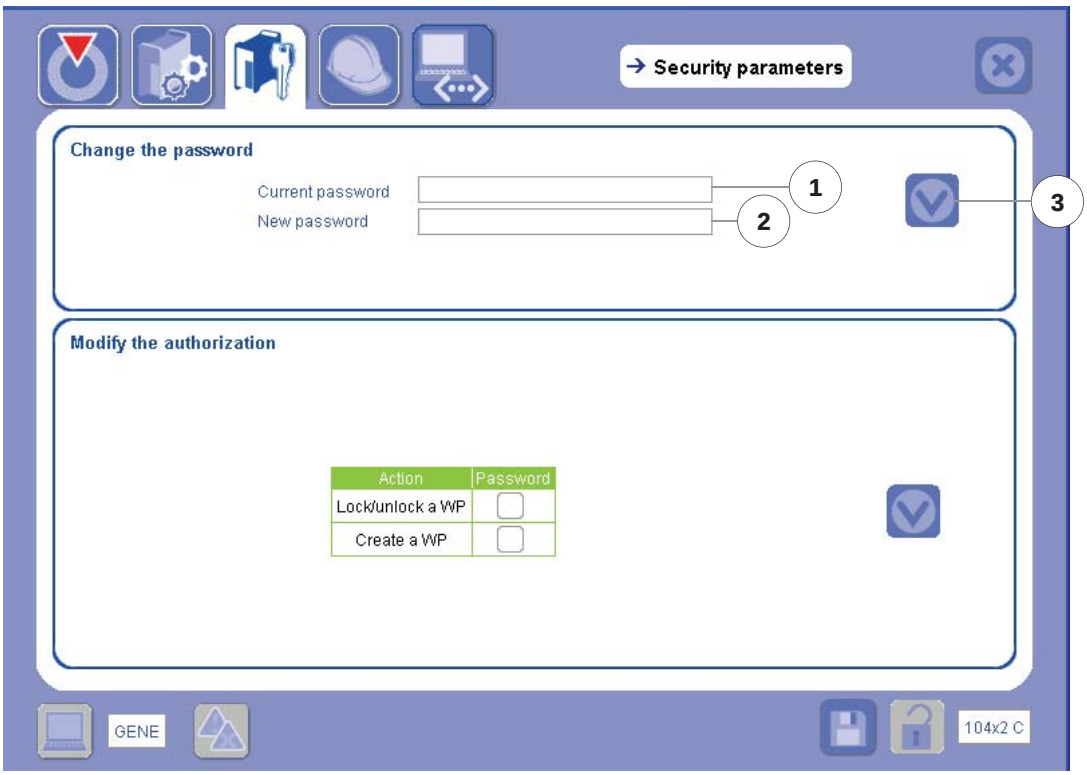

* The version of the power source is not shown on the PC when it is not connected to the power source.

## 7. 2. Security parameters

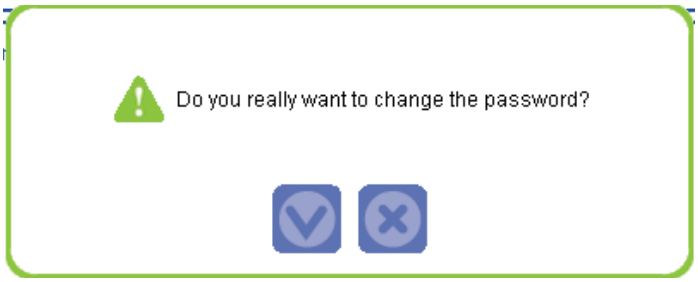
The **Security parameters** window is divided into two sections, one for password management and the second one for authority control parameters.

### *7. 2. 1. Changing of the password*

The window is displayed as follows:



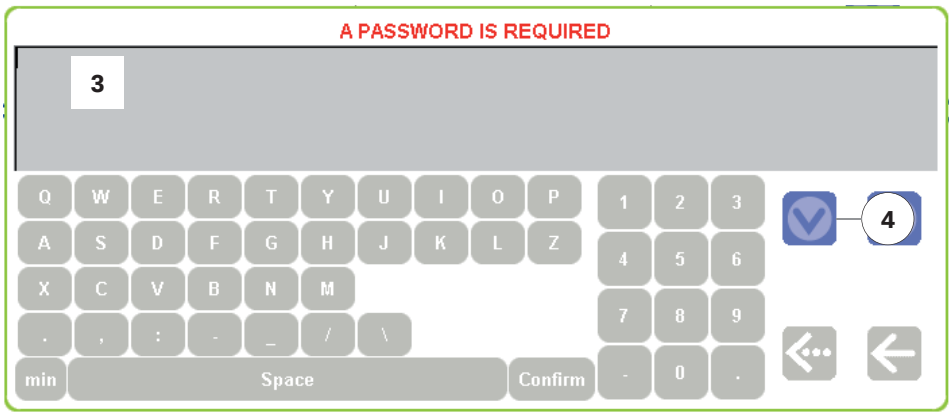

1) Enter your present **password**; at the very first use of the system there is no password.
2) Enter your new password,
3) select the Confirm icon , 
4) confirm the following confirmation message.




The new **password** is set.

### 7. 2. 2. Modifying authorizations

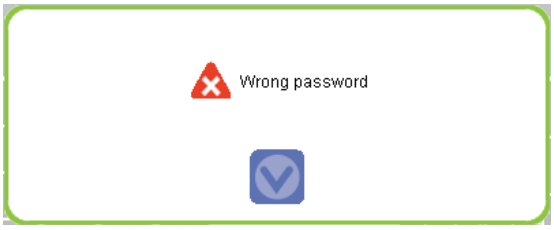

1) Tick the action(s) where a password shall be required.
2) Select the Confirm icon ,
3) enter the password,
4) select the Confirm icon ,




5) Confirm the following confirmation message.


The modifications are set

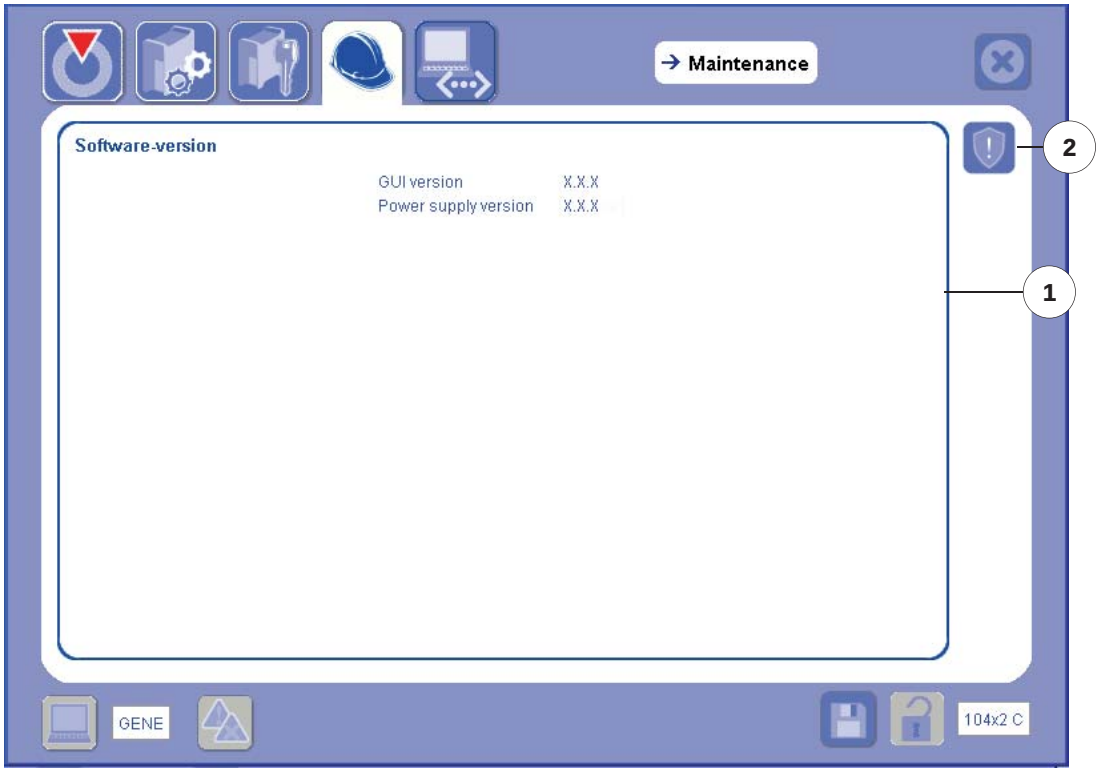
If after step 4) the following message is displayed, select the Confirm icon and repeat from step 2.




## 7. 3. Maintenance

The **Maintenance** window is divided into two sections:

- The software version of GUI and of the power source if it is connected
- The access icon to the Security management window.




During maintenance operations it can become necessary to deactivate some security functions.

**The deactivation of security functions is dangerous and should be carried out exceptionally by authorized staff only. In every case the security functions must be reactivated after the intervention.**

1) Click on the access icon to Security management on the **Maintenance** window,
2) the **Security Management** window appears,
3) remove the ticks of the security functions to be deactivated,
4) select the Confirm icon ,
5) confirm the security message by clicking on the Confirm icon .

The deselected security function(s) are deactivated.
If at least one security function has been deactivated the asterisks (*) on the display of the remote control

Display of remote control pendant P4

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 0 | 5 | | T | 0 | 0 | 1 | 5 | s | | 0 | 1 | 2 | 4 | i |
| X | ! | X | | 1 | 2 | . | 3 | V | | 1 | 5 | 0 | . | 0 | A |

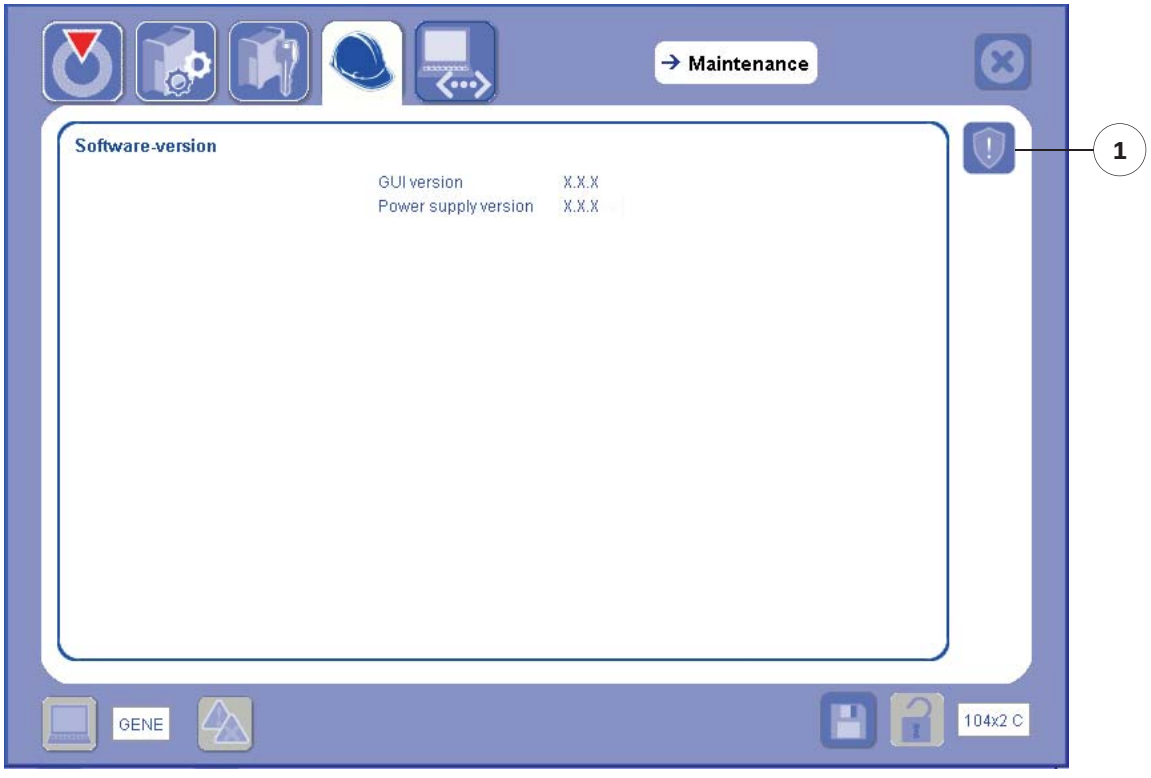
Display of remote control pendant P P6 or P6 HW

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | W | P | S | : | 0 | 0 | 1 | I | N | 1 | 7 | 0 | x | 1 | 5 | | | |
| | P | R | G | : | < | 0 | 3 | A | B | C | D | E | F | G | > | | | |
| | | S | 0 | 5 | | T | 0 | 0 | 1 | 5 | s | | 0 | 1 | 2 | 4 | i | |
| | | X | ! | X | | 1 | 2 | . | 3 | V | | 1 | 5 | 0 | . | 0 | A | |

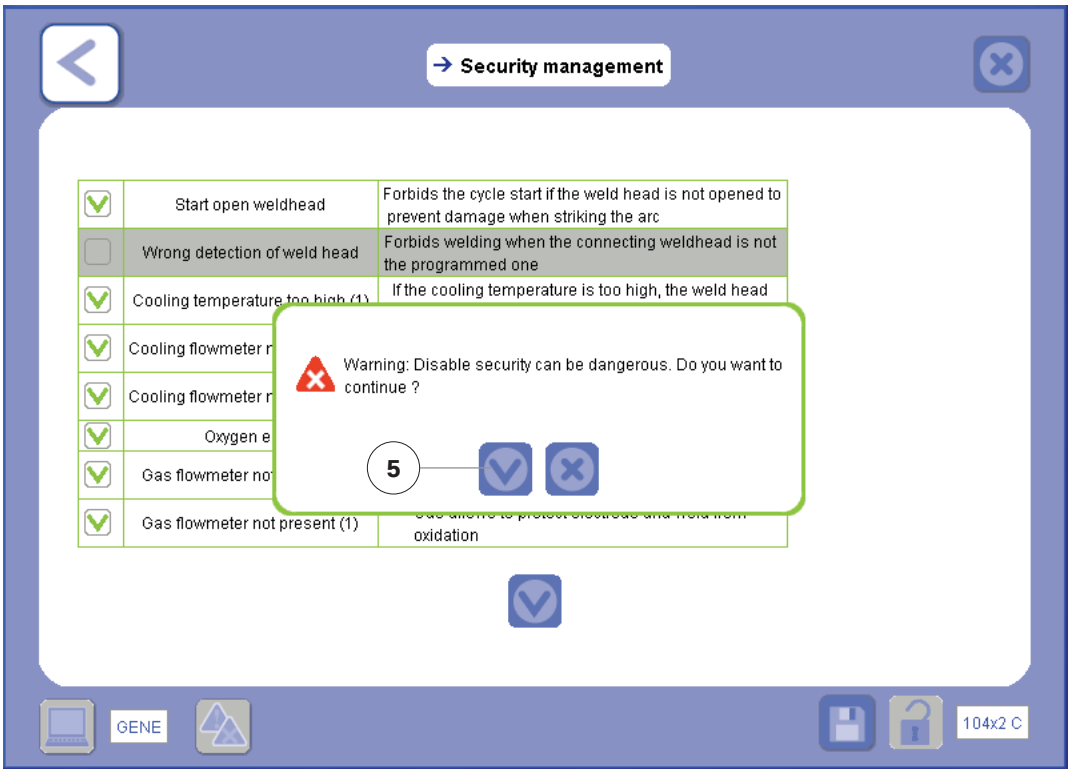
pendant are replaced by crosses (X) and one of the indicator lights next to the button "Simulation/With arc" flashes.
To reactivate a security function proceed like described before and check that each line is ticked.

***Comment:***

If the power source is switched on, all security functions are in active mode. Turning on the power source resets any deactivated functions to their active state.




Security management
2
3
Start open weldhead
Forbids the cycle start if the weld head is not opened to prevent damage when striking the arc
Wrong detection of weld head
Forbids welding when the connecting weldhead is not the programmed one
Cooling temperature too high (1)
If the cooling temperature is too high, the weld head must be damaged
Cooling flowmeter not present (2)
If the cooling flow is not sufficient, the weld head must be damaged
Cooling flowmeter not present (1)
If the cooling flow is not sufficient, the weld head must be damaged
Oxygen error
Oxygen rate too high, shielding gas cover insufficient
Gas flowmeter not present (2)
Gas allows to protect electrode and weld from oxidation
Gas flowmeter not present (1)
Gas allows to protect electrode and weld from oxidation
4
GENE
104x2 C


Security management
Start open weldhead
Forbids the cycle start if the weld head is not opened to prevent damage when striking the arc
Wrong detection of weld head
Forbids welding when the connecting weldhead is not the programmed one
Warning: Disable security can be dangerous. Do you want to continue ?
5
Gas flowmeter not present (1)
oxidation
GENE
104x2 C

## 7. 4. Special PC features

In order to be able to work on the GUI from your PC, you must first:

- install the GUI software on your PC

then,

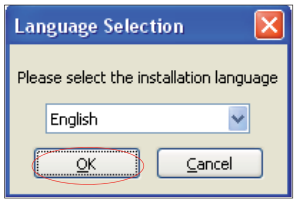
- connect your PC to the power source.

### *7. 4. 1. Installation of the GUI software*

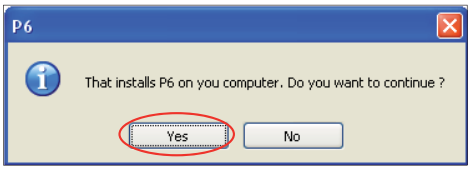
To install the GUI software on your PC (P6 GUI in the example below):

1) power up your PC;
2) insert the GUI installation CD into the PC drive. The installation procedure starts automatically:

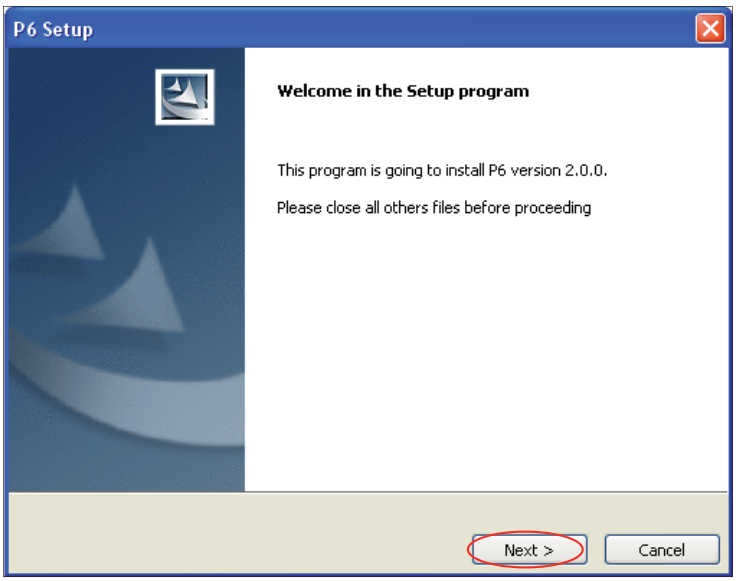
1




2

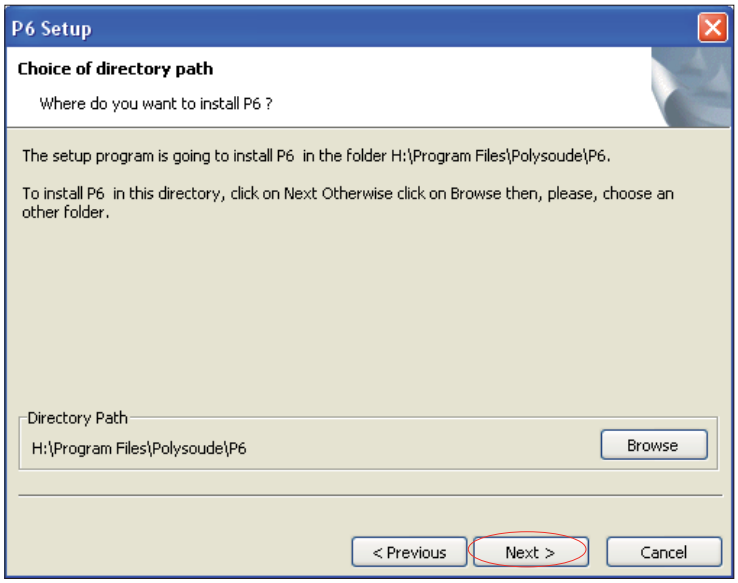



3

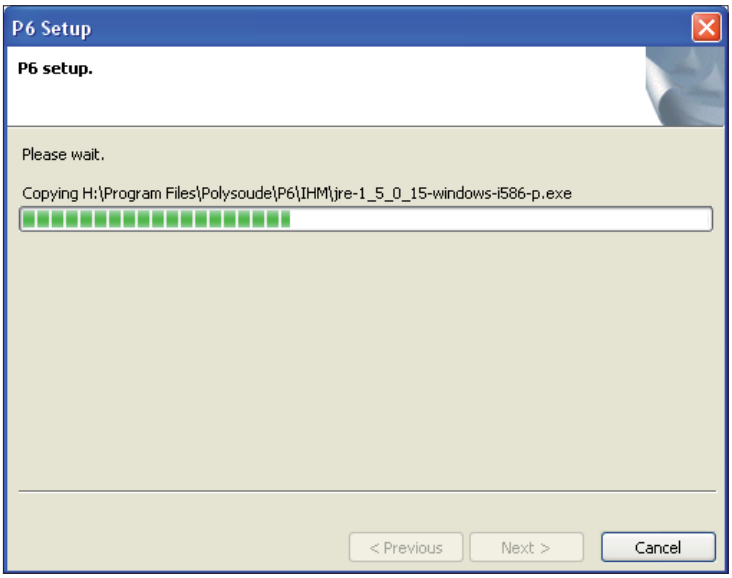



**The GUI should not be launched during installation or uninstallation of the software.**

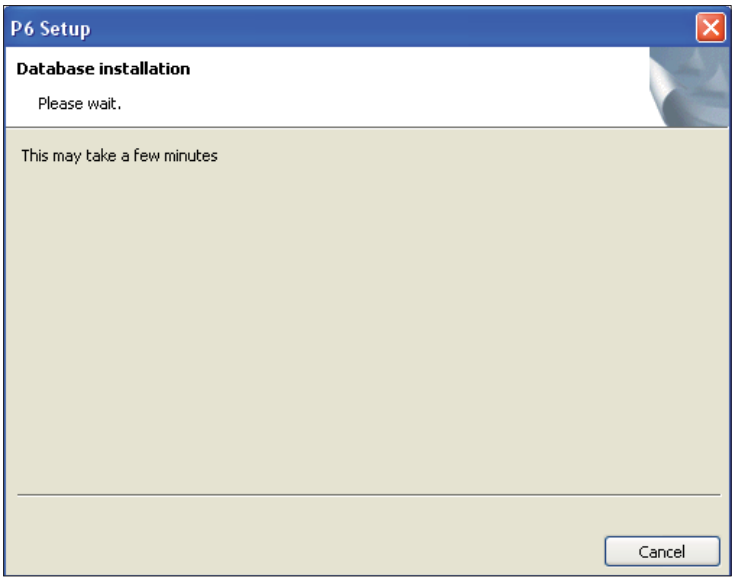
4


P6 Setup
Choice of directory path
Where do you want to install P6 ?
The setup program is going to install P6 in the folder H:\Program Files\Polysoude\P6.
To install P6 in this directory, click on Next Otherwise click on Browse then, please, choose an other folder.
Directory Path
H:\Program Files\Polysoude\P6
Browse
< Previous
Next >
Cancel

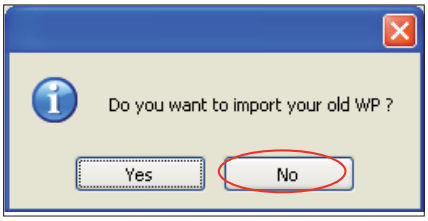
5


P6 Setup
P6 setup.
Please wait.
Copying H:\Program Files\Polysoude\P6\IHM\jre-1_5_0_15-windows-i586-p.exe
< Previous
Next >
Cancel

6


P6 Setup
Database installation
Please wait.
This may take a few minutes
Cancel

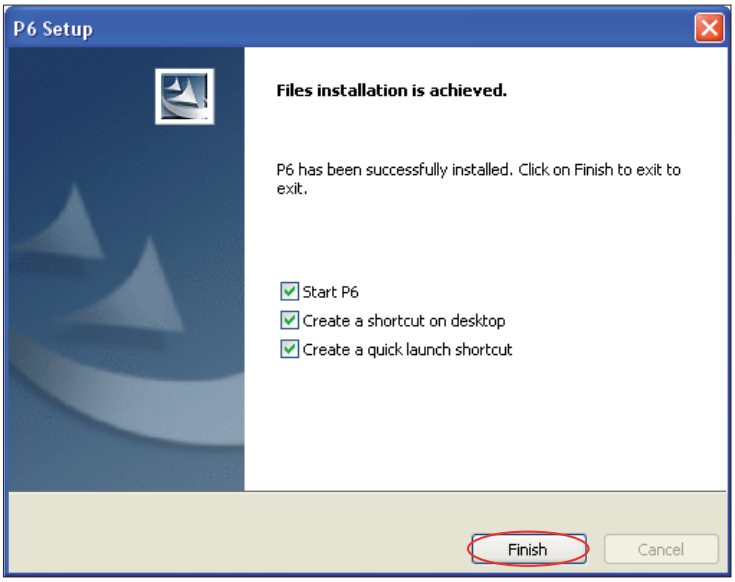
7




When installing for the first time, click on the **No** button since you have no old WPs.

The ability to load old versions of the WP is useful if you have had to uninstall the software on your PC and then reinstall on the same PC: at the next installation, your old WPs stored in the database situated in the Backup folder (whose default path is **C:\Program Files\Polysoude\P6\BDD**) can therefore be reintroduced into the library of WPs contained in your PC.

8




When you check the **Start P6** box, the GUI software starts up automatically.

**Always check that used version between power source and GUI are compatible.**

If you have any problems installing the GUI on Windows 7:

- Right clik on the icon power source. Click on “Compatibility Troubleshoots”.
- Choose “Try recommended settings”.
- Click on “Start the program ...”, then on “Next”.
- Answer “Yes, save these settings for this program”.

### *7. 4. 2. PC/Power Source connection*

To connect a PC to the Polysoude power source, you must:

- connect your PC to the RJ45 connector situated at the front of the power source with the Ethernet cable supplied;
- configure the IP address of the PC so that it is compatible with that of the power source.

**The power source default address is 172.16.200.20**

**Configuring the power source's IP address:**
Press the button **BT 6** "I-" of the remote control pendant during several seconds.
On the display of the remote control pendant appears:

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | > | | I | P | | A | d | r | e | s | s | | | |
| | | | T | a | c | h | o | | | | | | | |

Select "IP Adress" with the button **BT 1**.
Confirm the selection with the button **BT 3** "N+".
On the display of the remote control pendant appears Ip number
The IP address is in the form of four numeric blocks that can be modified by **BT2** and **BT3**. Moving from one block to another is effected by a pulse on **BT1.**
Once you have reached the last block, pressing once more on BT1 stores the new entry in memory and terminates the IP address modification procedure.


*P4 remote control pendant*

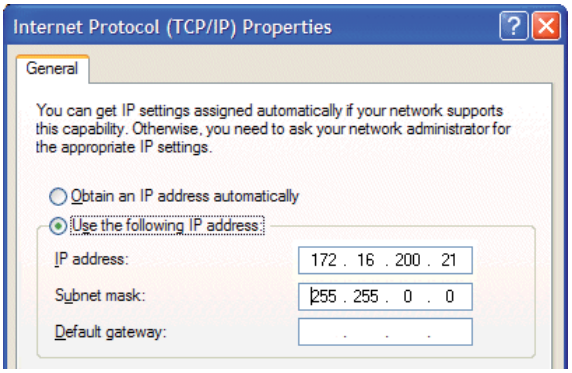
*P6 remote control pendant*

*P6 HX remote control pendant*

#### 7. 4. 2. 1. Stage 1: on the PC

➢ *Setup in Windows NT*

- In the **Start** menu (only for Classic Start menu), select **Settings >Network Connections**.
- The list of connections appears. Right click **Local network connection** then click on **Properties**.
- A window of properties appears. The "General" tab contains all of the elements used for the connection. Click on the "Internet Protocol (TCP/IP)" entry in the list, then on the **Properties** button.
- Under the "General" tab of the **Internet Protocol (TCP/IP) Properties**, tick the option "Use the following IP address".




The default IP address of the power source is **172.16.200.20**. Your address must therefore begin with **172.16.200** and end with a number between 21 and 29 (e.g. 172.16.200.23).

1) Insert this address in the "IP Address" field.
2) Click in the "Sub-network mask" field. This should be filled in automatically.
3) Click on the **OK** button.

Your IP address is now set up as a static address.

In order to retrieve a dynamic IP address for your network, begin the procedure again by ticking the option "Obtain an IP address automatically" in the Internet Protocol properties.

➢ *Setup in Windows Vista*

1) Go to **Start > Control panel**.
2) If you are in a default display, click on **Network and Internet** then **Network centre and sharing**.
3) The default IP address of the power source is **172.16.200.20**. Your address must therefore begin with **172.16.200** and end with a number between 21 and 29 (e.g. 172.16.200.23).
4) Insert this address in the "IP Address" field.
5) Click in the "Sub-network mask" field. This should be filled in automatically.
6) Click on the **OK** button.

Your IP address is now set up as a static address.

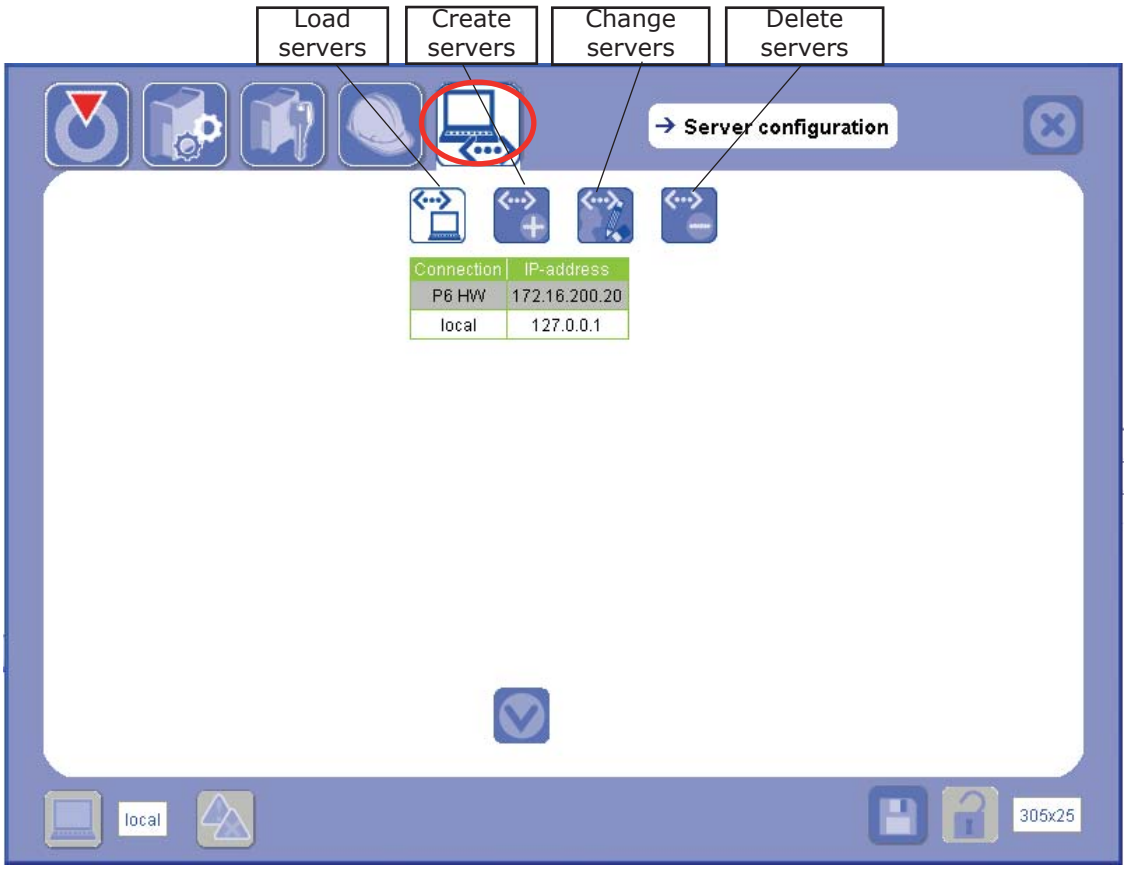
In order to retrieve a dynamic IP address for your network, begin the procedure again by ticking the option "Obtain an IP address automatically" in the properties of Internet Protocol version 4.

#### 7. 4. 2. 2. Stage 2: on the GUI

On the software Home page, click on the shortcut  situated on the bottom strip of the GUI.

The **Server Configuration** screen is displayed: the term **Server** designates the PC/Power source connection.

The **Server Configuration screen** is presented as below:




At the first time of using the GUI, the only server available is the **local** connection which designates the PC. Selecting the **local** connection allows you to work on the GUI from your PC in **not connected to power source** mode.

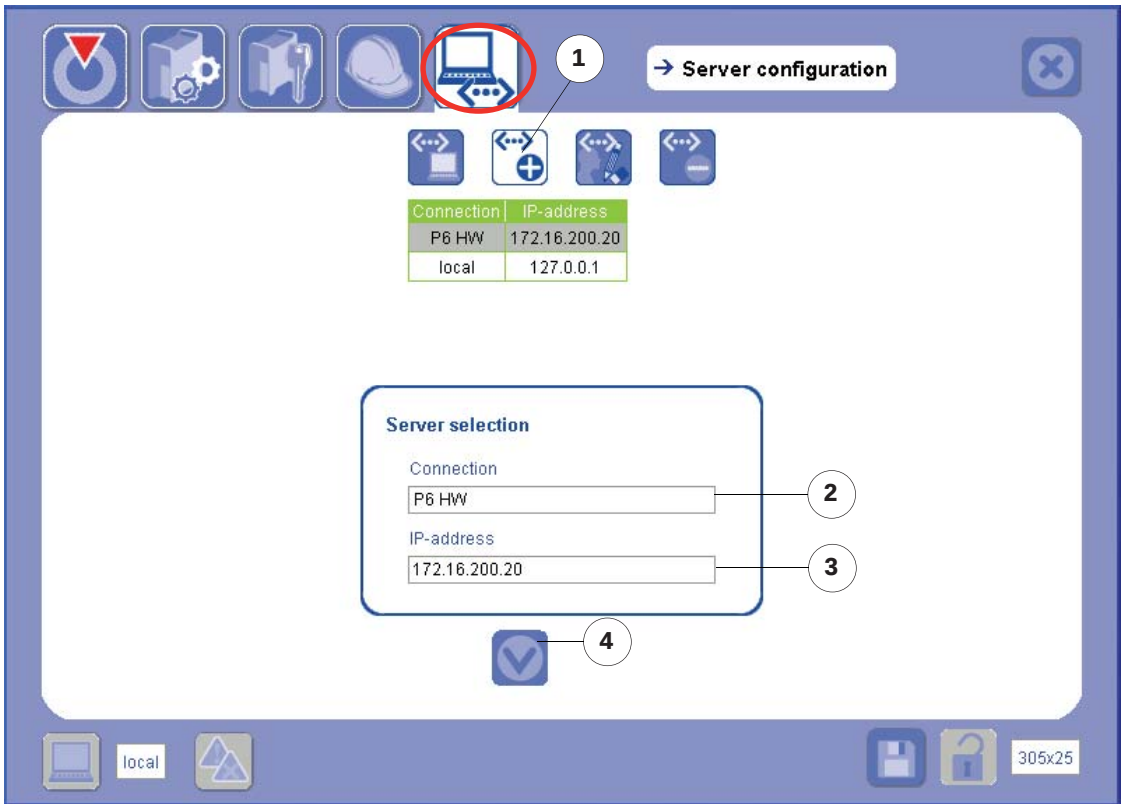
**Always return** to **"local"** connection **before** switching off the power source, disconnecting the RJ45 network cable or closing the GUI application.

See the Operating, maintenance and programming manual for the power source.

➢ *Create a server*

In order to be able to use the GUI on your PC connected, you must create a server, that is create the PC/ Power Source connection you need.

In order to create a server, proceed as follows:




1) select the **Create server** icon. The **Server selection** box appears;
2) enter the name of the **connection**, (P6HW in the example above, refer to Chapter *4.3 Filling in forms* to use the keyboard);
3) enter the IP address of the power source to which you want to connect;
4) select the Confirm icon .
5) Confirm the following message of confirmation:

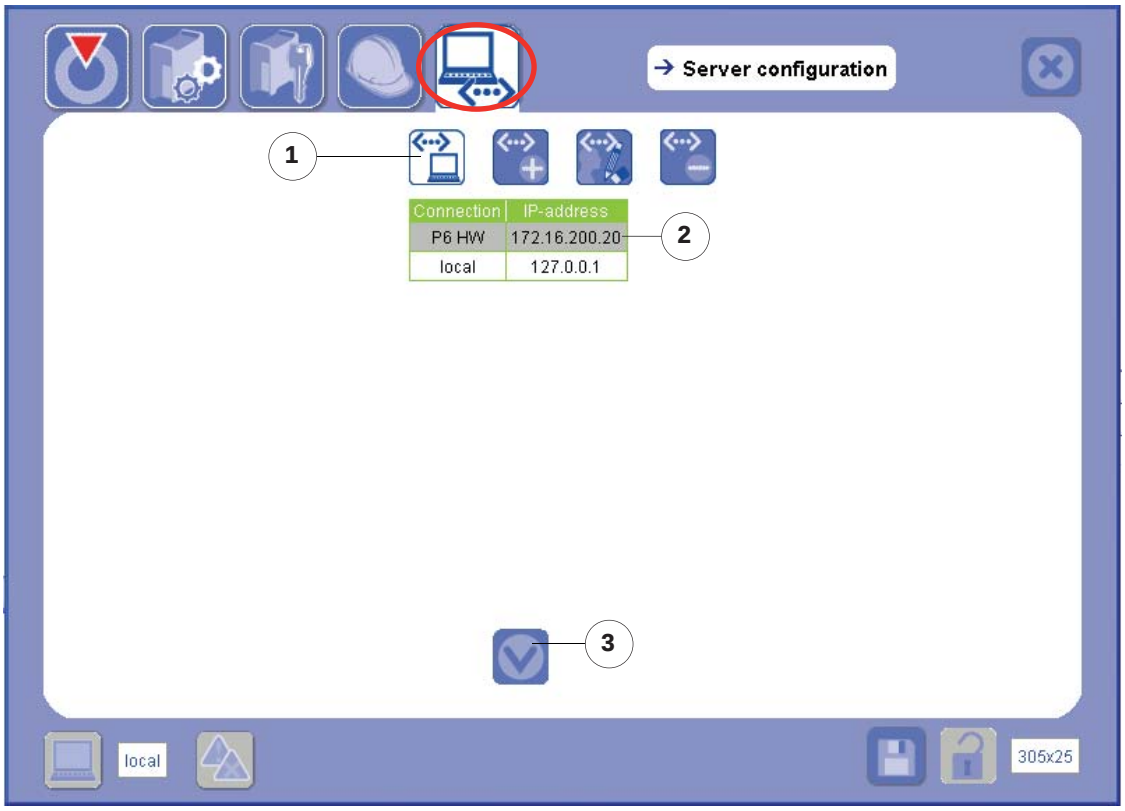

Once the create server message has been confirmed, the PC/Power Source connection is ready to be loaded.

The new server is added to the list of existing servers.

Go to **Load server** in order to establish the connection between your PC and the power source to which you want to connect.

➢ *Load a server*

In order to load a server, proceed as follows:




1) select the **Load server** icon;
2) select the server to be loaded;
3) select the Confirm icon .
4) Confirm the following message of confirmation:

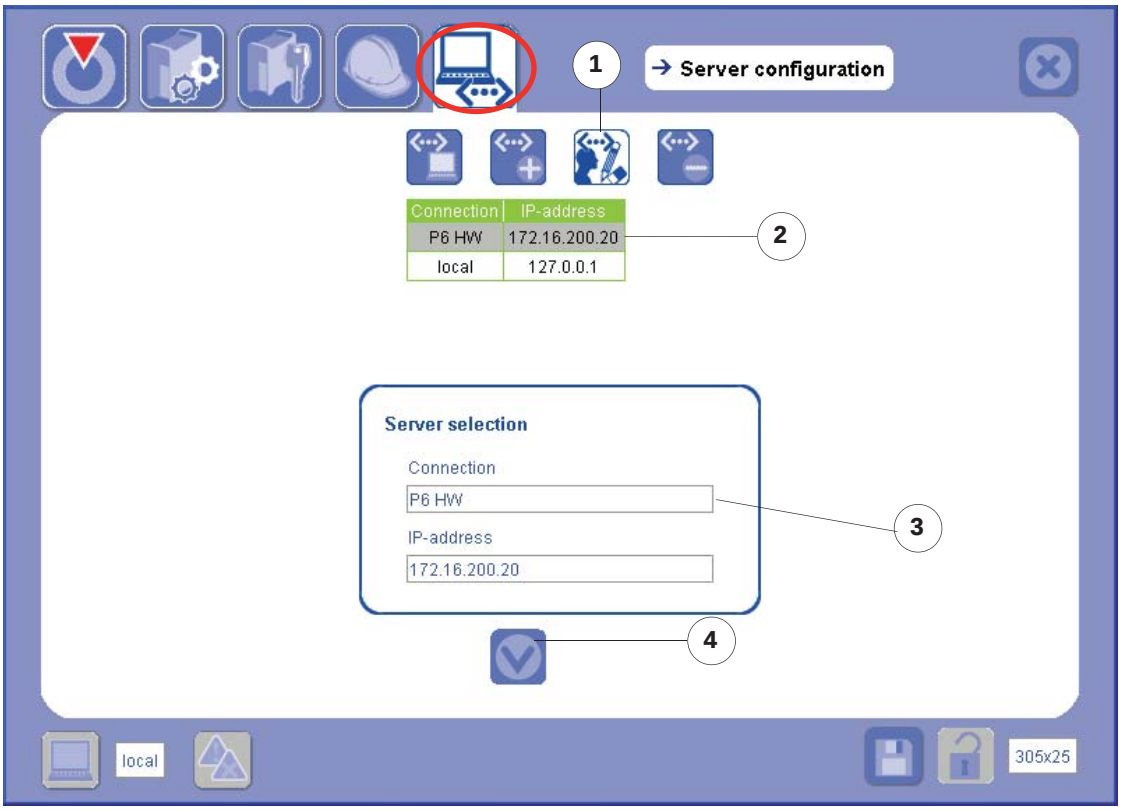

Once the server change message has been confirmed:

- you are automatically redirected to the GUI homepage;
- the selected WP for the new server is loaded;
- the name of the server loaded is displayed on the bottom left of the GUI.

**DO NOT DISCONNECT the network cable.**
**Always return** to **"local"** connection **before** disconnecting the RJ45 network cable

➢ *Change a server*

To rename a server or change the IP address refering the power source, proceed as follows:



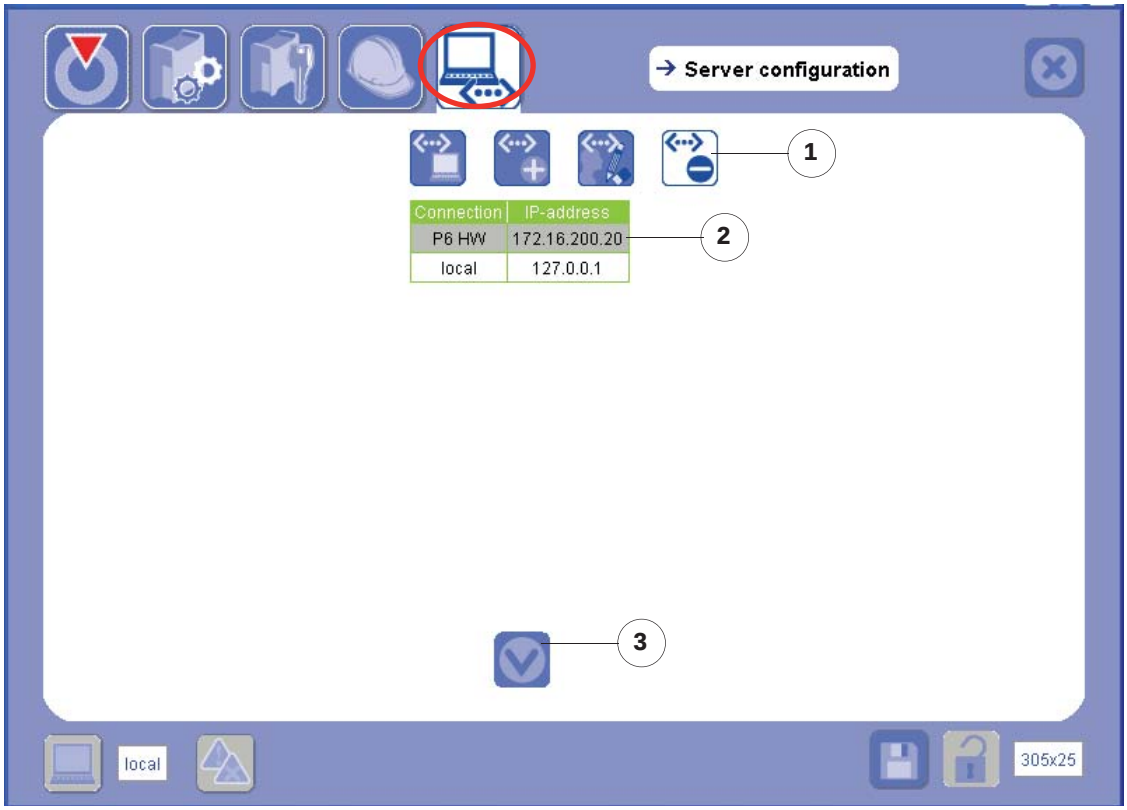

1) select the **Change server** icon. The **Server selection** box appears;
2) select the line containing the server to be renamed or on that of the IP address of the power source to be changed;
3) enter the new name of the **Connection** or change the IP address of the power source;
4) select the Confirm icon .
5) Confirm the following message of confirmation:


The new server name appears in the list of existing servers.

| |
|---|
| ***Comment:*** *you cannot rename the* ***local*** *server.* |

➢ *Delete a server*

In order to delete a server, proceed as follows:




1) select the **Delete server** icon;
2) select the line for the server to be deleted;
3) select the Confirm icon .
4) Confirm the following message of confirmation:


The deleted server disappears from the list of existing servers.

| |
|---|
| ***Comment:*** *you cannot delete the* ***local*** server. |

### *7. 4. 3. PC/Power Source WP transfer (with or without touchscreen)*

PC/Power Source WP transfer enables you to transfer your WP to/from the library of WPs contained in your PC and in your power source.

The presence of the touchscreen does not impede this operation.

The transfer of WP between a PC and a Power Source can be effected as follows:

- with a USB key

or

- with the GUI on the PC in **not connected to the power source** (local) mode

#### 7. 4. 3. 1. Transfer by USB key

➢ *From the power source*

You can retrieve the selected WP from the power source by proceeding as follows:

1) connect the USB key to the power source;
2) press the **Write command** situated on the front panel of the power source (refer to P4 manual)

In this way, you will retrieve onto your USB key:

- the selected WP (.wpo file in the WP folder);
- all of the welding print-outs (.txt files in the print-out folder);
- the maintenance print-out (.txt file in the log folder);
- the documentation (.html file in the WPS folder).

In order to transfer a WP other than the selected one onto your USB key, use the GUI to select the required WPs from the **Available WPs** screen (see chapter *6.1.2.5. Transfer a WP*). In this case the WPs are copied directly to the USB key and are not deleted from their original location.

➢ *From the PC*

Before carrying out the first transfer of a WP from the PC using a USB key, you are advised first of all to:

1) connect the USB key to the power source;
2) press the **write command.**

The WP folders, ticket, log and WPS you need for the transfer are automatically recreated on your USB key.

In order to transfer WP from the PC to the USB key, proceed as follows:

1) connect the USB key to the PC;
2) open the file storage directory whose access path is shown on the **Setup Power Source screen** accessible from the Home page;
3) copy/paste the .wpo file for the WP **into the WP folder** created beforehand on your USB key.

When transferring the WP from the PC to the USB key, you copy the WPs into the WP folder without erasing them from their original location. The procedure is the same when the transfer is carried out from the USB key to the PC.

#### 7. 4. 3. 2. Transfer from the GUI

In order to transfer a WP from the GUI, your PC must be in **not connected to the power source** mode.

**The WP transfer is only guaranteed to work if the GUI and power source versions are compatible.**

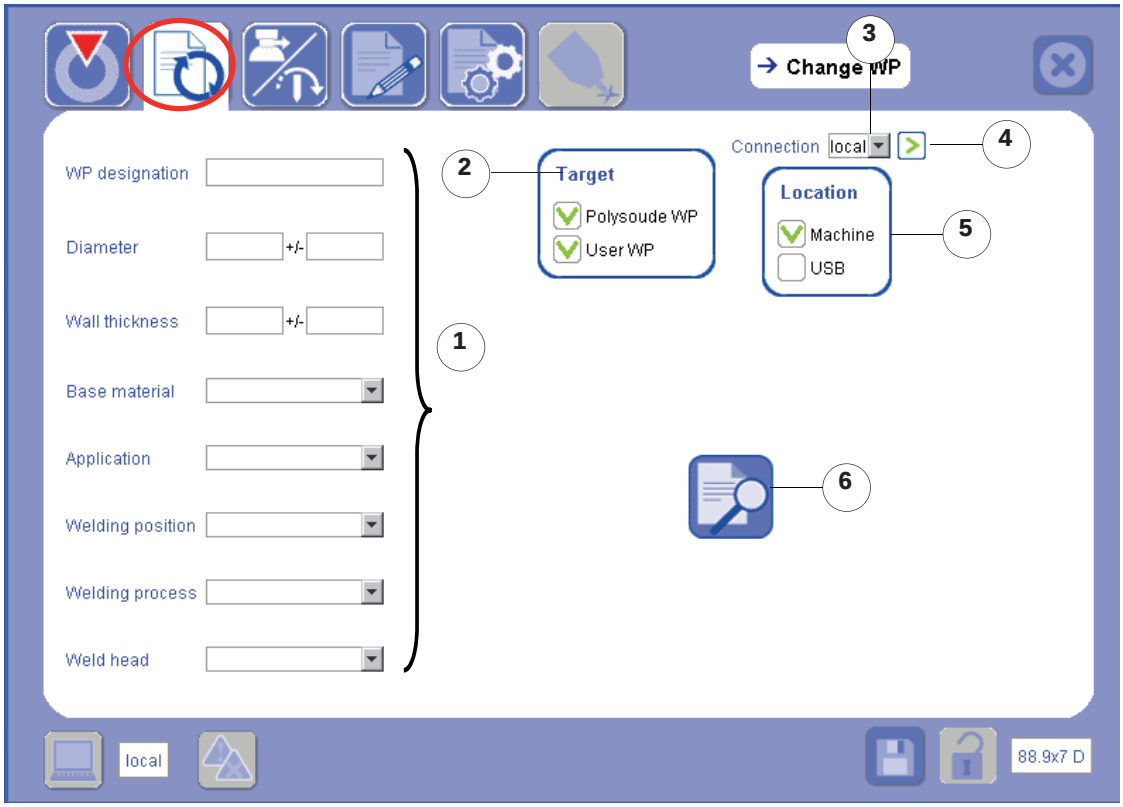
To do this:

- set the IP address of the PC so that it is compatible with that of the power source to which the PC is going to connect (refer to Chapter *7.2.2. PC/Power Source connection*);
- load the **local** server (see section *Load a server p.67*);
- connect the PC to the RJ45 connector situated at the front of the power source (see the manual for the power source).

As explained in Chapter *6.1.2.5. Transfer a WP*, the operation to transfer a WP is accessible only from the Available WP page. You must therefore go to **Change WP**.

The selection of the **Connection** on the search screens (**Change WP**) and the display of results (**Available WPs**) determines the direction of the transfer:

➢ *On the* **Change WP** *screen:*




1) enter the search criteria according to the WP you want to obtain;
2) indicate the targets in which you want to conduct the search;
3) select the **Connection**:
   - to conduct the search in the **WP library of the power source** to which the PC is connected, select the server created for this power source in the **Connection** drop-down menu;
   - to conduct the search in **PC WP library**, select the **local** server in the **Connection** drop-down menu.
4) confirm the selection of the connection by selecting the arrow [>]: the list of search locations is then updated;
5) select:
   - the **Machine** location if you have selected the **local** server (see screenshot above);
   - the **Machine** or **Remote control** location if you have selected the server for the desired power source;
6) start the search.

On the **Available WPs** screen:

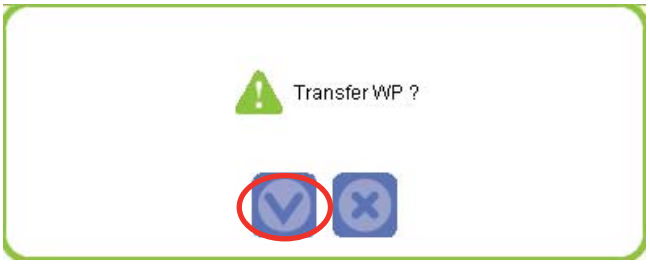

| | Diameter | Wall thickness | Base material | Weld head | Application | Welding process | Welding position |
|---|---|---|---|---|---|---|---|
| 104X2 A | 104.0 | 2.0 | Stainless steel | MW 115 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 104X2 B | 104.0 | 2.0 | Stainless steel | MU IV 115 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 104X2 C | 104.0 | 2.0 | Stainless steel | MW 115 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 12.7X0.9 A | 12.7 | 0.9 | Stainless steel | UHP 1500 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 12.7X0.9 B | 12.7 | 0.9 | Stainless steel | UHP 1500 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 12.7X1.25 A | 12.7 | 1.25 | Stainless steel | UHP 500 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 12.7X1.25 B | 12.7 | 1.25 | Stainless steel | UHP 1500 | Tube/Tube | TIG without wire | PG/PF - 5G |
| 12.7X1.65 A | 12.7 | 1.65 | Stainless steel | UHP 500 | Tube/Tube | TIG without wire | PG/PF - 5G |

1) select the line(s) of the WP(s) you want to transfer;
2) select the **Transfer WP** icon;
3) select the **Connection** to which you want to transfer the WPs (by default, the connection is the same as that shown on the search page in order to carry out a simple change to storage location):
   - to transfer the WP from the power source to the PC to which it is connected, select the **local** server in the **Connection** drop-down menu;

If the search has been conducted on a power source, you may select only the power source itself or **local** since the transfer of WP from one power source to another is impossible.

   - to transfer the WP from the PC to the power source to which it is connected, select the server created for this power source in the **Connection** drop-down menu.
4) confirm the selection of the **Connection** by selecting the arrow : the list of transfer locations is then updated;
5) select the location for transfer;
6) select the Confirm icon .

7) Confirm the message of confirmation for WP transfer:




**The transfer operation is complete.**

During a transfer of WP between PC/Power Source, the WPs are copied into the destination location but are not deleted from the origin location.

## 7. 5. Connection of power sources in a network

You can create several servers if you wish to connect your PC to several power sources connected to the same network. In this case, you have to assign a different IP address to each power source in the network and create a server for each one (refer to the power source manual for how to modify the IP address of the power source).

In order to retrieve the new address of the power source, you must have the remote control associated with the power source.

To do this, press the button "I-" of the remote control for 10 seconds: the IP address will appear on its display.

Once you have retrieved the address of the power source via the remote control, the procedure is the same as that described in Chapter *7.2.2. PC/Power Source connection* of the present manual.

The benefit of connecting power sources in a network is that it facilitates transfer of WPs from your computer to the various power sources.

On the other hand, however, if you intend connecting your PC to different power sources without wanting to put them into a network, then they can all have the same IP address and connect to your PC via the same server.

There is a serious danger for the uninformed user powering up the P4-P6 via the network and starting a weld cycle without being able to see the work area. Wherever possible, the welding machines and the control units must be positioned so that the operator is able to see the work area or the danger zone.

# 8. Options

## 8. 1. Oxygen meter

This section describes the adjustments necessary for using the oxygen meter with the GUI-power source system. The oxygen meter option is only available with the P4 power source.

Ensure that the interface between the power source and the oxygen meter is correctly installed. Refer to the oxygen meter option chapter of the user manual for the power source.

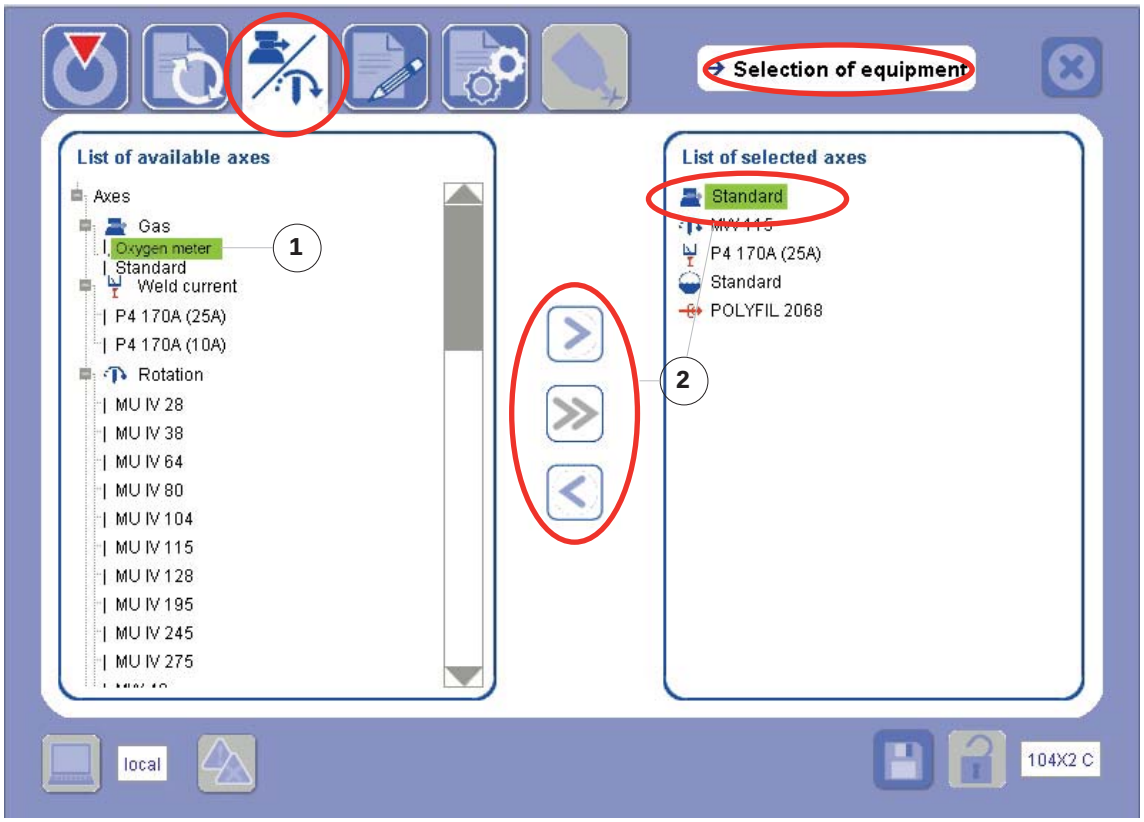
It is important for operators to read and understand the user manual for the oxygen meter. In it, you will find detailed explanations of the various basic functions of the equipment.

### *8. 1. 1. Selection of equipment*

Go to the "Selection of equipment" screen.

1) Select Oxygen meter

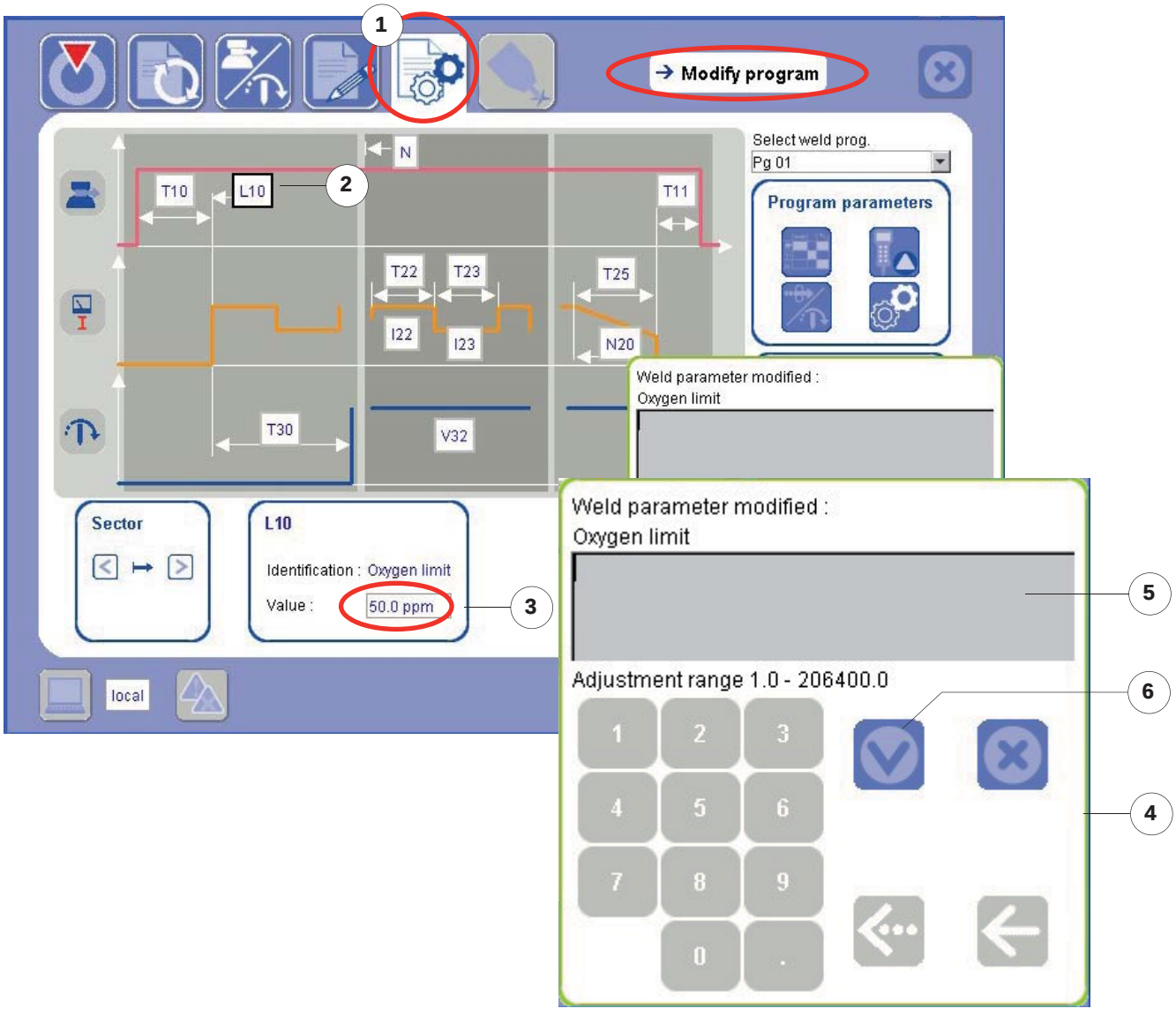
2) Confirm your selection by clicking the arrow exchange  . The Oxygen meter option is now in the list of selected axes and to replace the standard gas.



### *8. 1. 2. Adjust the oxygen threshold*

During the cycle start-up, the pregas time is set to "T10". The power source controls the measurement of the oxygen content. This content must be less than or equal to the programmed threshold. If the power source does not receive any measurement (timeout = 2 secs), or receives a measurement greater than the programmed threshold, the cycle is stopped. The GUI displays "Oxygen fault".

1) The operator must adjust the oxygen threshold. Go to the "Modify program" screen.
2) On the diagram, an **L10** field is visible after the **T10** field. The **L10** field is the oxygen threshold. Its value must be configured. Click on **L10**.
3) The **L10** Programming box is displayed. Place the cursor in the "Value" file of the **L10** Programming box.
4) A new window opens.
5) Place the cursor in the entry field in this window. Using the numeric key pad, enter the desired value in ppm.
6) Confirm by clicking on . The value entered appears in the "Value" file of the **L10** Programming box.



## 9. FAQ

### ☞ *How do you find out the IP address of the power source?*

Press the button **BT 6** "I-" of the remote control pendant during several seconds.
On the display of the remote control pendant appears:

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | > | | I | P | | A | d | r | e | s | s | | | |
| | | | T | a | c | h | o | | | | | | | |

Select "IP Adress" with the button **BT 1**.
Confirm the selection with the button **BT 3** "N+".
On the display of the remote control pendant appears Ip number.

### ☞ *How do you print a program on a ticket?*

To print a program on a ticket from the power source printer, press the same button as that used to print the weld ticket, keeping it held down for a few seconds (see power source manual).

### ☞ *What is a Dynamic WP and what is it used for?*

A Dynamic WP means **Dynamic Welding Procedure**. A Dynamic WP contains all the information required to reproduce a welding application (e.g. gas information, workpiece preparation, etc.).

### ☞ *What is the difference between a WP and a program?*

A WP is a **Welding Procedure** linked to an application that can contain several programs.

### ☞ *How do you access the **Available WPs** screen?*

To access the **Available WPs** screen, you must carry out a WP search from the **Change WP** screen.

### ☞ *How do you change the parameters in a Polysoude WP?*

The Polysoude WPs are locked, it is therefore impossible to change parameters or data inside them. To use this WP and change it, you have to duplicate it from the **Available WPs** screen.

### ☞ *How can you replace an item of equipment while keeping the program parameters?*

On the P4 power source.
When device is to be replaced, select the device to be used then add it without deleting the existing device. This enables you to keep the parameters programmed on this axis.

On the P6 power source.
When replacing a device, select the device to be used then select the device to replace and use the **Transfer and replace** key. This enables you to keep the parameters programmed on this axis.

### ☞ *How do you copy the selected WP and welding tickets to a USB key?*

To download the selected WP and welding tickets to your USB key, connect it to the power source then press the **write command** situated to the side of the USB port. The selected WP and all the welding tickets will be downloaded to your USB key.

☞ *How do you copy a Dynamic WP to a USB key?*

The documentation generation function (Dynamic WP) may be accessed via the **Document WP** screen from the icon  . With a touchscreen, the Dynamic WP is automatically copied to the USB key in html format.
With a PC, you must go and get the html file on the access path indicated on the **Power source set-up** screen and copy it to your USB key.

☞ *How do you copy a WP from the USB key to the machine?*

Connect your USB key to the power source and press the **read command** situated to the side of the USB port. Any WPs present on the USB drive will automatically be copied to the power source (into the **Remote control** location).

☞ *How do you create sectors in a program?*

To create a sector, access the **Advanced Programming** screen from the **Modify program** screen. The icon  will generate a new sector.

☞ *How do you change the server address?*

To change the server address, access the **Server Configuration Screen**, select the server to be changed, then select the icon  .

☞ *How do you rename a WP?*

There is no rename WP function, so you have to duplicate a WP to change its name.

☞ *How do you adjust the preweld current?*

There is no "preweld current" parameter. The preweld current can be adjusted using the T30 parameter (pre-rotation time) to put a time delay on the start of rotation, then using I22 (high current) for the first sector. These parameters are available and can be modified from the **Modify program** screen diagram.

☞ *Problem connecting the power source?*

The P4-P6 GUI uses three ports for communicating with the database of the power source and PC:

- Port 3050.
- Port 8060.
- Port 8070.

These ports must be "accessible". If they are not, the user may have problems either:

- during installation of the software, or
- when trying to connect to the power source.

If the problem does occur it could be due to:

- a firewall or antivirus program that is prohibiting access.
- another application that uses the same port.

**The ports 3050, 8060 and 8070 must be accessible.**

# 10. Annexes

## 10. 1. Annex 1: list of icons

| Icon | Meaning |
|---|---|
|  | Touchscreen |
|  | PC |
|  | Home |
|  | Change WP |
|  | Start the search |
|  | Load WP |
|  | Establish WP/Program… |
|  | Duplicate WP/Program… |
|  | Delete WP/Program… |
|  | Transfer WP |
|  | WP lock/unlock |
|  | Connection setup |
|  | Connect the power source to the PC |
|  | Create a connection |
|  | Delete a connection |
|  | Rename a connection |

| Icon | Meaning |
|---|---|
|  | Welding |
|  | Control panel |
|  | Weld information |
|  | Override summary |
|  | Selection of equipment |
|  | Warning |
|  | Alert |
|  | Info |
|  | Time |
|  | Electrode position |
|  | Tour |
|  | Weld current |
|  | Rotation speed |
|  | Arc voltage |
|  | Wire speed |
|  | Start a cycle |
|  | Gas test |
|  | Rotation direction 1 |
|  | Rotation direction 2 |
|  | Cycle In/Out |

| Icon | Meaning |
|---|---|
|  | Water test |
|  | Downslope |
|  | Document WP |
|  | Heading: Kind of workpieces<br>☐ Tab: General information |
|  | Mechanical adjustments |
|  | Weld layer definition |
|  | Generate documentation |
|  | Comments |
|  | Electrode/Torch parameters |
|  | Wire parameters |
|  | Workpiece preparation |
|  | Gas parameter |
|  | Mechanical adjustments |
|  | Thermal conditions |
|  | Modify program |
|  | Override adjustments |
|  | Functions + axes setup |
|  | Advanced Programming |
|  | Program management |

| Icon | Meaning |
|---|---|
|  | Optimization using weld assistant |
|  | Delete a sector |
|  | Create a sector |
|  | Rename a program |
|  | Selection of equipment |
|  | Power source setup |
|  | Locked |
|  | Unlocked |
|  | Erase all (GUI keyboard key) |
|  | Erase one by one (GUI keyboard key) |
|  | Return |
|  | Transfer and replace |
|  | Close |
|  | Stop |
|  | Confirm |
|  | Shortcut to server setup |
|  | Save |
|  | Question |
|  | Security management |

## 10. 2. Annex 2: example of Dynamic Welding Procedure (Dynamic WP)

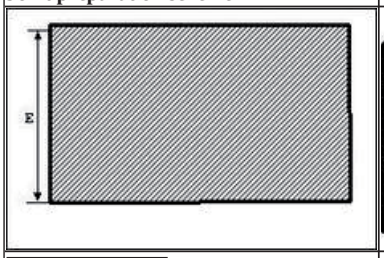
| POLYSOUDE | Description of the WP | |
|---|---|---|

***WP designation : MOS***

WPQR :
Manufacturer : POLYSOUDE
Editor :
Established, date :
Welding process : TIG without wire
Application : Tube/Tube
Welding position : PG/PF - 5G

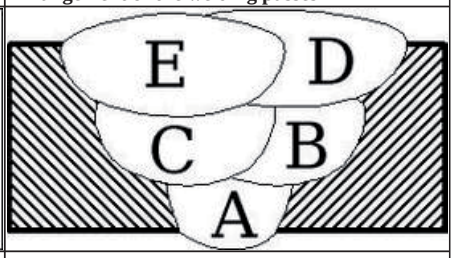
| Base materials | |
|---|---|
| Base material | Stainless steel |
| Diameter | 104 mm |
| Wall thickness | 2 mm |
| Tack welding | 12h-6h |
| Designation | |
| Standard | ASME |
| Reference | |
| Cleaning | Acetone |

**Joint preparation scheme**




| | E - mm |
|---|---|
| Value | 0 |
| Tolerance + | 0.1 |
| Tolerance - | 0.1 |

**Arrangement of the welding passes**




| Weld layer | A | B | C | D | E |
|---|---|---|---|---|---|
| Linked program | Pg 01 | Pg 01 | Polysoude | - | - |

***WP summary***

| Next program | Polarity | Oscillation | Starting position | Cycle time | Link | Next program | First program |
|---|---|---|---|---|---|---|---|
| Pg 01 | DC | Without | 11 h | | Presented | Pg 01 | YES |
| Polysoude | DC | Without | 3 h | | Linked | Pg 01 | NO |

***Welding equipment***

Weld current : P6 300A (1.0.0)
Rotation : MU IV 115 (1.0.1)

**Comments :**

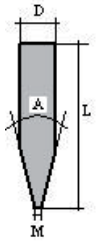
**Next program : Pg 01**

***Welding torch***

| | |
|---|---|
| Type | P |
| Length ( mm) | 12 |
| Diameter ( mm) | 11 |

***Electrode***

| | |
|---|---|
| Type | Lanthane |
| Diameter ( mm) | 2.4 |
| Length ( mm) | 28 |
| Electrode angle (°) | 30 |
| Flattened tip ( mm) | 0.2 |




***Type of filler metal***
***Without wire***

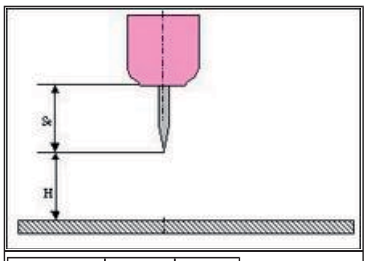
***Shielding gas***

| | Kind | Flow rate ( l/min) | Min. flow rate ( l/min) | Max. flow rate ( l/min) | Leak space ( mm) |
|---|---|---|---|---|---|
| Gas 1 | Argon | 6 | | | |
| Gas 2 | | | | | |
| Backing-gas | Argon | | 5 | 7 | 3 |
| Trailing-gas | | | | | |

***Thermal conditions***

| | |
|---|---|
| Pre-heating temperature ( °C) | Post-heat treatment ( °C) |
| Max. interpass temperature ( °C) | Thermal treatment after welding |

***Mechanical adjustments***




| | Se - mm | H - mm |
|---|---|---|
| Value | 0 | 1.4 |
| Tolerance + | 0.1 | 0.05 |
| Tolerance - | 0.1 | 0.05 |

***Functions + conditions of axis***

| Axis | Function | Condition |
|---|---|---|
| Gas | Running | Complete cycle |
| Rotation | Speed | Constant |
| Rotation | Rotation direction | Direction 1 |
| Rotation | Return | Change sens of rotation to reach home position |
| Weld current | HF-ignition | Standard |
| Weld current | Welding | Thermal pulsing |

***Override setup***

Override-mode : Without memory

| Axis | Parameter | Override steps | Override value |
|---|---|---|---|
| Rotation | Speed | 5 | 10 |
| Weld current | High current | 5 | 2 |
| Weld current | Low current | 5 | 2 |

***Parameters of program***

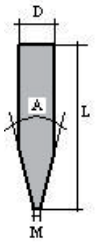
| | → | S1 | ● ● ● |
|---|---|---|---|
| N -° | 0 | 0 | 365 |
| T10 - sec | 7 | | |
| T30 - sec | 6.5 | | |
| N30 (0) - ° | 0 | | |
| D - mm | 104 | | |
| I20 - A | 25 | | |
| V32 (0) - mm/min | | 94 | |
| T31 - sec | | 0 | |
| I22 - A | | 87 | |
| I23 - A | | 30 | |
| T22 (0) - ms | | 149 | |
| T23 (0) - ms | | 260 | |
| T11 - sec | | | 8 |
| N20 (0) - ° | | | 365 |
| T25 - sec | | | 8 |
| I25 - A | | | 5 |

**Cycle time :**
**Voltage :**
**Comments :**

**Program name : Polysoude**

| *Welding torch* | |
|---|---|
| Type | |
| Length ( mm) | |
| Diameter ( mm) | |

| *Electrode* | |
|---|---|
| Type | |
| Diameter ( mm) | |
| Length ( mm) | |
| Electrode angle (°) | |
| Flattened tip ( mm) | |




***Type of filler metal***
***Without wire***

***Shielding gas***

| | Kind | Flow rate ( l/min) | Min. flow rate ( l/min) | Max. flow rate ( l/min) | Leak space ( mm) |
|---|---|---|---|---|---|
| Gas 1 | | | | | |
| Gas 2 | | | | | |
| Backing-gas | | | | | |
| Trailing-gas | | | | | |

***Thermal conditions***

| Pre-heating temperature ( °C) | Post-heat treatment ( °C) |
|---|---|
| Max. interpass temperature ( °C) | Thermal treatment after welding |

***Mechanical adjustments***

| Value | |
|---|---|
| Tolerance + | |
| Tolerance - | |

***Functions + conditions of axis***

| Axis | Function | Condition |
|---|---|---|
| Gas | Running | Complete cycle |
| Rotation | Speed | Constant |
| Rotation | Rotation direction | Direction 1 |
| Rotation | Return | No return |
| Weld current | HF-ignition | Standard |
| Weld current | Welding | Thermal pulsing |

***Override setup***

Override-mode : Without memory

| Axis | Parameter | Override steps | Override value |
|---|---|---|---|
| Rotation | Speed | 5 | 10 |
| Weld current | High current | 5 | 2 |
| Weld current | Low current | 5 | 2 |

***Parameters of program***

| |  | S1 |  |
|---|---|---|---|
| N -° | 0 | 0 | 365 |
| T10 - sec | 10 | | |
| T30 - sec | 3 | | |
| N30 (0) - ° | 0 | | |
| D - mm | 115 | | |
| I20 - A | 25 | | |
| V32 (0) - mm/min | | 44 | |
| T31 - sec | | 0 | |
| I22 - A | | 10 | |
| I23 - A | | 5 | |
| T22 (0) - ms | | 100 | |
| T23 (0) - ms | | 100 | |
| T11 - sec | | | 10 |
| N20 (0) - ° | | | 365 |
| T25 - sec | | | 3 |
| I25 - A | | | 5 |

**Cycle time :**
**Voltage :**
**Comments :**

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Certification

Translation of original instructions

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