



feedWare CX

comprehensive Vision-solution
for all anyfeed models,
based on Cognex In-Sight
smart cameras

flexfactory[®]
reinvent feeding

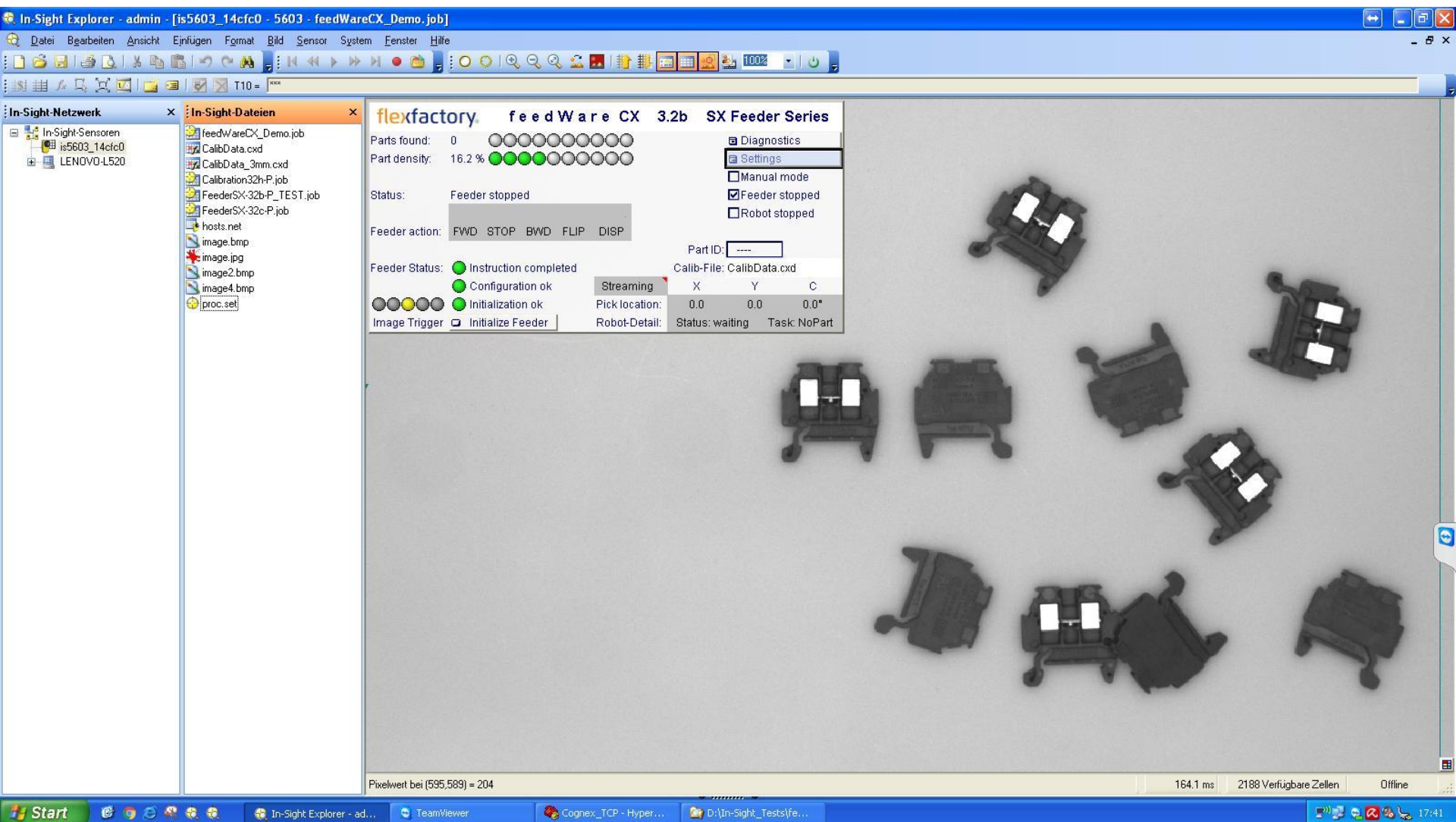
Giessenstrasse 15 • CH-8953 Dietikon • Schweiz
Tel +41 44 774 55 66 • www.flexfactory.com

Content

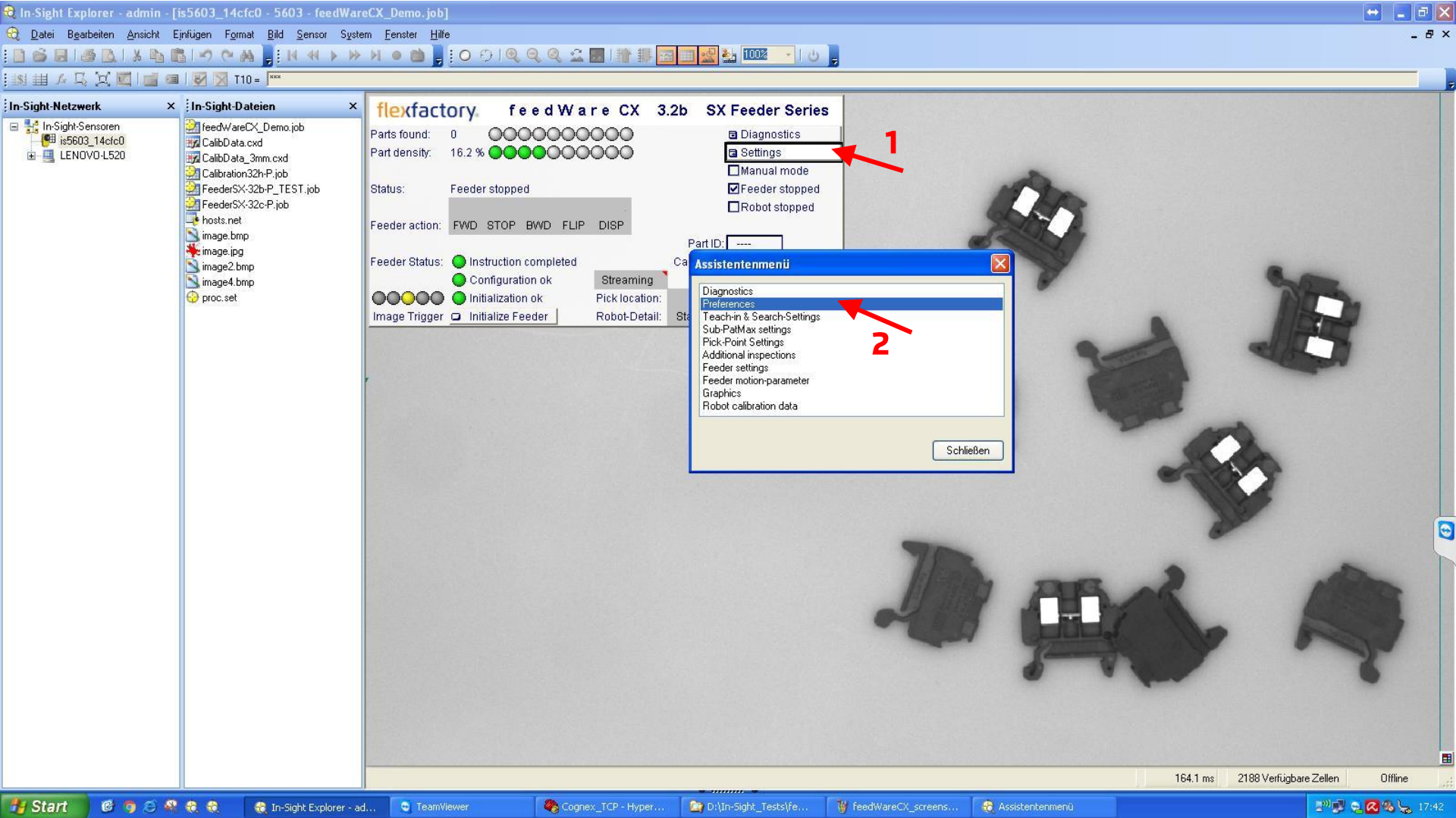
Screenshot sequence for setup procedure

The following screenshots illustrate step by step the typical procedure for setting up a part recognition, i.e. Teach-in a new product with our vision software feedWare CX.

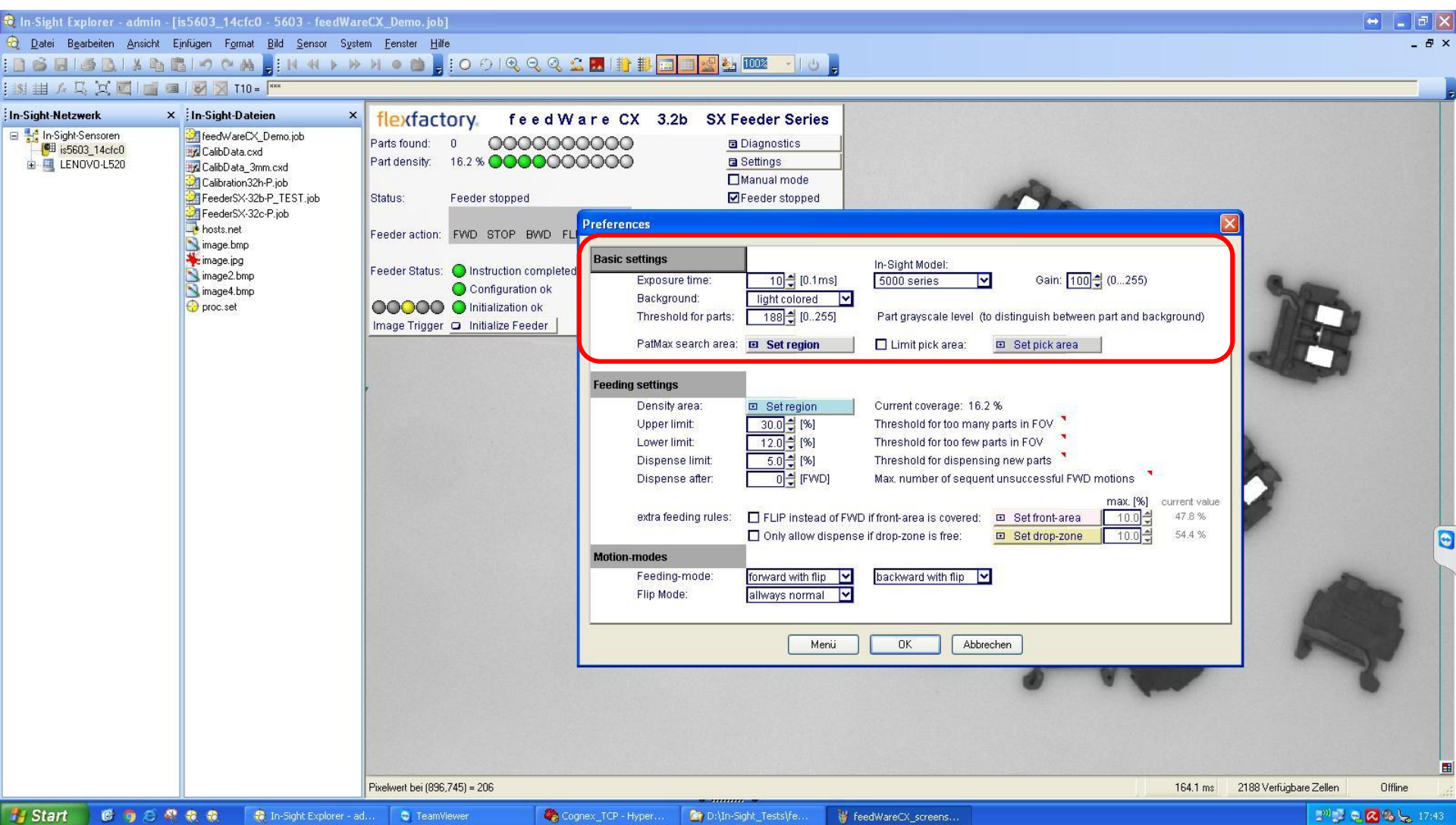
1. Take an image with reference part



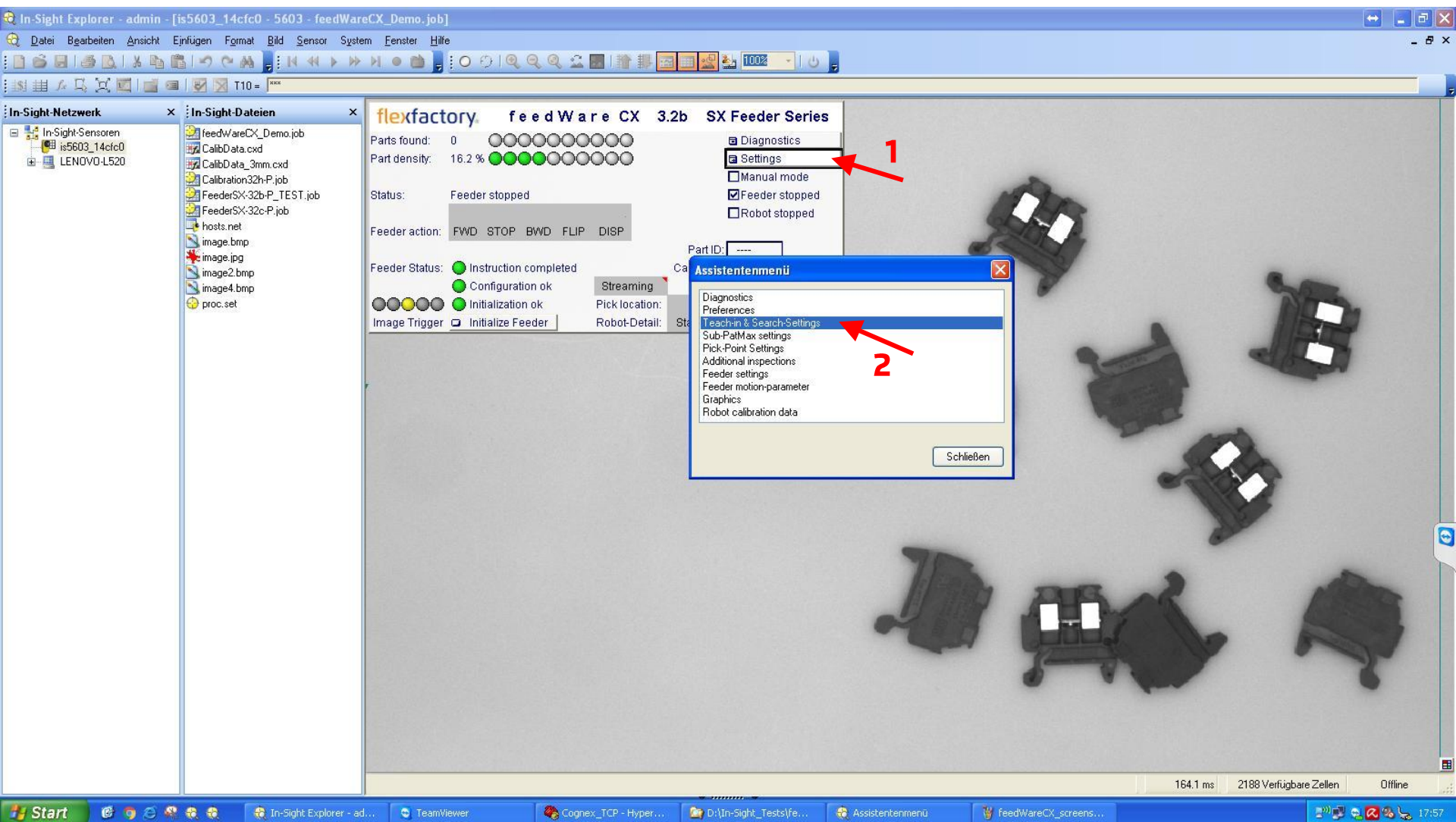
2. Settings: Preferences



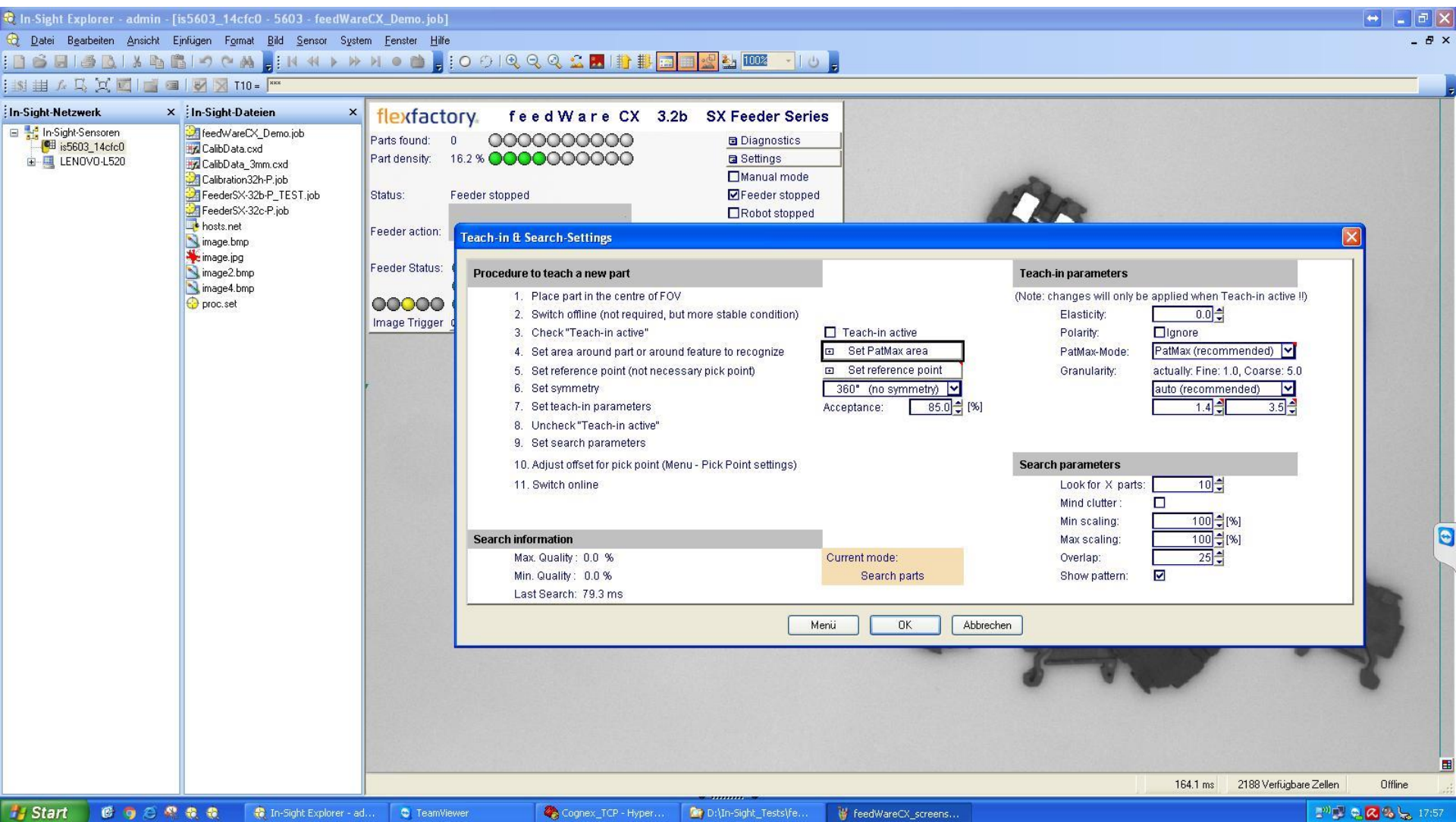
3. Basic settings



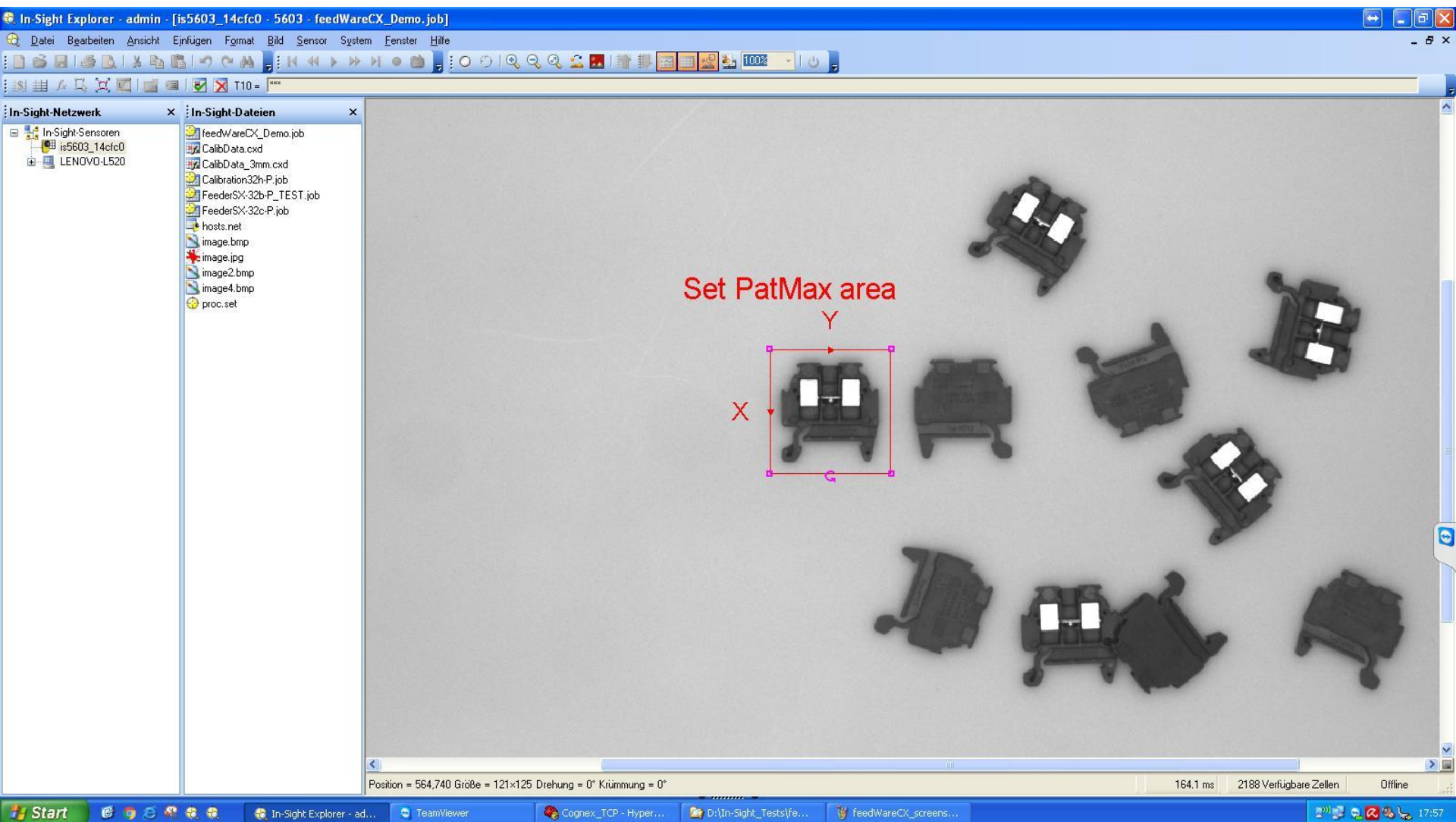
4. Settings: Teach-in



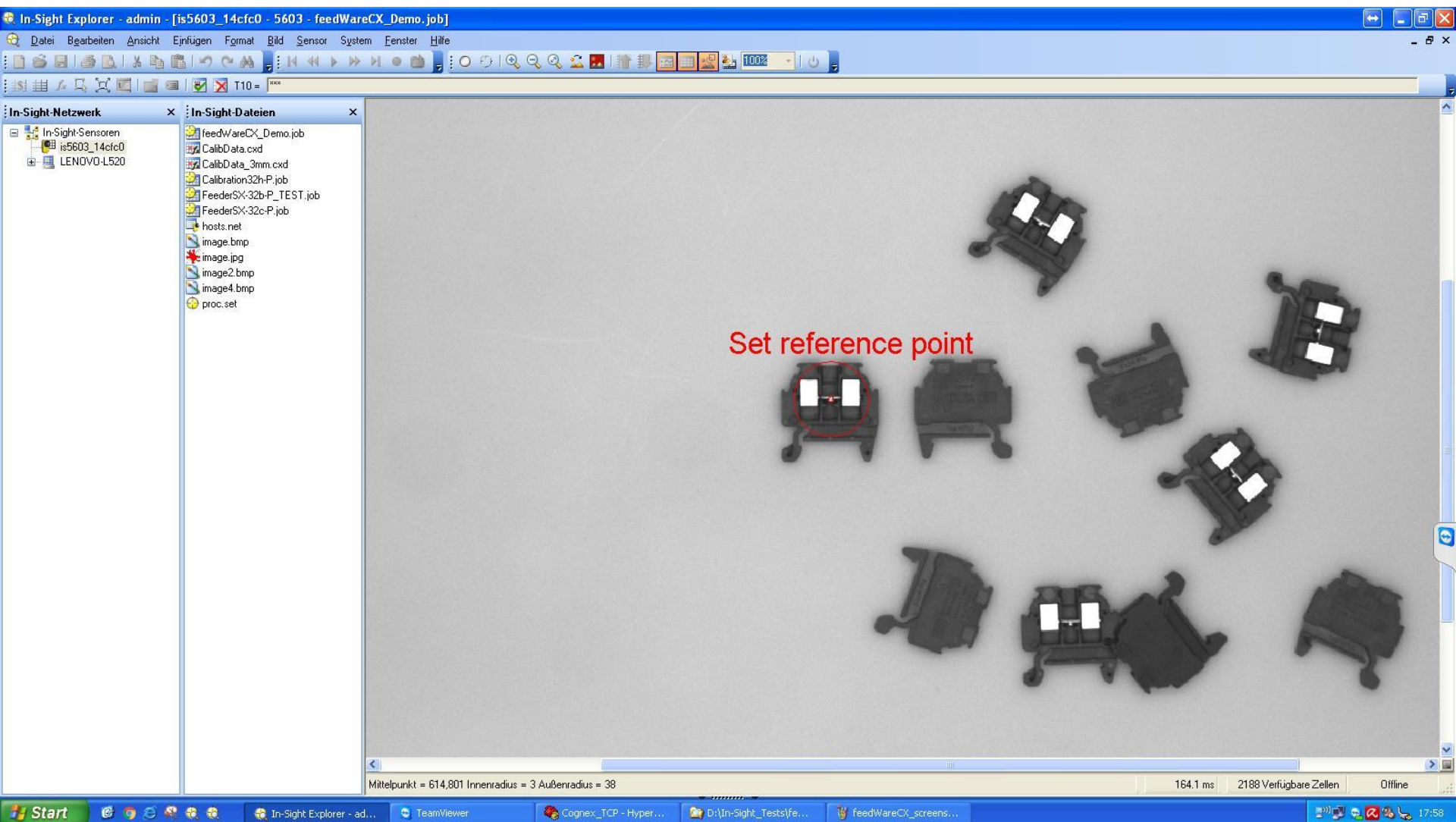
5. Teach-in menu



6. Set region around reference part



7. Set reference point



8. Execute Teach-in

In-Sight Explorer - admin - [is5603_14cfc0 - 5603 - feedWareCX_Demo.job]

flexfactory feedWare CX 3.2b SX Feeder Series

Parts found: 4
Part density: 16.2 %

Status: Feeder stopped
Teach-in active !!

Feeder action:
Feeder Status:

Teach-in & Search-Settings

Procedure to teach a new part

1. Place part in the centre of FOV
2. Switch offline (not required, but more stable condition)
3. Check "Teach-in active"
4. Set area around part or around feature to recognize
5. Set reference point (not necessary pick point)
6. Set symmetry
7. Set teach-in parameters
8. Uncheck "Teach-in active"
9. Set search parameters
10. Adjust offset for pick point (Menu - Pick Point settings)
11. Switch online

Search information

Max. Quality: 100.0 %
Min. Quality: 99.9 %
Last Search: 130.9 ms

Teach-in parameters
(Note: changes will only be applied when Teach-in active !!)

Elasticity: 0.0
Polarity: Ignore
PatMax-Mode: PatMax (recommended)
Granularity: actually: Fine: 1.0, Coarse: 3.8
1.4 3.5

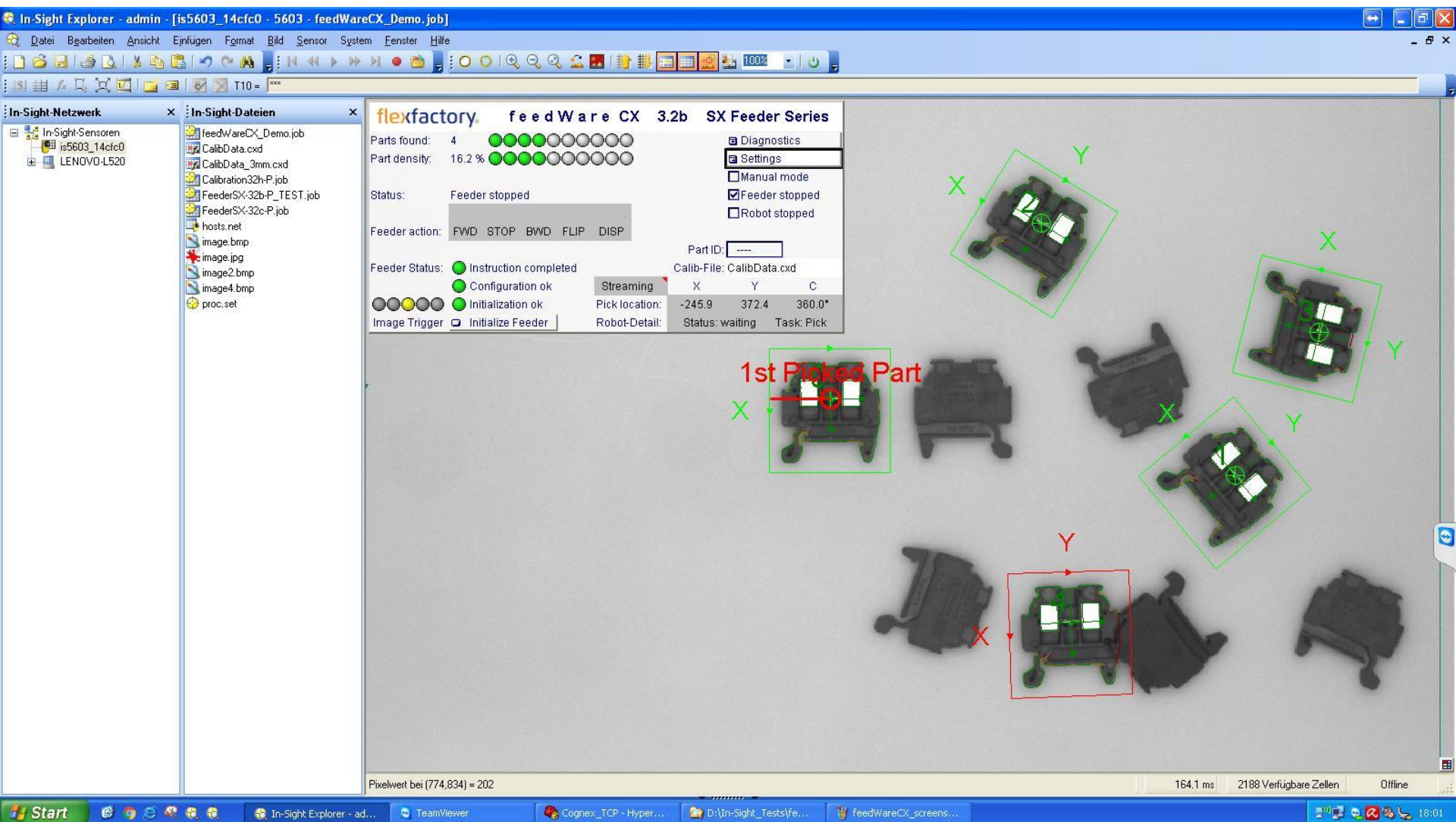
Search parameters

Look for X parts: 10
Mind clutter:
Min scaling: 100 [%]
Max scaling: 100 [%]
Overlap: 25
Show pattern:

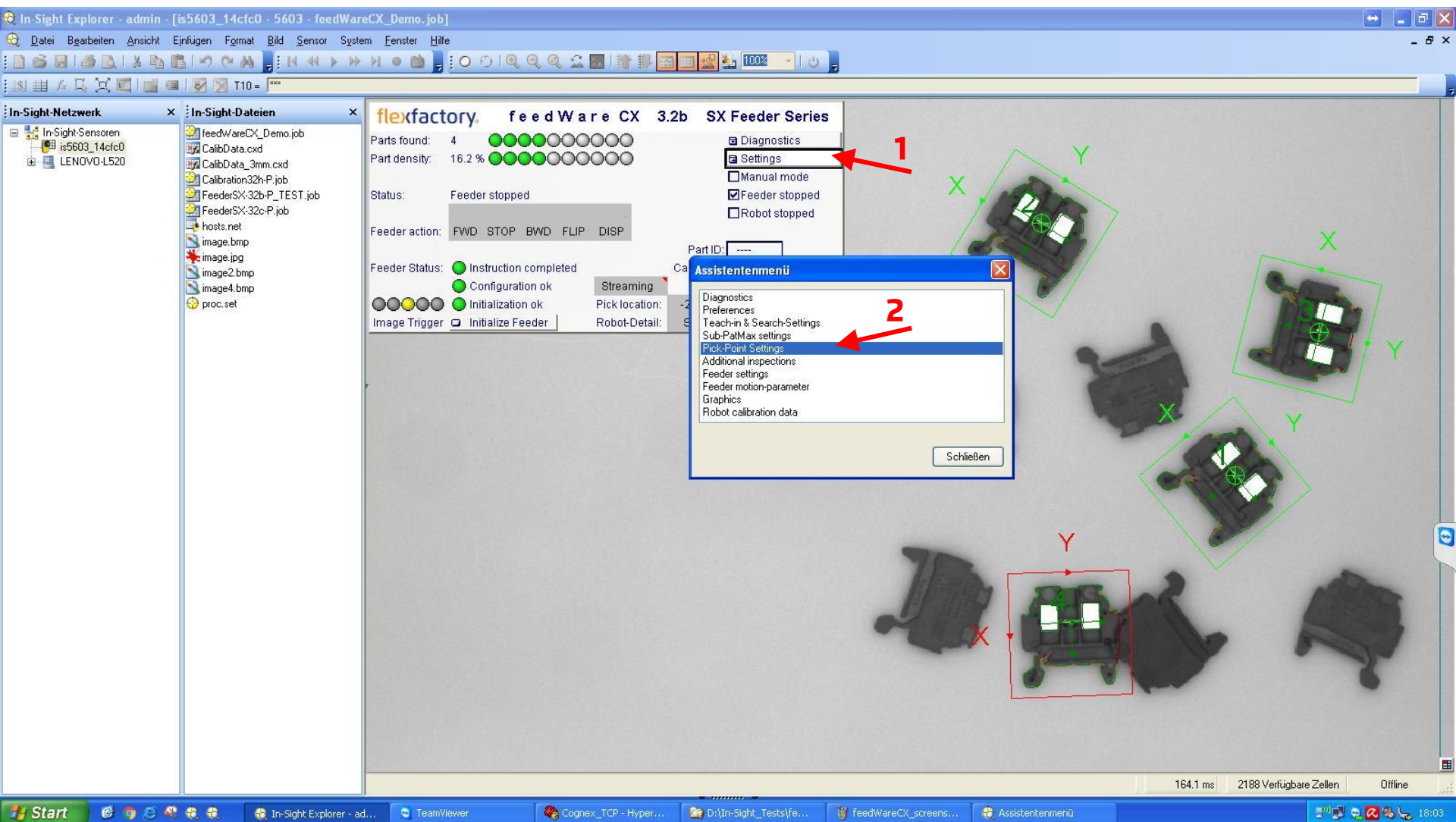
Current mode: Teach-in active

Buttons: Menü, OK, Abbrechen

9. Verify the recognition



10. Settings: Pick-Point



11. Pick-Point menu

The screenshot displays the In-Sight Explorer software interface. The main window shows a top-down view of a robot arm with several parts on a conveyor. A 'Pick-Point menu' dialog box is open in the foreground, allowing configuration of pick-point settings. The background interface includes a file explorer, a status panel for 'flexfactory feedWare CX 3.2b SX Feeder Series', and a table of pick locations.

Pick-Point Settings Dialog:

- Pick-Point Offset (relative to reference point):**
 - X-Offset: 0.00 [mm]
 - Y-Offset: 0.00 [mm]
 - C-Offset (Angle): 0.00 [°] (-180°...+180°)
 - Source for X,Y,C: Use Main-PatMax as reference
- Part-sorting method:**
 - Sorting method: Left to right
 - Set Sort-Point
- Mult-Pick Mode:**
 - Multi-Pick: When two parts are ready to pick, output both coordinates
 - Force Multi-Pick: Flip until two parts are ready to pick

Main Interface Status:

- Parts found: 4
- Part density: 16.2 %
- Status: Feeder stopped
- Feeder action: FWD STOP BWD FLIP DISP
- Feeder Status: Instruction completed, Configuration ok, Initialization ok
- Image Trigger: Initialize Feeder
- Part ID: ----
- Calib-File: CalibData.cxd
- Streaming: X Y C
- Pick location: -245.9 372.4 360.0°
- Robot-Detail: Status: waiting Task: Pick

Pick Location Table:

Streaming	X	Y	C
<input checked="" type="checkbox"/>	-245.9	372.4	360.0°

12. Adjust Pick-Point offset

The screenshot displays the In-Sight Explorer interface for a flexfactory feedWare CX 3.2b SX Feeder Series. The main window shows a top-down camera view of the feeder with several parts. A red circle and crosshair mark the '1st Picked Part'. A 'Pick-Point Settings' dialog box is open, showing the following configuration:

- Pick-Point Offset (relative to reference point)**
 - X-Offset: 4.20 [mm] (indicated by a red arrow)
 - Y-Offset: 0.00 [mm]
 - C-Offset (Angle): 90.00 [°] (-180°...+180°)
 - Source for X,Y,C: Use Main-PatMax as reference
- Part-sorting method**
 - Sorting method: Left to right
 - Set Sort-Point:
- Multit-Pick Mode**
 - Multi-Pick: When two parts are ready to pick, output both coordinates
 - Force Multi-Pick: Flip until two parts are ready to pick

The background interface includes a file explorer on the left, a status panel with 'Parts found: 4' and 'Part density: 16.2%', and a pick location table:

Part ID	X	Y	C
Streaming	-238.7	370.8	90.0°

13. Additional inspections

The screenshot displays the In-Sight Explorer software interface. The main window shows a top-down view of a robot arm with several parts. A red box highlights one part, and a green box highlights another. A red arrow labeled '1' points to the 'Settings' option in the 'Diagnostics' menu. A second red arrow labeled '2' points to the 'Additional inspections' option in the 'Assistentenmenü' dialog box. The 'Assistentenmenü' dialog box is open, showing a list of options: Diagnostics, Preferences, Teach-in & Search-Settings, Sub-PatMax settings, Pick-Point Settings, Additional inspections (highlighted), Feeder settings, Feeder motion-parameter, Graphics, and Robot calibration data. The 'Schließen' button is at the bottom right of the dialog box. The background interface shows 'flexfactory feedWare CX 3.2b SX Feeder Series' with various status indicators and controls.

14. Activate 'Clear-grip' inspection

The screenshot displays the In-Sight Explorer software interface. The main window shows a top status bar with 'flexfactory feedWare CX 3.2b SX Feeder Series'. Below this, it indicates 'Parts found: 4' and 'Part density: 16.2%'. The 'Feeder action' is 'FWD_STOP BWD FLIP D' and 'Feeder Status' includes 'Instruction completed', 'Configuration ok', and 'Initialization ok'. The 'Image Trigger' is set to 'Initialize Feeder'. A red arrow points to the 'Inspection active' checkbox in the 'No 1: Clear-grip' section of the 'Additional inspections' dialog box.

Additional inspections

====> Important: Apply settings always at '1st Picked Part' !!!

Inspection Type	Inspection active	Set region	Threshold	Apply region
No 1: Clear-grip	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>
No 2: Clear-grip	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>
No 3: Clear-grip	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>
No 4: Clear-Grip	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>
No 5: Contrast	<input type="checkbox"/>	<input checked="" type="checkbox"/>	25	<input checked="" type="checkbox"/>
No 6: Contrast	<input type="checkbox"/>	<input checked="" type="checkbox"/>	25	<input checked="" type="checkbox"/>

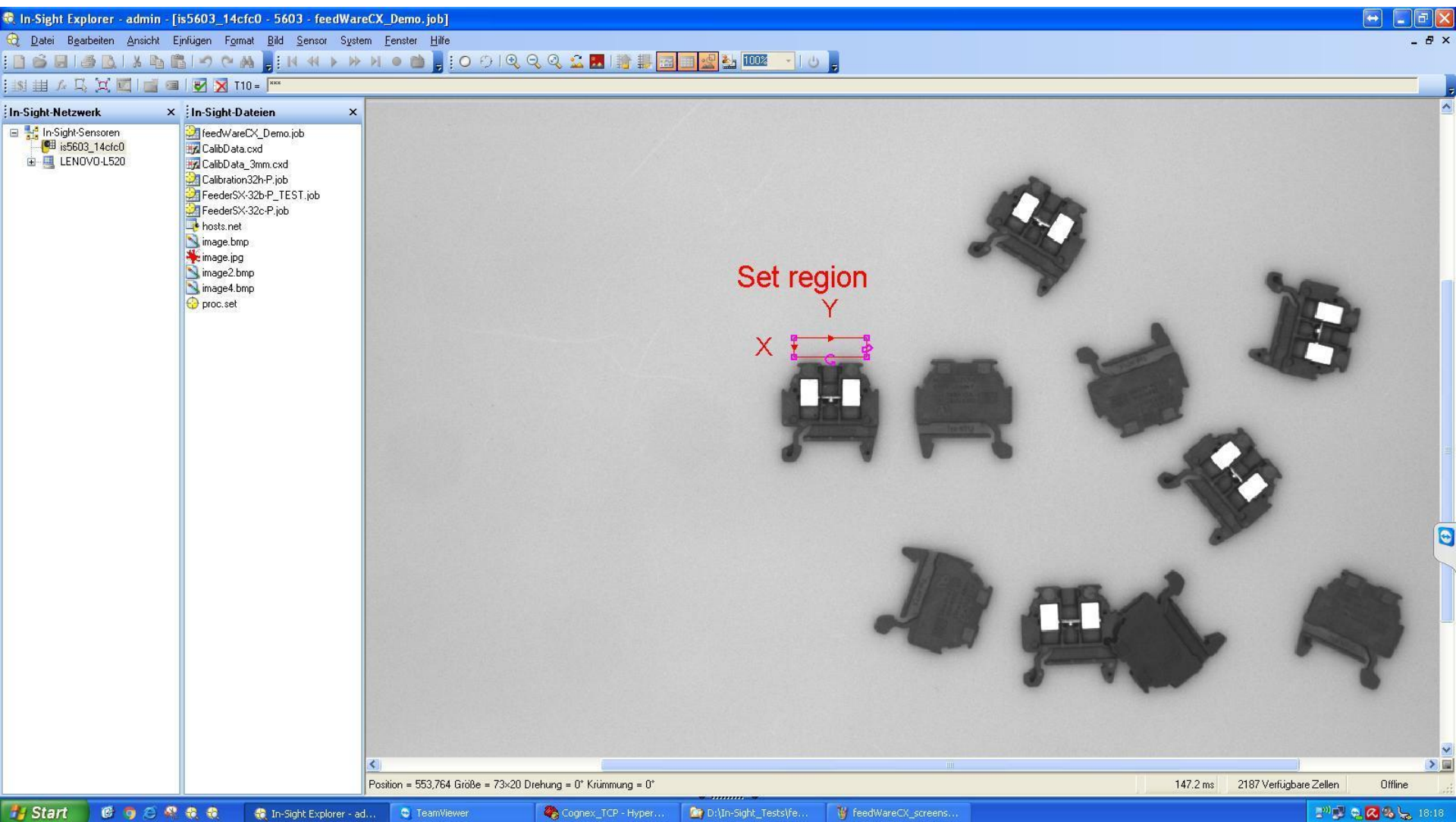
Directions

Region: First set the region at the '1st Picked Part' and hit Return, then click 'Apply region' to activate the change

Threshold: For Clear-Grip: Sets the coverage in %, above which the region is considered as 'not free'
For others: Sets the limit for the inspection to be fulfilled

Buttons: Menü, OK, Abbrechen

15. Set Clear-grip region



16. Apply region (reference to part)

The screenshot displays the In-Sight Explorer software interface. The main window shows a top view of a conveyor belt with several car parts. A configuration window titled "Additional inspections" is open in the foreground. The window contains a yellow warning banner: "====> Important: Apply settings always at '1st Picked Part' !!!". Below this, there are six inspection settings, each with a "Set region" dropdown, a "Threshold" input field, and an "Apply region" checkbox. A red arrow points to the "Apply region" checkbox for "No 1: Clear-grip".

flexfactory feedWare CX 3.2b SX Feeder Series

Parts found: 4
Part density: 16.2 %

Status: Feeder stopped

Feeder action: FWD STOP BWD FLIP D

Feeder Status: Instruction completed
 Configuration ok
 Initialization ok

Image Trigger Initialize Feeder

Additional inspections

====> Important: Apply settings always at '1st Picked Part' !!!

Inspection No.	Inspection Name	Inspection active	Set region	Threshold	Apply region
No 1	Clear-grip	<input checked="" type="checkbox"/>	[Set region]	[1]	<input checked="" type="checkbox"/>
No 2	Clear-grip	<input type="checkbox"/>	[Set region]	[1]	<input type="checkbox"/>
No 3	Clear-grip	<input type="checkbox"/>	[Set region]	[1]	<input type="checkbox"/>
No 4	Clear-Grip	<input type="checkbox"/>	[Set region]	[1]	<input type="checkbox"/>
No 5	Contrast	<input type="checkbox"/>	[Set region]	[25]	<input type="checkbox"/>
No 6	Contrast	<input type="checkbox"/>	[Set region]	[25]	<input type="checkbox"/>

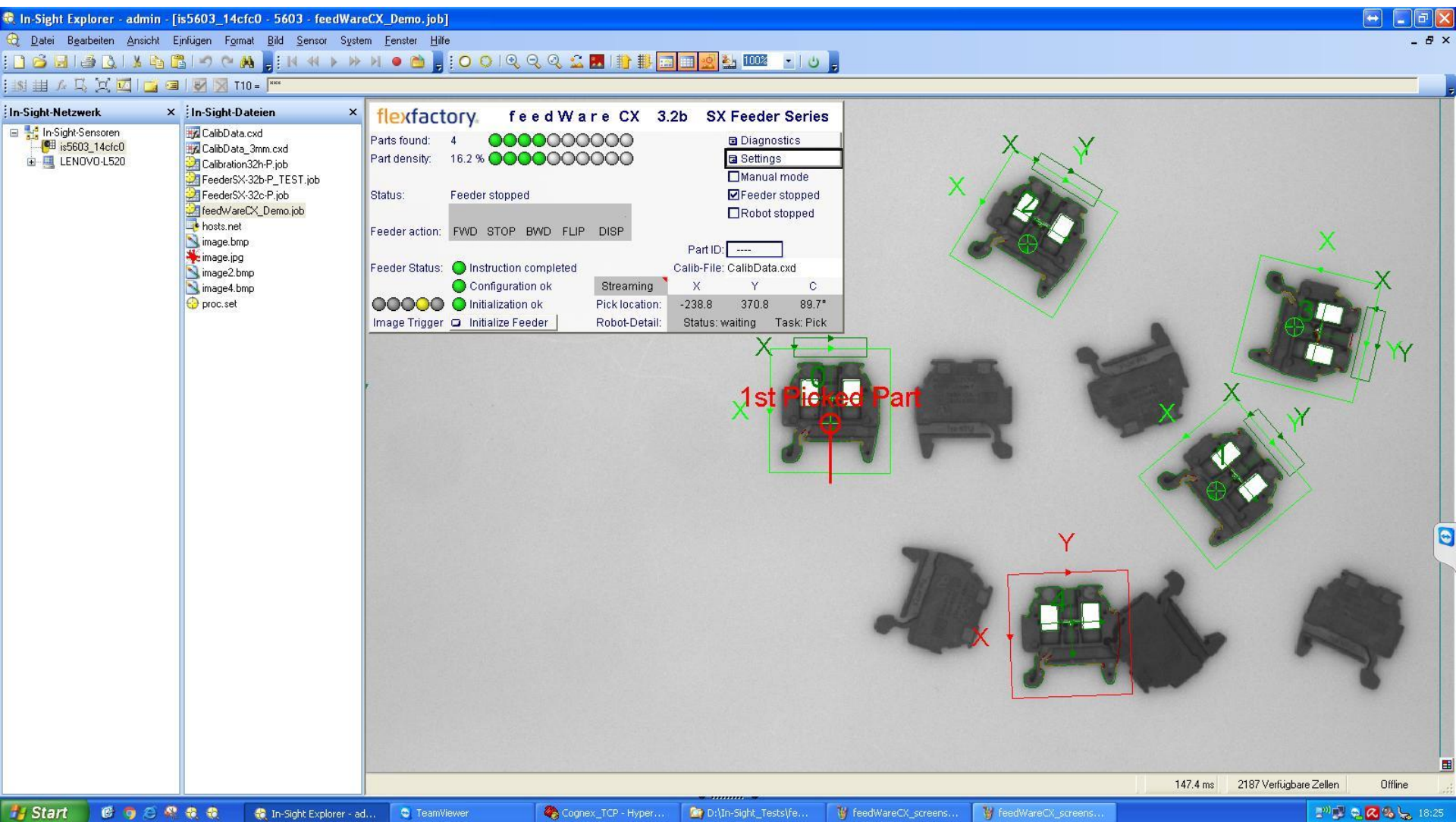
Directions

Region: First set the region at the '1st Picked Part' and hit Return, then click 'Apply region' to activate the change

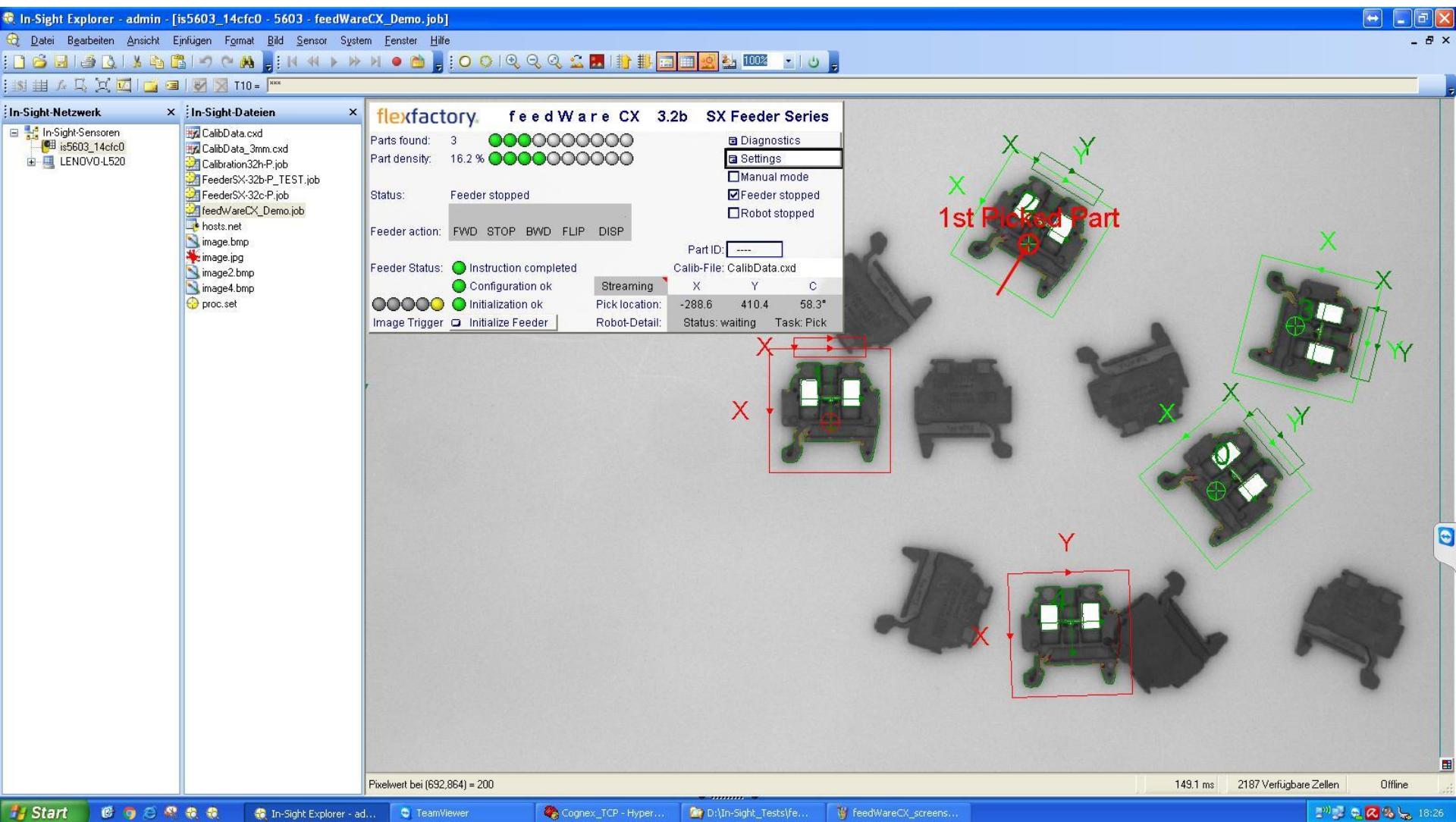
Threshold: For Clear-Grip: Sets the coverage in %, above which the region is considered as 'not free'
For others: Sets the limit for the inspection to be fulfilled

Buttons: Menü, OK, Abbrechen

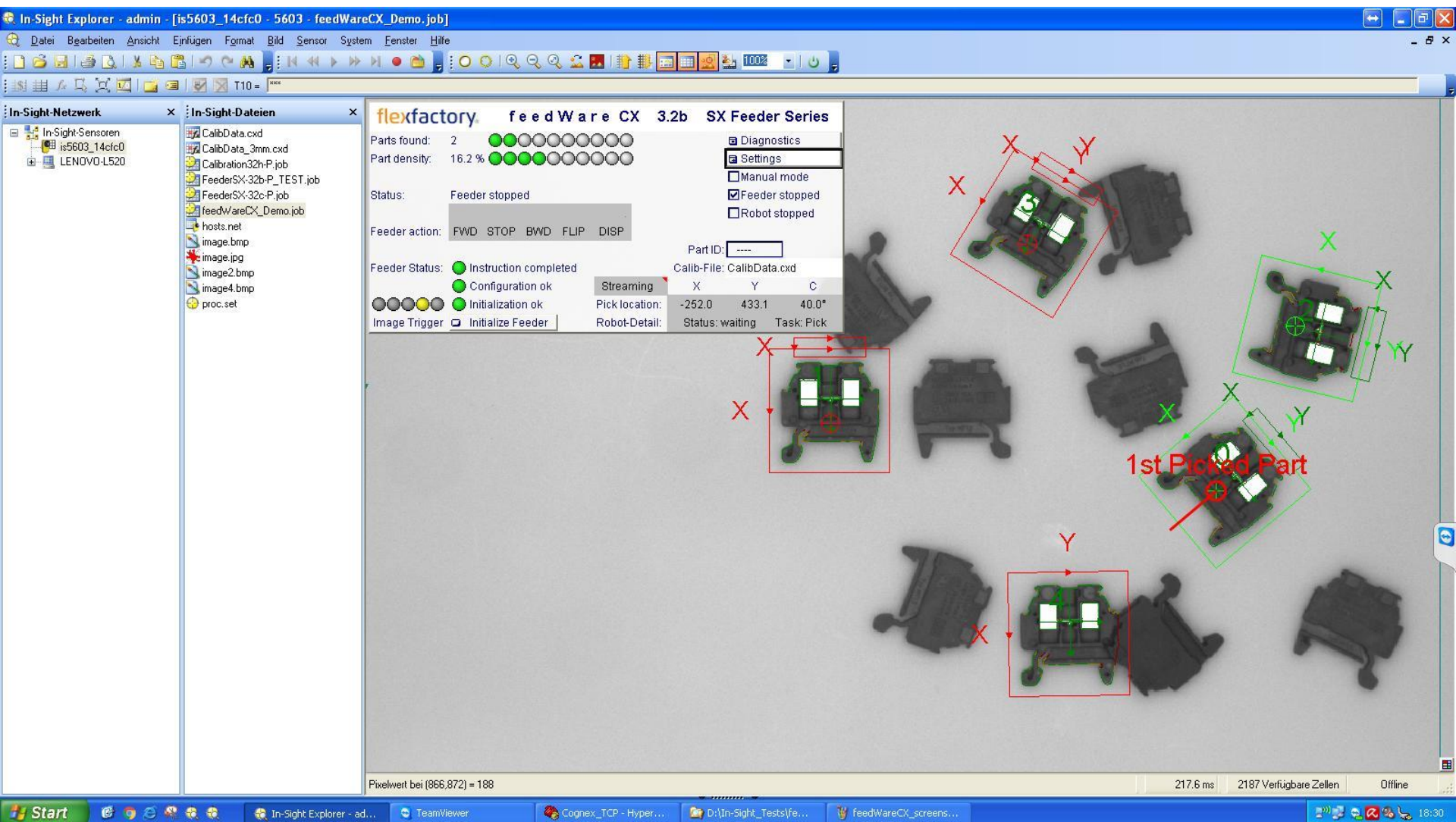
17a. Test Clear-grip area



17b. Test Clear-grip area



17c. Test Clear-grip area



18. Set more Clear-grip areas

The screenshot displays the In-Sight Explorer software interface for a flexfactory feedWare CX 3.2b SX Feeder Series. The interface is divided into several sections:

- Left Panel (In-Sight-Netzwerk / In-Sight-Dateien):** Lists network devices and files, including calibration data (CalibData.cxd) and job files (FeederSX-32b-P_TEST.job, FeederSX-32c-P.job, feedWareCX_Demo.job).
- Top Panel (flexfactory feedWare CX 3.2b SX Feeder Series):** Shows system status and controls.
 - Parts found: 2 (indicated by 2 green circles)
 - Part density: 16.2% (indicated by 16.2% green circles)
 - Status: Feeder stopped
 - Feeder action: FWD STOP BWD FLIP DISP
 - Feeder Status: Instruction completed, Configuration ok, Initialization ok
 - Image Trigger: Initialize Feeder
 - Part ID: ----
 - Calib-File: CalibData.cxd
 - Streaming: X Y C
 - Pick location: -252.0 433.1 40.0°
 - Robot-Detail: Status: waiting Task: Pick
- Main View:** A top-down camera view of the feeder mechanism. Several dark, curved parts are visible. Red and green bounding boxes and coordinate axes (X, Y) are overlaid on the parts, indicating clear-grip areas for the robot's gripper. One part is specifically labeled "1st Picked Part" in red.
- Bottom Panel:** Displays technical data: Pixelwert bei (907,813) = 207, 151.9 ms, 2187 Verfügbare Zellen, and Offline status.

19b. Verify all

The screenshot displays the In-Sight Explorer software interface for a flexfactory feedWare CX 3.2b SX Feeder Series. The interface is divided into several sections:

- Top Bar:** Shows the application name "In-Sight Explorer - admin - [is5603_14cfc0 - 5603 - feedWareCX_Demo.job]" and standard Windows menu options like "Datei", "Bearbeiten", "Ansicht", etc.
- Left Panel:** Contains two tree views: "In-Sight-Netzwerk" (network) and "In-Sight-Dateien" (files). The files list includes calibration data (.cxd), job files (.job), and image files (.bmp, .jpg).
- Central Control Panel:** Displays system status and configuration for the "flexfactory feedWare CX 3.2b SX Feeder Series".
 - Parts found:** 3 (indicated by 3 green circles).
 - Part density:** 16.2% (indicated by 16.2% green circles).
 - Status:** Feeder stopped.
 - Feeder action:** FWD STOP BWD FLIP DISP.
 - Feeder Status:** A row of status indicators: Instruction completed (green), Configuration ok (green), Initialization ok (green), and Image Trigger (Initialize Feeder button).
 - Part ID:** ---
 - Calib-File:** CalibData.cxd
 - Streaming:** X Y C
 - Pick location:** -200.0 331.7 63.0°
 - Robot-Detail:** Status: waiting, Task: Pick
- Right Panel:** Shows a top-down view of the feeder with several parts. Each part is enclosed in a green bounding box with "X" and "Y" coordinates. One part is highlighted with a red bounding box and labeled "1st Picked Part".
- Bottom Bar:** Displays system performance metrics: "229.8 ms", "2187 Verfügbare Zellen", and "Offline".

20. Save and done.

Ready to pick up parts with the robot

The recognition for this product is now set up and the camera-job can be saved to the corresponding file name.