



## Define machine

GCA Stepper Model  Select the stepper model

MOP Version

Global Alignment

Chuck size

Objective spacing     Other value

Use AWA

Local Alignment

Type

INSITU

Additional options

RMS

ACS

Exposure scale factor

Laser Dose Control

## Create a new job

Create a new job file from the beginning

## Use a local template

Use a file in this account as a template for a new job

## Upload job file

Upload and edit an existing user job file

## Pass colour map

Optionally assign each pass a colour when showing the plugs and dropouts

Pass name  Colour

DEFAULT..008000
TEST..0066FF
E..FFCC00
G..99CC00
B..CCFFFF





## Define machine

GCA Stepper Model

MOP Version

Global Alignment

Chuck size

Objective spacing

Use AWA

### Local Alignment

Type

INSITU

### Additional options

RMS

ACS

Exposure scale factor

Laser Dose Control

Select the MOP version

mm

mm Other value  mm (40.0 - 101.6)

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## Pass colour map

Optionally assign each pass a colour when showing the plugs and dropouts

Pass name  Colour

DEFAULT..008000
TEST..0066FF
E..FFCC00
G..99CC00
B..CCFFFF



## Define machine

GCA Stepper Model

MOP Version

### Global Alignment

Chuck size  mm

Objective spacing  mm Other value  mm (40.0 - 101.6)

Use AWA

Local Alignment

Type

INSITU

### Additional options

RMS

ACS

Exposure scale factor

Laser Dose Control

Select the chuck size

## Create a new job

Create a new job file from the beginning

## Use a local template

Use a file in this account as a template for a new job

## Upload job file

Upload and edit an existing user job file

## Pass colour map

Optionally assign each pass a colour when showing the plugs and dropouts

Pass name  Colour

DEFAULT..008000
TEST..0066FF
E..FFCC00
G..99CC00
B..CCFFFF



## Define machine

GCA Stepper Model

MOP Version

### Global Alignment

Chuck size  mm

Objective spacing  mm Other value  mm (40.0 - 101.6)

Use AWA

### Local Alignment

Type

INSITU

### Additional options

RMS

ACS

Exposure scale factor

Laser Dose Control

Define additional options for your particular stepper. This is much the same as the supervisor running the MOP's CONFIG command

Do not use exposure scale factor

## Create a new job

Create a new job file from the beginning

## Use a local template

Use a file in this account as a template for a new job

## Upload job file

Upload and edit an existing user job file

## Pass colour map

Optionally assign each pass a colour when showing the plugs and dropouts

Pass name  Colour

DEFAULT..008000
TEST..0066FF
E..FFCC00
G..99CC00
B..CCFFFF





## Define machine

GCA Stepper Model

MOP Version

### Global Alignment

Chuck size  mm

Objective spacing  mm Other value  mm (40.0 - 101.6)

Use AWA

### Local Alignment

Type

INSITU

### Additional options

RMS

ACS

Exposure scale factor

Laser Dose Control

## Create a new job

Create a new stepper job. The current machine settings will be saved and used for all future job creation.

## Use a local template

Use a file in this account as a template for a new job

## Upload job file

Upload and edit an existing user job file

## Pass colour map

Optionally assign each pass a colour when showing the plugs and dropouts

Pass name  Colour

DEFAULT..008000
TEST..0066FF
E..FFCC00
G..99CC00
B..CCFFFF





## Define machine

GCA Stepper Model

MOP Version

### Global Alignment

Chuck size  mm

Objective spacing  mm Other value  mm (40.0 - 101.6)

Use AWA

### Local Alignment

Type

INSITU

### Additional options

RMS

ACS

Exposure scale factor

Laser Dose Control

## Create a new job

Create a new job file from the beginning

Create a new stepper job using a previously defined job as a template. The templates are stored in the user's directory and will appear in the dropdown list.

or a new job

## Use a local template

## Upload job file

Upload and edit an existing user job file

## Pass colour map

Optionally assign each pass a colour when showing the plugs and dropouts

Pass name  Colour

DEFAULT..008000
TEST..0066FF
E..FFCC00
G..99CC00
B..CCFFFF





## Define machine

GCA Stepper Model

MOP Version

### Global Alignment

Chuck size  mm

Objective spacing  mm Other value  mm (40.0 - 101.6)

Use AWA

### Local Alignment

Type

INSITU

### Additional options

RMS

ACS

Exposure scale factor

Laser Dose Control

## Create a new job

Create a new job file from the be

## Use a local template

## Upload job file

Upload and edit an existing user job file

## Pass colour map

Optionally assign each pass a colour when showing the plugs and dropouts

Pass name  Colour

DEFAULT	.008000
TEST	.0066FF
E	.FFCC00
G	.99CC00
B	.CCFFFF

Import and edit an existing job file. This job file can be downloaded from the stepper using Kermit or the 'DOS PUT' command available in our upgrade kits.



## Define machine

GCA Stepper Model

MOP Version

### Global Alignment

Chuck size  mm

Objective spacing  mm Other value  mm (40.0 - 101.6)

Use AWA

### Local Alignment

Type

INSITU

### Additional options

RMS

ACS

Exposure scale factor

Laser Dose Control

## Create a new job

Create a new job file from the beginning

## Use a local template

Colours, based on the pass name, can be assigned to the graphical display of the wafer when defining plugs and dropouts. This can improve the documentation of the job. The colour map is stored in the user's directory.

## Upload job file

## Pass colour map

Optionally assign each pass a colour when showing the plugs and dropouts

Pass name  Colour

DEFAULT..008000
TEST..0066FF
E..FFCC00
G..99CC00
B..CCFFFF







←Main Page (back)

Print

## Job Parameters

Job Name

Date

Job comment

Tolerance  ▾

Othogonality correction  ppm (± 200)

Leveler batch size  (1 to 25)

Wafer diameter  mm (12.7 - 225)

### Scale correction

X  ppm (± 200)

Y  ppm (± 200)

## Array Parameters

### Step size

X  mm

Number of columns  Span X

Y  mm

Number of rows  Span Y

### Translate origin

X  mm

Y  mm

Define the global parameters of the job before defining the settings for each pass in the job. This will be the same as running SPEC (or JOB under MOP 7.3). The parameter list may vary depending on the version of the MOP and the options selected for the stepper in the main page.

### Left die center

Row

Column

### Left key offset

X  mm

Y  mm

### Epi shift

X  mm (± 0.050)

Y  mm (± 0.050)

## Wafer Image Adjust

Offset X  mm

Offset Y  mm

Shape  ▾

## Pass Parameters





←Main Page (back)

Print

## Job Parameters

Job Name

Date

Job comment

Tolerance

Othogonality correction  ppm ( $\pm 200$ )

Leveler batch size

Wafer diameter

Scale correction

X

Y

## Array Parameters

Step size

X  mm

Number of columns  Span X

Y  mm

Number of rows  Span Y

Translate origin

X  mm

Y  mm

## Alignment Parameters

Standard Keys

Right die center

Row

Column

Right key offset

X  mm

Y  mm

die center

Row

Column

key offset

X  mm

Y  mm

Epi shift

X  mm ( $\pm 0.050$ )

Y  mm ( $\pm 0.050$ )

## Wafer Image Adjust

Offset X  mm

Offset Y  mm

Shape

## Pass Parameters

The step size in X and Y is used to calculate the number of columns and rows if a SPAN in X or Y is specified. Pressing ALL will maximise the number of rows or columns for a given wafer diameter. These parameters will be updated when the user moves to another input line.





←Main Page (back)

Print

## Job Parameters

Job Name

Date

Job comment

Tolerance

Othogonality correction  ppm (± 200)

Leveler batch size  (1 to 25)

Wafer diameter  mm (12.7 - 225)

### Scale correction

X  ppm (± 200)

Y  ppm (± 200)

## Array Parameters

### Step size

X  mm

Number of columns  Span X

Y  mm

Number of rows  Span Y

### Translate origin

X  mm

Y  mm

## Alignment Parameters

Standard Keys

### Right die center

Row

Column

### Right key offset

X

Y

### Left die center

Row

Column

### Left key offset

X

Y

### Epi shift

X  mm (± 0.050)

Y  mm (± 0.050)

Grayed out parameters will be unavailable, usually as a result of selecting some other option. In this case, custom alignment key positions can't be entered since the user has chosen to use standard keys.

## Wafer Image Adjust

Offset X  mm

Offset Y  mm

Shape

## Pass Parameters





←Main Page (back)

Print

## Job Parameters

Job Name

Date

Job comment

Tolerance

Othogonality correction  ppm ( $\pm 200$ )

Leveler batch size  (1 to 25)

Wafer diameter  mm (12.7 - 225)

### Scale correction

X  ppm ( $\pm 200$ )

Y  ppm ( $\pm 200$ )

## Array Parameters

### Step size

X  mm

Number of columns  *Span X*

Y  mm

Number of rows  *Span Y*

### Translate origin

X  mm

Y  mm

## Alignment Parameters

Standard Keys

### Right die center

Row

Column

### Right key offset

X  mm

Y  mm

### Left die center

Row

Column

### Left key offset

X  mm

Y  mm

### Epi shift

X  mm ( $\pm 0.050$ )

Y  mm ( $\pm 0.050$ )

## Wafer Image Adjust

Having defined the global parameters for all passes, settings for each individual pass can now be specified

mm

mm



## Pass Parameters





← Job Parameters (back)

Print

⇒ Template

⇒ Job file

Pass List

## Pass Parameters

Name

Comment

Use local alignment

Microscope focus offset  *0.1 μm(± 2000)*

AWA filename  *.SRX*

Pass shift

X  *mm (±100.0)*

Y  *mm (±100.0)*

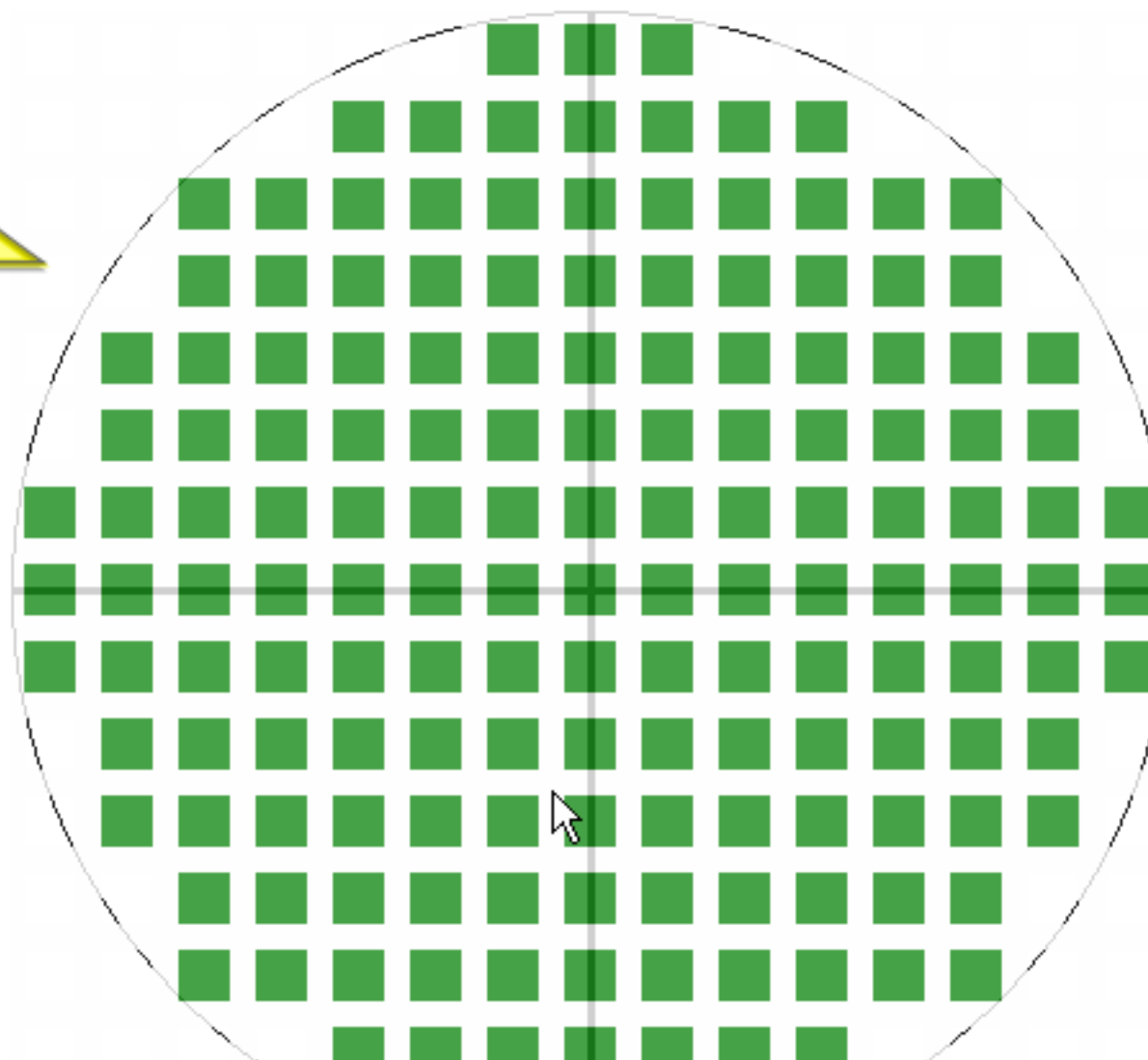
Offset X

Y

A dropdown list of defined passes for the current job. Passes in this list can be deleted or changed. Each pass can be used as a template for additional passes which can be added (with a different name) to the list.

- Exposure ▼
- Local\_Alignment ▼
- RMS ▼

This is a display of the exposed die positions on the wafer based on the previously defined wafer size and X/Y step spacing. Coloured squares represent exposed dies. The colour will depend on the pass name (green is the default colour). Pale squares show unexposed dies. In an ARRAY pass, mouse clicking on a square will 'drop out' the exposure.





# H&L Associates' Stepper Job Creation

Version 2.1Beta for MOP 7.3 [Demo]



← Job Parameters (back)

Print

⇒ Template

⇒ Job file

Pass List

## Pass Parameters

Name

Comment

Use local alignment

Microscope focus offset  *0.1 μm(± 2000)*

AWA filename  *.SRX*

Pass shift

X

Y

Exposure ▲

Exposure time

Focus offset  *0.1 μm(± 1000)*

Use match

Match template filename

Match every Nth wafer  *(0-999)*

Reticle rotation offset  *ppm(±67)*

Reticle transmission  *%(-1,0-300)*

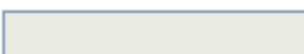
Local\_Alignment ▼

RMS ▼

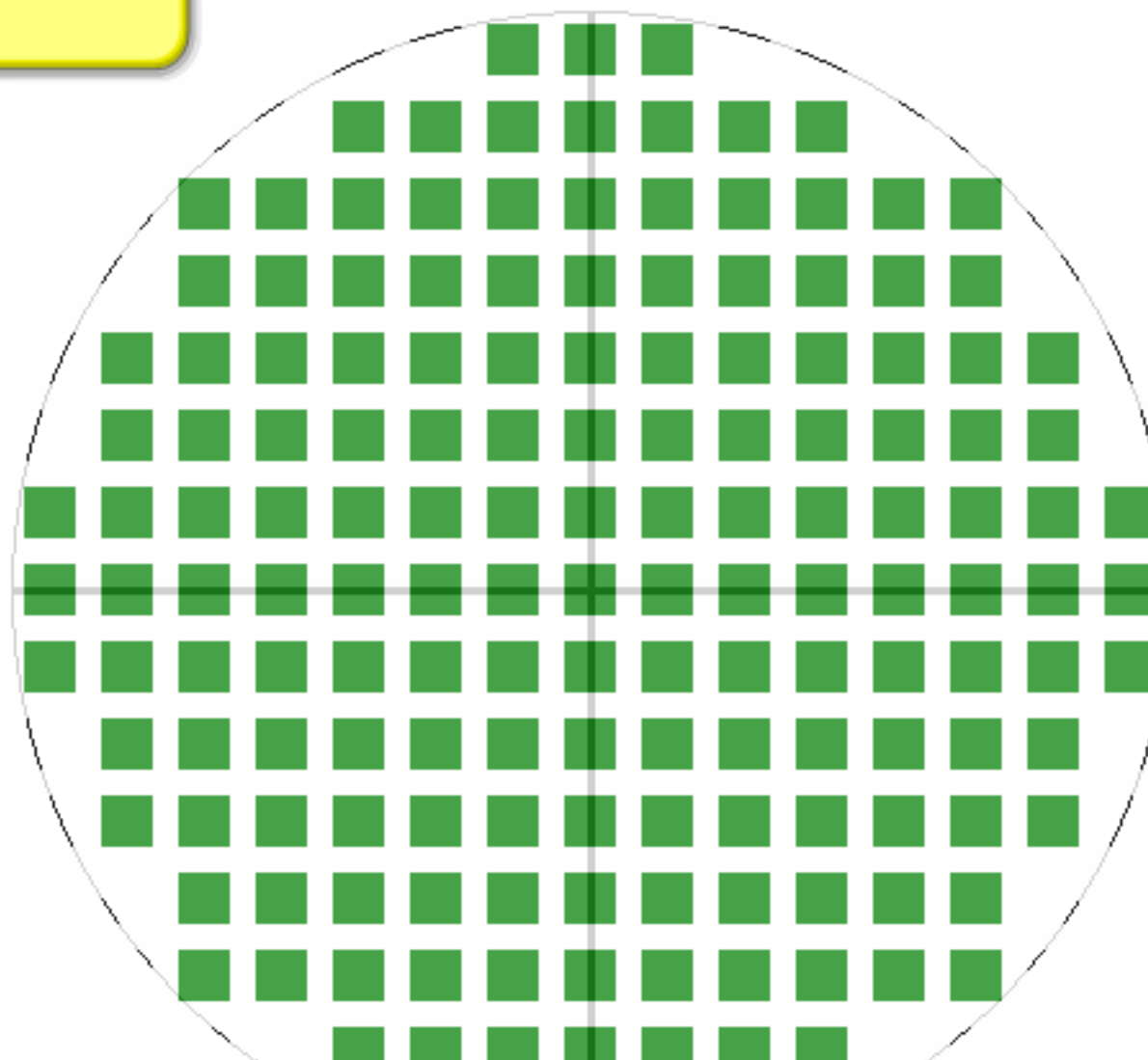
CSV Import

Array or Plug

Dropouts



Mouse clicking on these menu bars will present the choices for each group of pass parameters. In this case, the EXPOSURE parameters are displayed





# H&L Associates' Stepper Job Creation

Version 2.1Beta for MOP 7.3 [Demo]



← Job Parameters (back)   Print   ⇒ Template   ⇒ Job file

Pass List

CSV Import

Array or Plug

Dropouts

Offset X   
Y

## Pass Parameters

Name   
 Comment   
 Use local alignment   
 Microscope focus offset  *0.1 μm(± 2000)*  
 AWA filename  *.SRX*  
 Pass shift  
 X  *mm (±100.0)*  
 Y  *mm (±100.0)*

## Exposure ▲

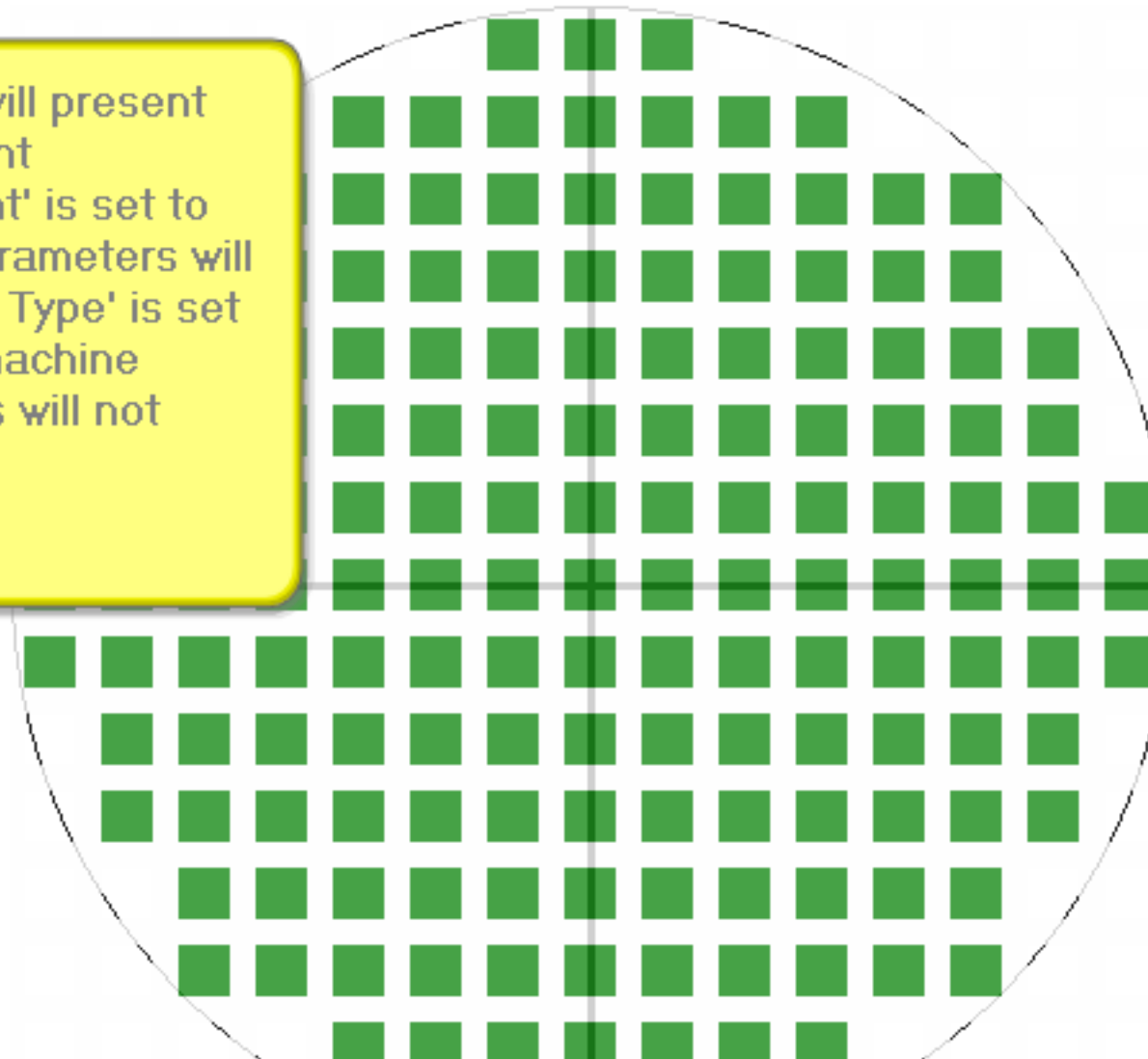
Exposure time  *sec (0-128.000)*  
 Focus offset   
 Use match   
 Match template filename   
 Match every Nth wafer   
 Reticle rotation offset   
 Reticle transmission

## Local Alignment ▲

Map every Nth wafer   
 Monitor mapping   
 Use 2-pt align   
 Rotation tolerance  *μrads(0.0-20.0)*  
 Continue with mapping   
 Expose mapping pass   
 Alignments per die  *(1-10)*

## Mark offsets

Mouse clicking on this menu bar will present the choices for the Local Alignment parameters. If 'Use local alignment' is set to 'NO' (option above) then these parameters will be grayed out. If 'Local Alignment Type' is set to 'NONE' in the main page (themachine specifications) then these choices will not appear.



Exposure time  sec (0-128.000)

Focus offset  0.1  $\mu\text{m}$  ( $\pm 1000$ )

Use match

Match template filename

Match every Nth wafer  (0-999)

Reticle rotation offset  ppm( $\pm 67$ )

Reticle transmission  %(-1,0-300)

**Local Alignment ▲**

Map every Nth wafer  (0-999)

Monitor mapping

Use 2-pt align

Rotation tolerance   $\mu\text{rads}$ (0.0-20.0)

Continue with mapping

Expose mapping pass

Alignments per die

**Mark offsets**

1 X:

**RMS ▲**

Reticle bar code

**Masking aperture**

XL  mm (0.00-100.00)

XR  mm (0.00-100.00)

YF  mm (0.00-100.00)

YR  mm (0.00-100.00)

**Reticle alignment offset**

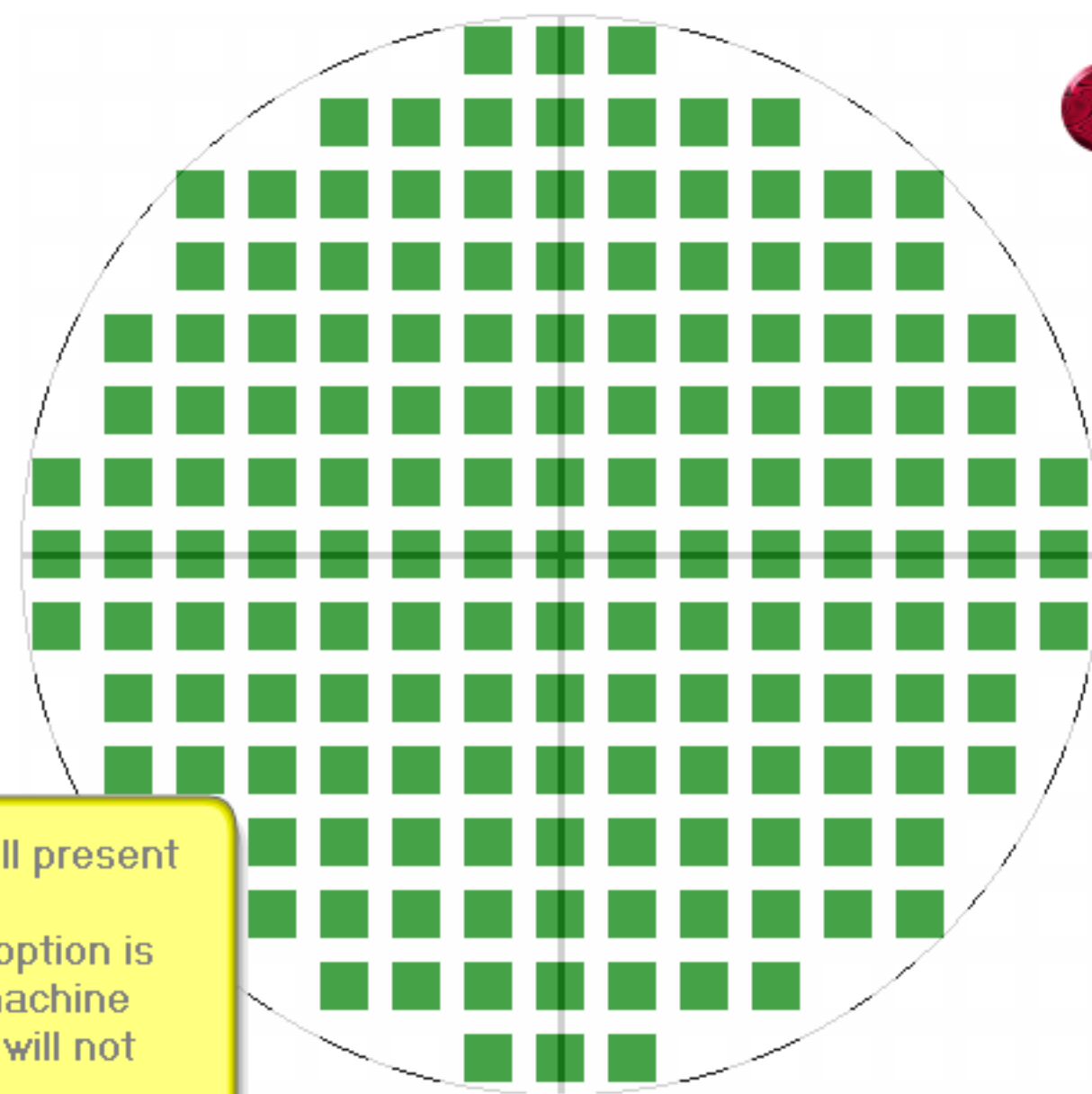
XL   $\mu\text{m}$  ( $\pm 10$ )

XR   $\mu\text{m}$  ( $\pm 10$ )

Y   $\mu\text{m}$  ( $\pm 10$ )

Mark phase

Reticle transmission  %(-1,0-100)



Mouse clicking on this menu bar will present the choices for the RMS (reticle management system). If the RMS option is set to 'NO' in the main page (the machine specifications) then these choices will not appear.





• [2009/03/23 10:00] ... Template file "Job1.tmpl" created (1713 bytes in size)

←Job Parameters (back) Print ⇒Template ⇒Job file

Pass List

Add

Pressing 'Template' will save all the current job information in a local file. This template file can be retrieved later and the job data used as the basis for a new job. A message will appear to confirm the action and indicate the size of the stored template file.

SV Import  Browse... ←Get data

Array or Plug

Dropouts

Delete

Offset X

Y  Add Offset

## Pass Parameters

Name

Comment

Use local alignment

Microscope focus offset

AWA filename

### Pass shift

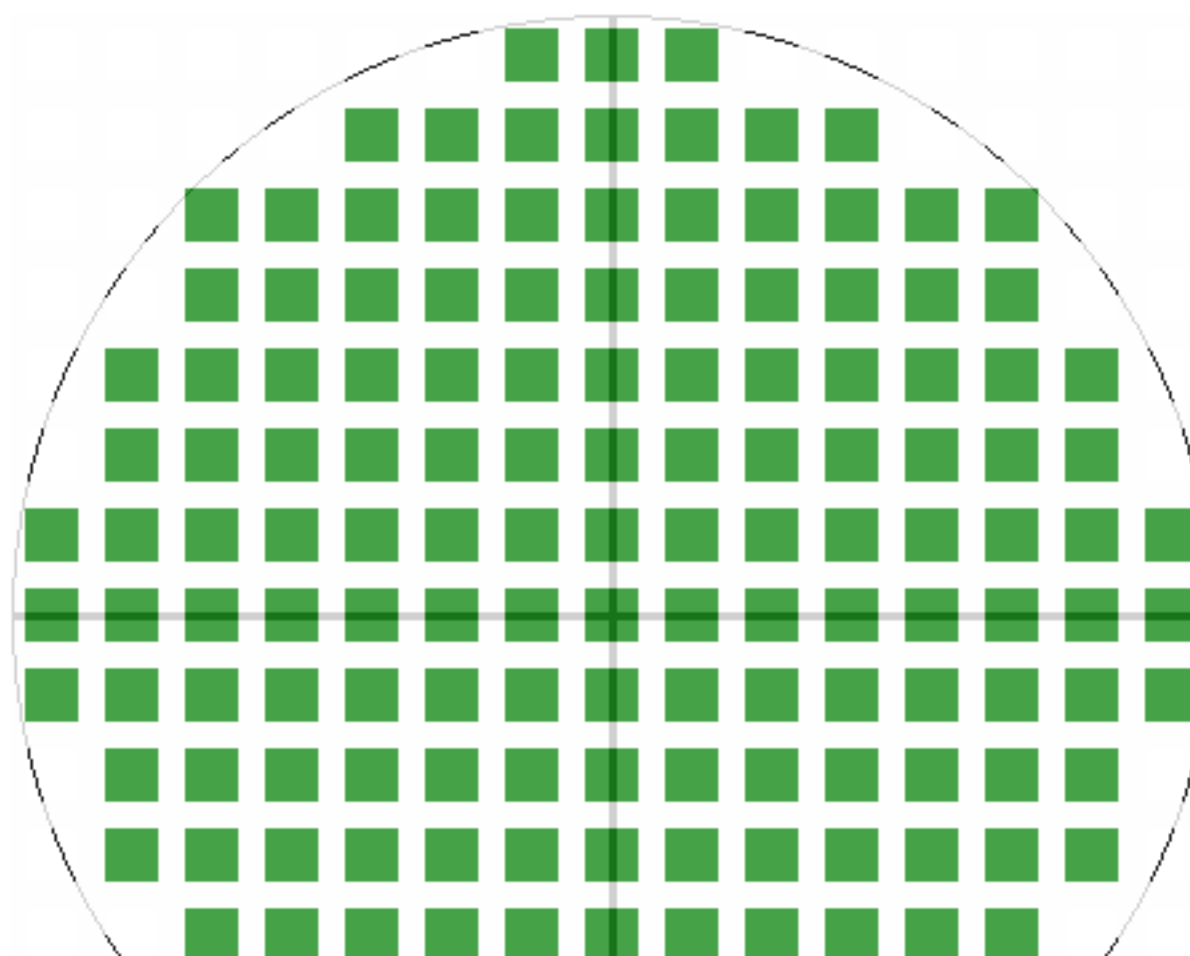
X  mm (±100.0)

Y  mm (±100.0)

Exposure ▼

Local\_Alignment ▼

RMS ▼





• [2009/03/23 10:00] ... Job file "Job1.hlj" created (320 bytes in size) [Download Job1.hlj](#)

← Job Parameters (back)   Print   ⇒ Template   ⇒ Job file

Pass List

### Pass Parameters

Name

Comment

Use local alignment  ▼

Microscope focus offset

AWA filename

Pass shift

X  mm (±100.0)

Y  mm (±100.0)

Exposure ▼

Local\_Alignment ▼

RMS ▼

Pressing 'Job file' will turn all the current job information into a stepper compatible data file. A message will appear to confirm the action and to present the user with a download button. Pressing 'Download' will start a transfer of the job file to the user. Save this file and then upload it to your stepper (using Kermit for example).

### Opening Job1.hlj

You have chosen to open

Job1.hlj

which is a: HLJ file

from: http://www.trilicium.ca

What should Firefox do with this file?

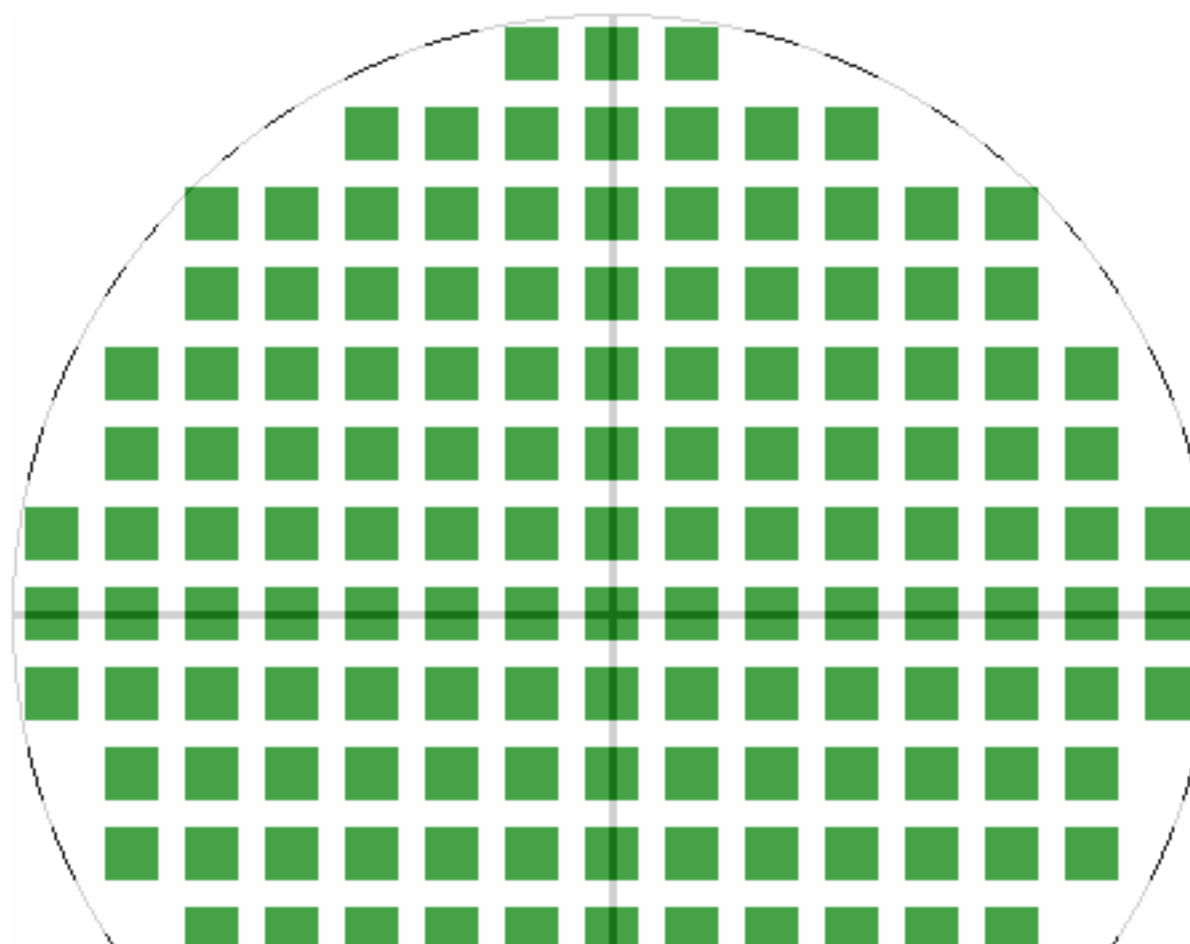
Open with:  ▼

Save File

Do this automatically for files like this from now on.

OK

Cancel





• [2009/03/23 10:01] ... Pass "B" data saved

←Job Parameters (back) Print ⇒Template ⇒Job file

Pass List

CSV Import

Array or Plug

## Pass Parameters

Name   
 Comment   
 Use local alignment   
 Microscope focus offset   
 AWA filename

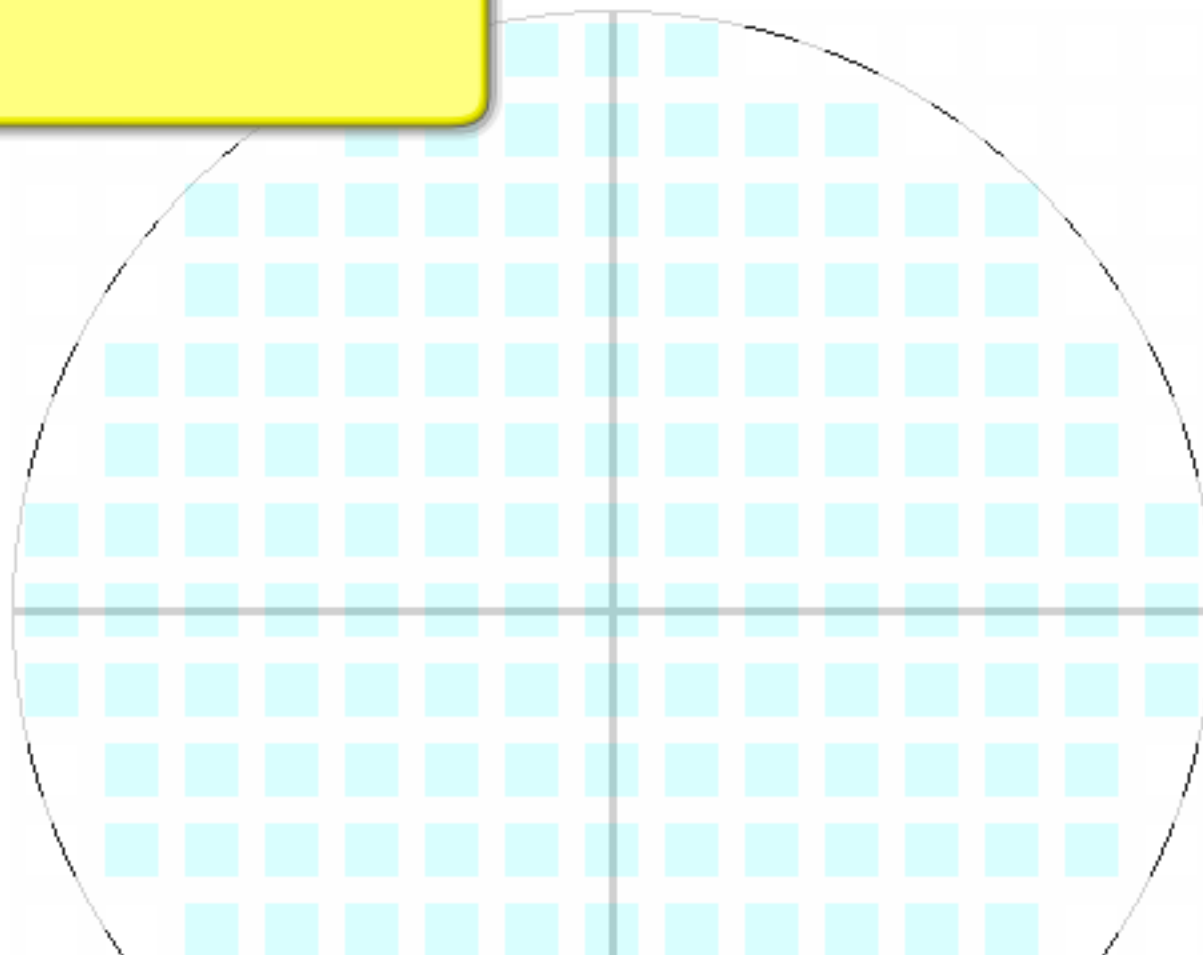
### Pass shift

X   
 Y

Exposure ▼  
 Local\_Alignment ▼  
 RMS ▼

Pressing 'Save' will save the current pass information, replacing the information already stored for the pass whose name appears in the pass list. In this case, pass 'B' information will be updated with the information on the screen. The actual pass name could be changed using the 'Save' button. A message to this effect will appear at the top of the screen. If a colour has been selected for this pass name (from the main page) then the wafer display will be updated. Here, the pass name 'B' has been assigned a colour different from the default of green.

Add Offset





• [2009/03/23 10:01] ... Pass "B" data saved

←Job Parameters (back) Print ⇒Template ⇒Job file

Pass List

B

Add

Add new p

### Pass Parameters

Name

F

Comment

Use local alignment

No

Microscope focus offset

0

0.1  $\mu\text{m}$ ( $\pm 2000$ )

AWA filename

NONE

.SRX

Pass shift

X

mm ( $\pm 100.0$ )

Y

mm ( $\pm 100.0$ )

Exposure ▼

Local\_Alignment ▼

RMS ▼

Pressing 'Add' will create a new pass object using the currently displayed pass information and add it to the pass list. The pass 'Name' must be different from any existing pass name in the list. The drop down pass list will be updated, in this case with a pass named 'F'.

Browse...

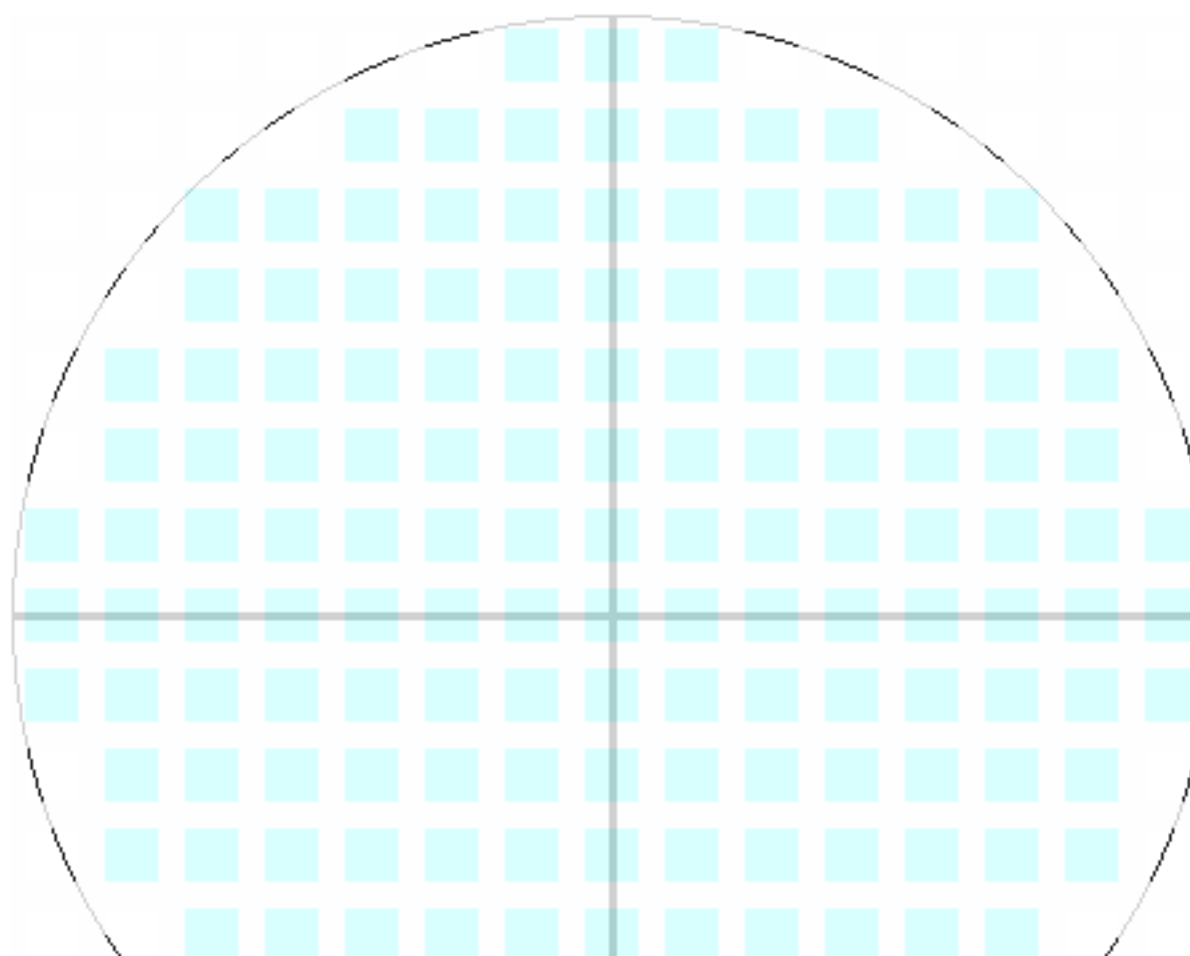
←Get data

Delete

Offset X

Y

Add Offset





# H&L Associates' Stepper Job Creation

Version 2.1Beta for MOP 7.3 [Demo]



← Job Parameters (back)

Print

⇒ Template

⇒ Job file

Pass List

F  
B  
F

CSV Import

Browse...

← Get data

## Pass Parameters

Name

Comment

Use local alignment

Microscope focus offset

0.1  $\mu\text{m}$  ( $\pm 2000$ )

AWA filename

.SRX

Pass shift

X

mm ( $\pm 100.0$ )

Y

mm ( $\pm 100.0$ )

Exposure ▼

Local\_Alignment ▼

RMS ▼

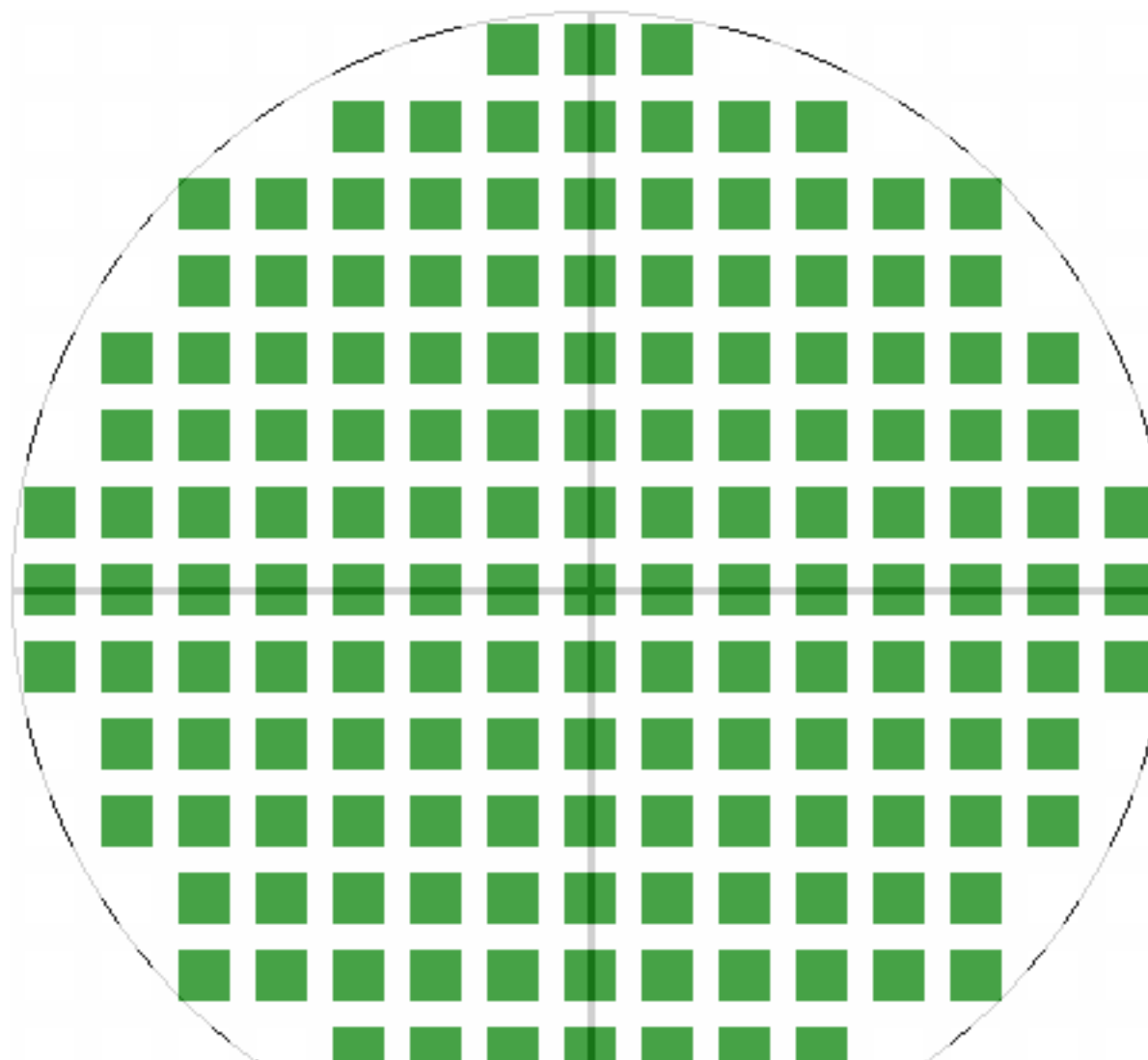
The pass drop down list now contains the information for two passes: B (which was the new name for an existing default pass) and F (which was created and added).

Delete

Offset X

Y

Add Offset





← Job Parameters (back)

Print

⇒ Template

⇒ Job file

Pass List

## Pass Parameters

Name

Comment

Use local alignment

Microscope focus offset  *0.1 μm(± 2000)*

AWA filename  **.SRX**

Pass shift

X  *mm (±100.0)*

Y  *mm (±100.0)*

Exposure ▼

Local\_Alignment ▼

RMS ▼

CSV Import

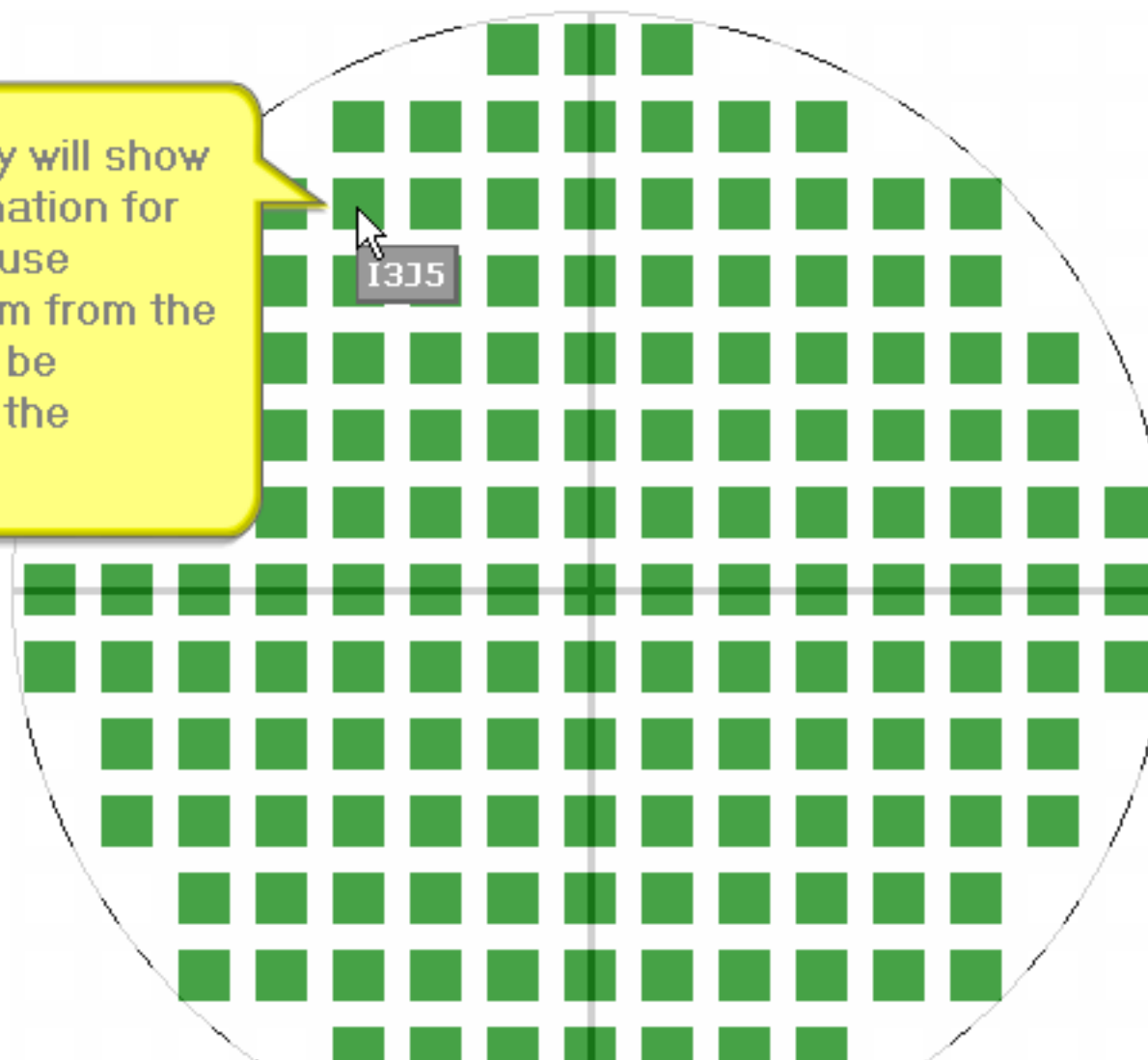
Array or Plug

Dropouts

Offset X

Y

Hovering over a die in the display will show the row (I) and column (J) information for that die. In an ARRAY pass, mouse clicking on the die will drop it from the pass. The dropout list above will be updated with the coordinates of the dropped die.





← Job Parameters (back)

Print

⇒ Template

⇒ Job file

Pass List

CSV Import

Array or Plug

- Dropouts
- 17J5
  - 16J5
  - 15J5
  - 14J5
  - 16J8
  - 16J9
  - 17J9
  - 18J9
  - 18J8
  - 17J8

Offset X

Y

## Pass Parameters

Name

Comment

Use local alignment

Microscope focus offset

AWA filename

Pass shift

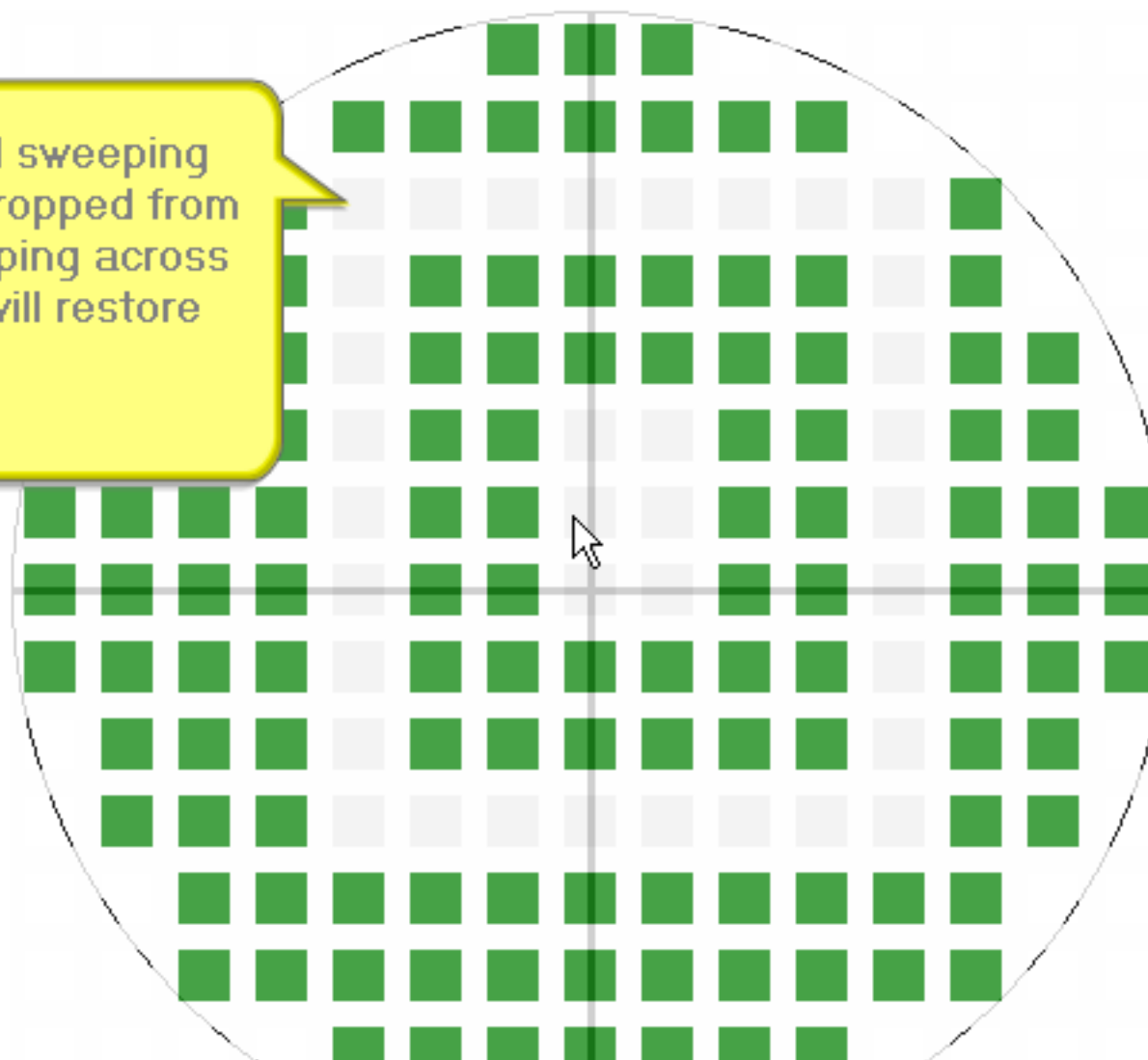
X  mm ( $\pm 100.0$ )

Y  mm ( $\pm 100.0$ )

The dropout list is updated with the coordinates of the dropped die. Highlighting one of more die locations in this list, and then pressing 'Delete' will restore the dropped dies to the pass.

- Exposure ▼
- Local\_Alignment ▼
- RMS ▼

By holding down the left mouse button and sweeping across multiple dies, several dies can be dropped from the pass. Alternatively, clicking on or sweeping across empty spots (dropped dies) in the display will restore the die to the exposure pass.





← Job Parameters (back)

Print

⇒ Template

⇒ Job file

Pass List

The pass can be changed to a PLUG pass using this dropdown list. If dropouts were previously specified for an ARRAY pass, then these will be converted to plugs in the PLUG pass and the 'Dropout' list will become a 'Plugs' list.

### Pass Parameters

Name

Comment

Use local alignment

Microscope focus offset

AWA filename  .SRX

Pass shift

X  mm (±100.0)

Y  mm (±100.0)

- Exposure ▼
- Local\_Alignment ▼
- RMS ▼

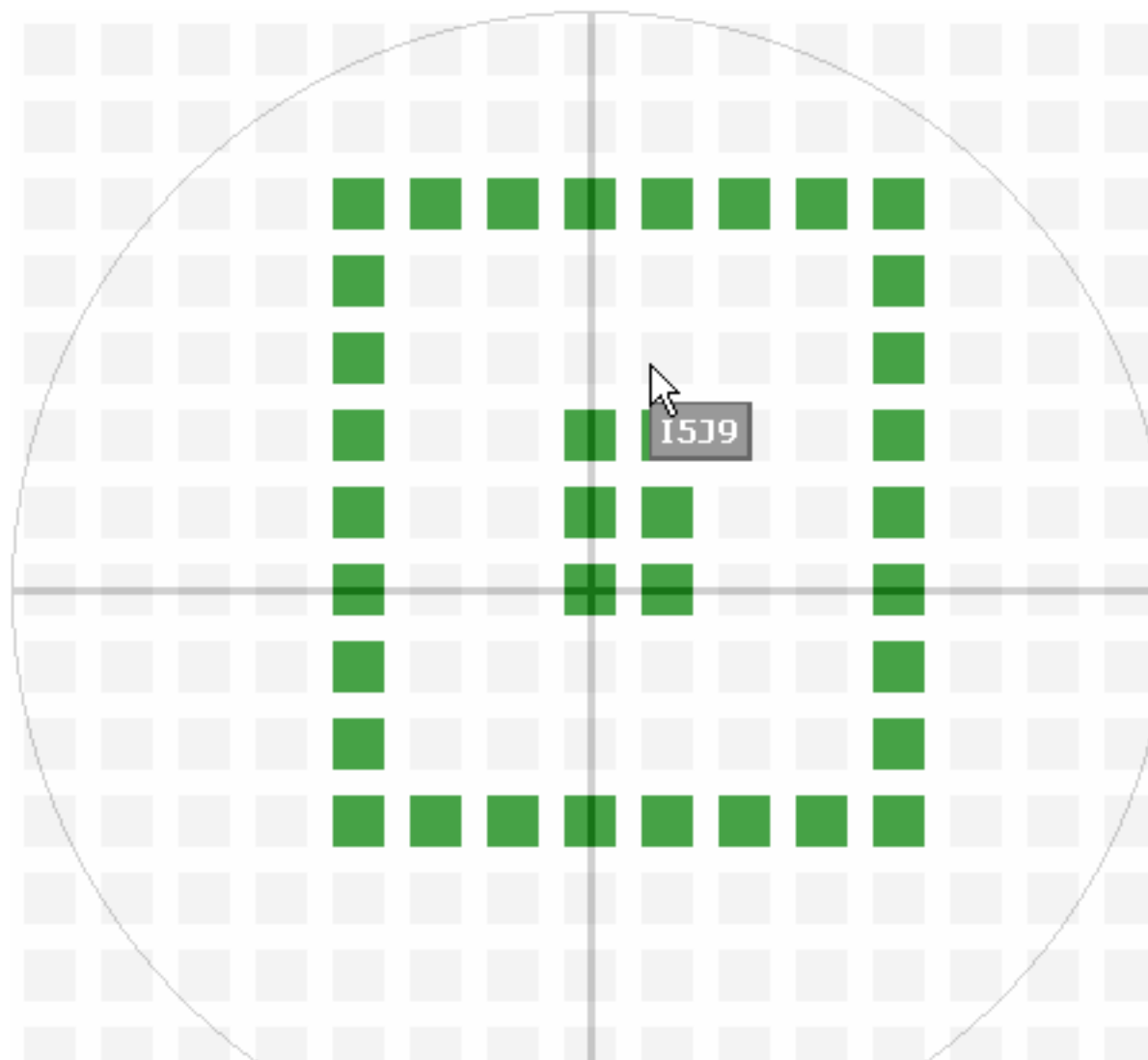
CSV Import

Array or Plug

- Plugs
- 17J5
  - 16J5
  - 15J5
  - 14J5
  - 16J8
  - 16J9
  - 17J9
  - 18J9
  - 18J8
  - 17J8

Offset X

Y







← Job Parameters (back)   Print   ⇒ Template   ⇒ Job file

Pass List

CSV Import

Array or Plug

- Plugs
- I3J9
  - I3J10
  - I3J11
  - I3J12
  - I4J12
  - I5J12
  - I6J12
  - I7J12
  - I8J12
  - I9J12

Offset X

Y

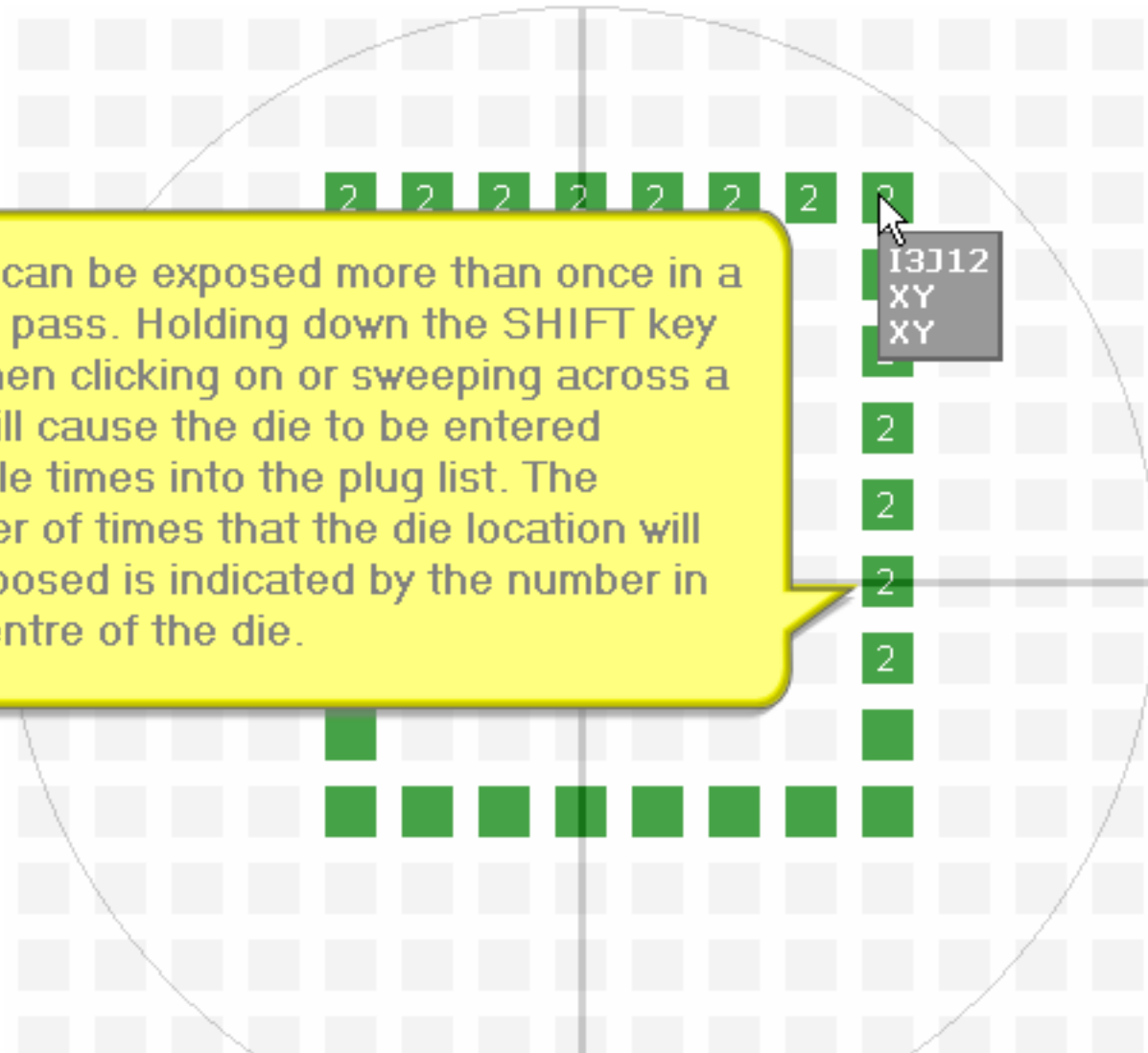
## Pass Parameters

Each plug can be offset. To add an X-Y offset to the plug:

1. highlight one or more plugs in the list
2. enter X and Y offset values
3. press 'Add Offset'

The X-Y offset value will be appended to the die coordinate in the list. The offset will also appear if you hover over a die in the display.

Plugs can be exposed more than once in a PLUG pass. Holding down the SHIFT key and then clicking on or sweeping across a die will cause the die to be entered multiple times into the plug list. The number of times that the die location will be exposed is indicated by the number in the centre of the die.



- Exposure ▼
- Local\_Alignment ▼
- RMS ▼



# H&L Associates' Stepper Job Creation

Version 2.1Beta for MOP 7.3 [Demo]



← Job Parameters (back)

Print

⇒ Template

⇒ Job file

Plug/dropout information can be imported from a simple text file in CSV (comma separated variable) format i.e. row,column,pass name . First browse on the local user computer for the CSV file and select it. Press the 'Get data' button. New passes will be created with the new pass names. If the pass name exists, its plug/dropout data will be replaced with the imported data. If a pass named 'CSV' exists in the pass list then it will serve as a template for all other settings of the imported passes.

CSV Import

\\VE\Wafer 084683\_01.txt

Browse...

Get data

Upload plugs/dropouts from a spreadsheet file

Array or Plug

Plug

Plugs

- I3J9
- I3J10
- I3J11
- I3J12
- I4J12
- I5J12
- I6J12
- I7J12
- I8J12
- I9J12

Delete

Offset X

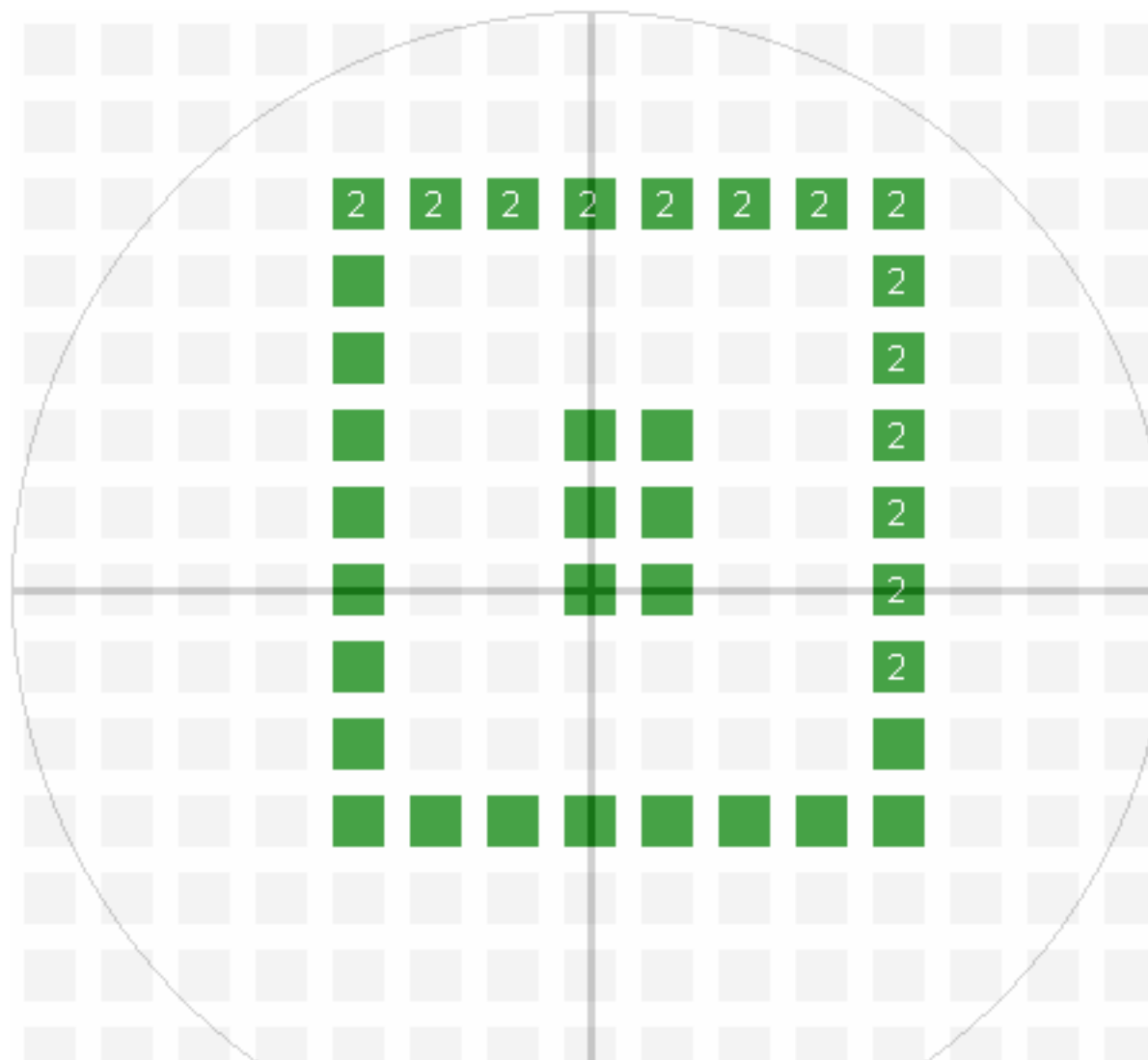
Y

Add Offset

Y

mm (±100.0)

- Exposure ▼
- Local\_Alignment ▼
- RMS ▼





• [2009/03/23 10:03] ... CSV data imported from file

←Job Parameters (back)

Print

⇒Template

⇒Job file

Pass List

- F
- B
- F
- TEST
- E

### Pass Parameters

Name

Comment

Use local alignment

Microscope focus offset  0.1  $\mu\text{m}$ ( $\pm 2000$ )

AWA filename  .SRX

#### Pass shift

X  mm ( $\pm 100.0$ )

Y  mm ( $\pm 100.0$ )

Exposure ▼

Local\_Alignment ▼

RMS ▼

After importing CSV data, the pass list will be updated and the newly created passes will be shown.

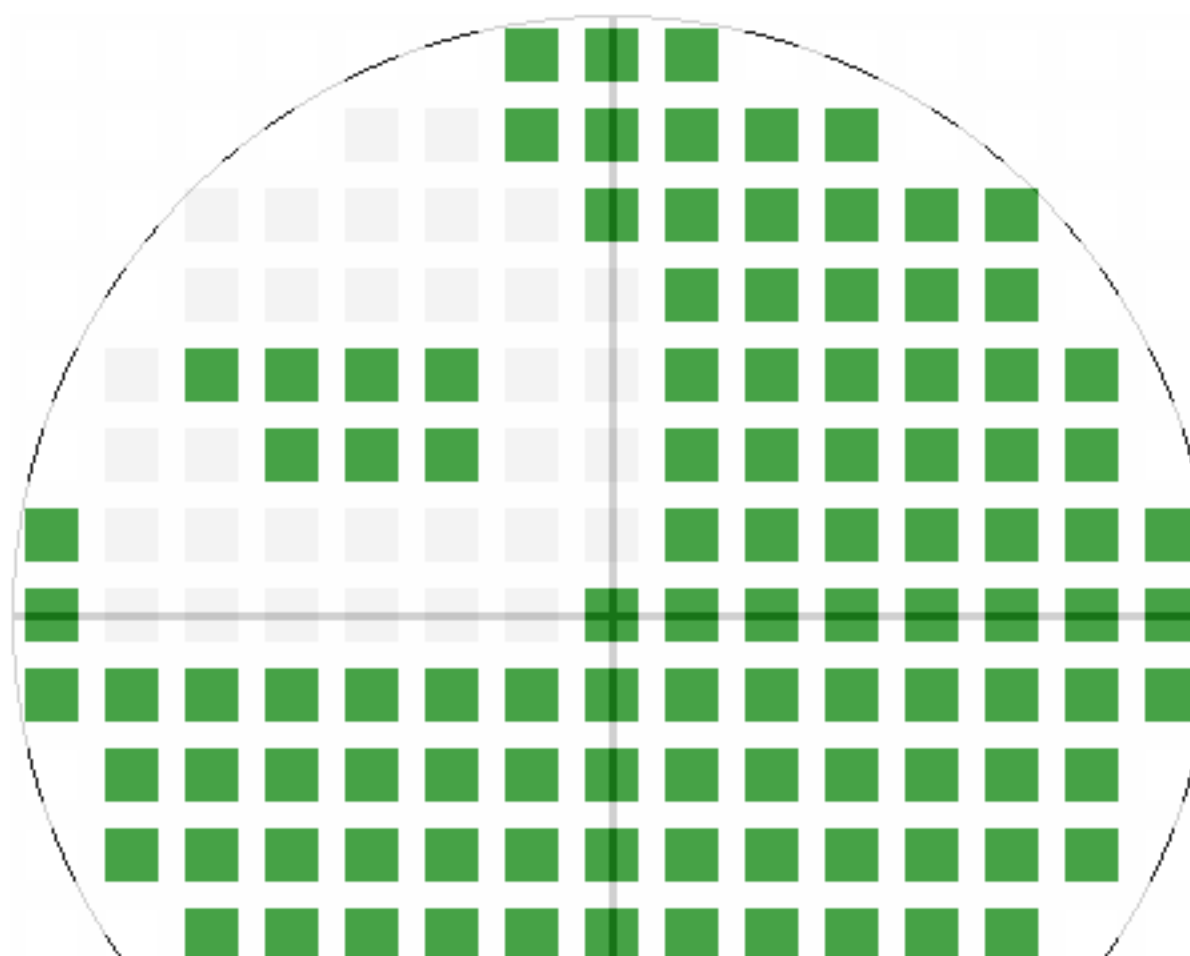
←Get data

- 18J7
- 18J6
- 18J5
- 18J4
- 18J3
- 18J2
- 17J8
- 17J7
- 17J6

Delete

Offset X

Y  Add Offset





# H&L Associates' Stepper Job Creation

Version 2.1Beta for MOP 7.3 [Demo]

← Job Parameters (back)   Print   ⇒ Template   ⇒ Job file

Pass List

TEST	▼
B	
F	
TEST	
E	

## Pass Parameters

Name:

Comment:

Use local alignment:  ▼

Microscope focus offset:  *0.1 μm(± 2000)*

AWA filename:  *.SRX*

Pass shift

X	<input type="text"/>	<i>mm (±100.0)</i>
Y	<input type="text"/>	<i>mm (±100.0)</i>

- Exposure ▼
- Local\_Alignment ▼
- RMS ▼

CSV Import

The wafer display will be updated to show the exposed dies for the currently highlighted pass in the pass list. Here, new passes (E and TEST) were created from the imported data and added to the list.

Offset X:

Y:

