LPX-1200 and LPX-250 Laser Scanners

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- 3D Scanning Technology
- 3D Scanning Process
- Hardware Features
- Software Features
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3D Scanning technology

- 2D hardware and software have changed how documents are created and stored
- 3D hardware and software are *changing* how models are created, edited, and stored

2D

Scan Design/Edit/Archive Print

3D

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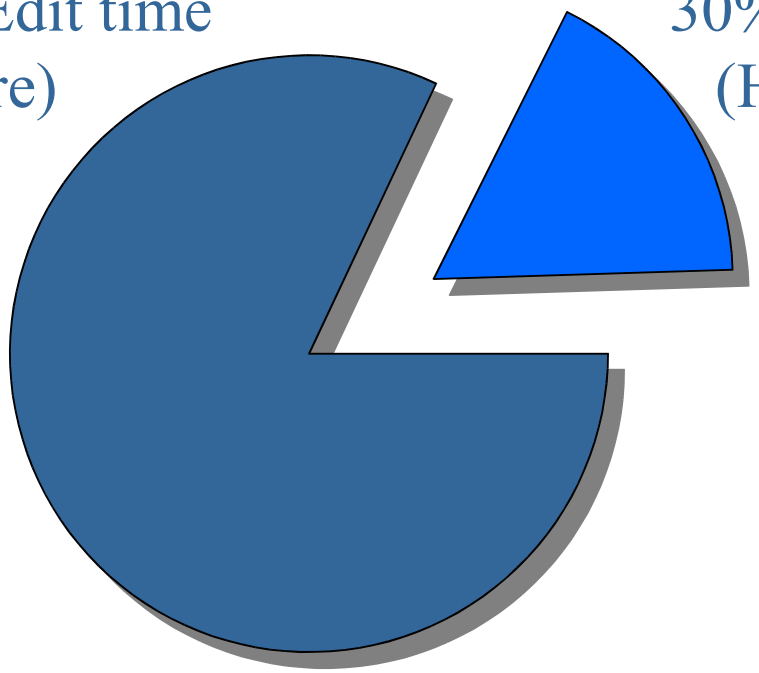
Scanning process

- **Scan model (hardware):**
  - Position in machine
  - Set up scan
  - Scan model
- **Basic scan data processing (software):**
  - Smooth model surface/delete spikes
  - Register/Merge scans into a single model
  - Close holes, refine model details
- **Advanced scan data editing (software):**
  - Decimate (reduce vertices/file size)
  - Modify faces
  - Sharpen edges
  - De-feature (remove unwanted items)
  - Define patches on faces

Scan process task/time

70% Process/Edit time
(Software)

30% Scan time
(Hardware)



Product features

LPX-1200

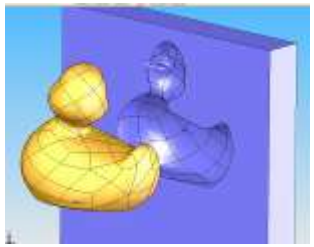
- **LPX-1200**
- **High productivity**
  - .004 scan resolution
  - Cleaner scan input, less processing time
  - Smooth / merge surfaces, decimate model
  - **Includes Pixform Pro** for advanced editing

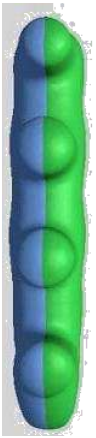
LPX-250

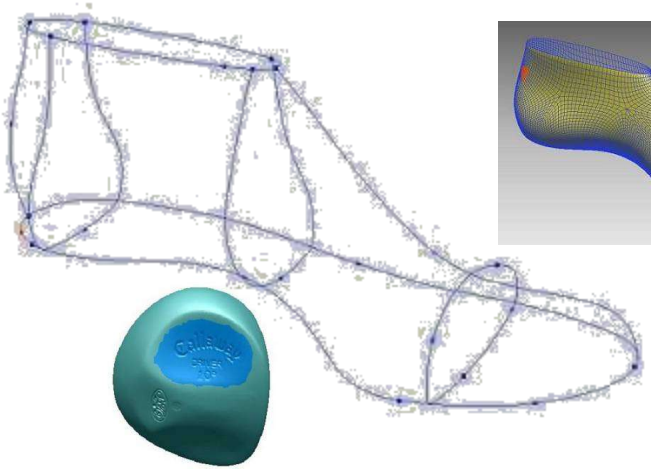
- **LPX-250**
- **High value**
  - .008 scan resolution
  - **Includes Pixform** software to smooth/merge surfaces and decimate model

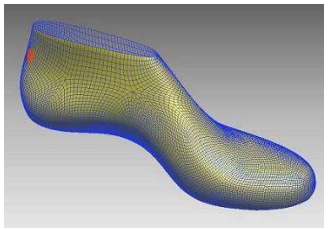
Pixform Pro Software included with LPX-1200

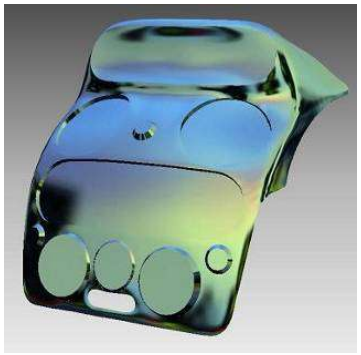
- **Advanced editing tools include:**
  - Delete features from scan data
  - Sharpen edges of scanned model
  - Add thickness/create shell
  - Mirroring/copying to create symmetrical objects
  - Create curves and edges from surfaces
  - Manually edit auto-surfaced models
  - Manual sub-surface control











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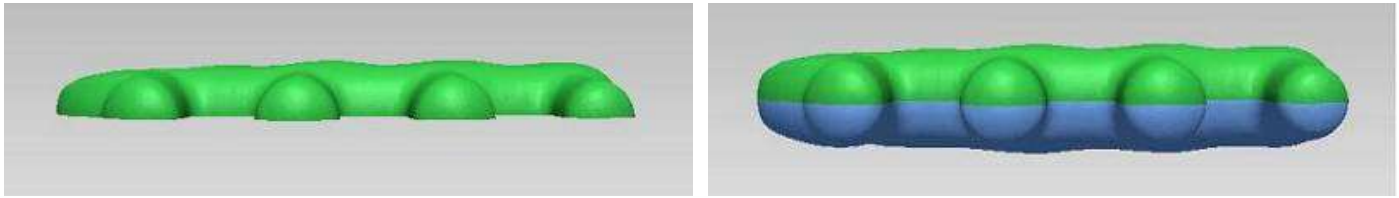
Pixform Pro/ LPX-1200 features

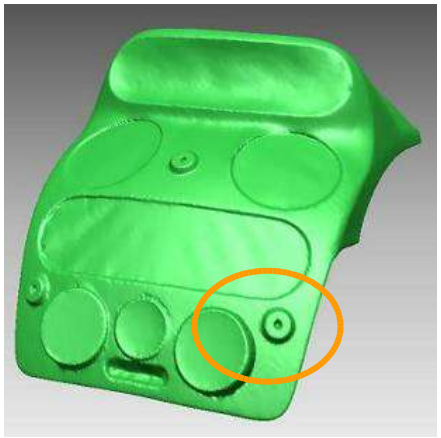
Delete features from scanned model

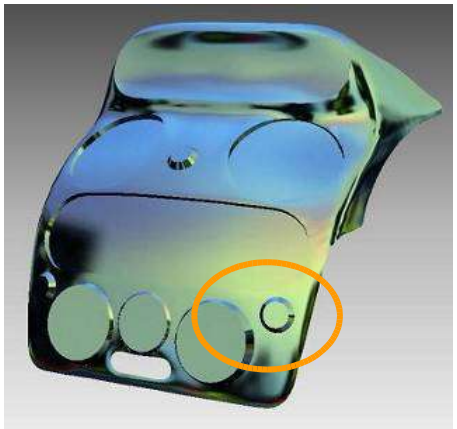
Mirroring/Copy to create symmetrical objects

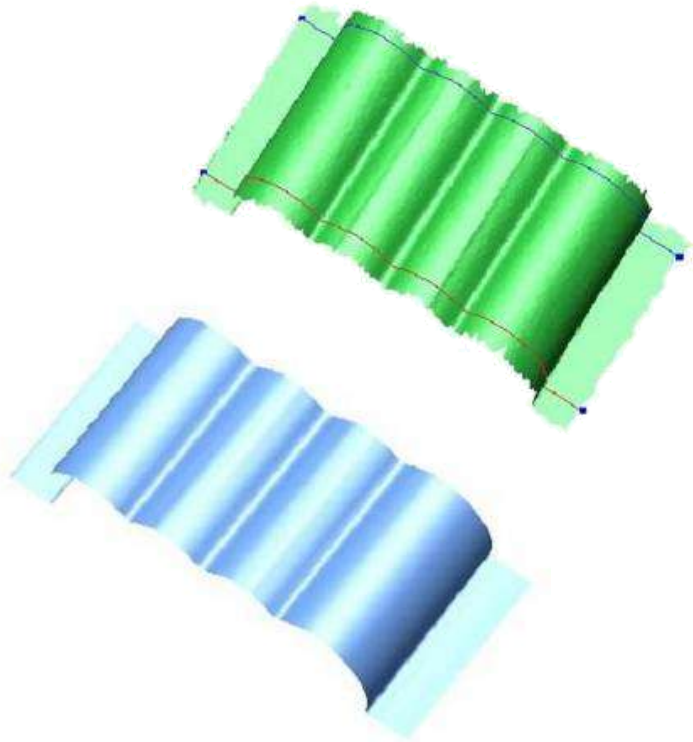


Pixform Pro/ LPX-1200 features

Construct a surface from polygon scan data.
Smooth faces, sharpen edges







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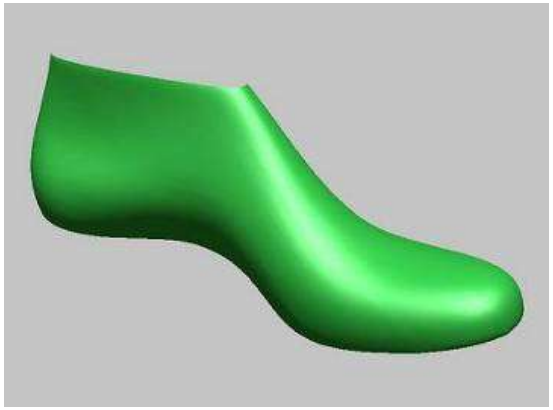
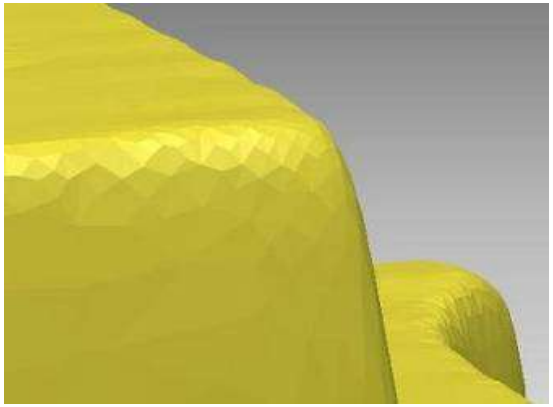
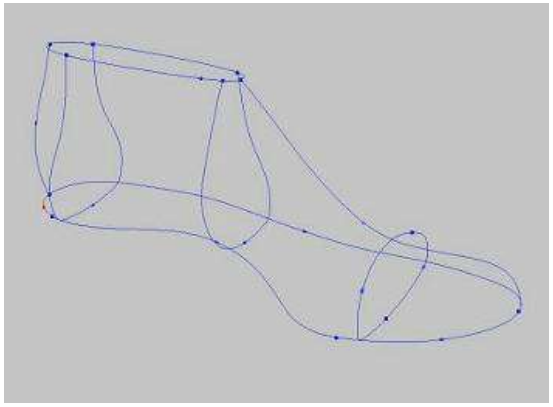
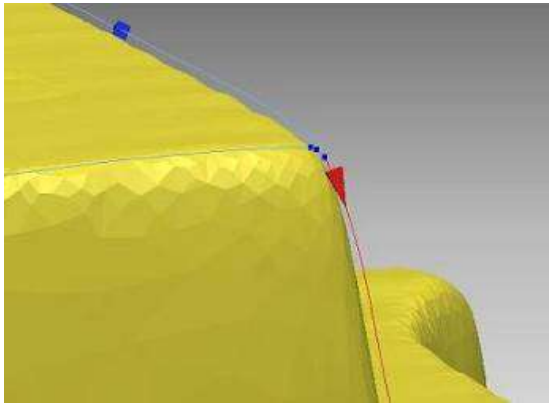
Pixform Pro/ LPX-1200 features

Create curves from surfaces for use in CAD software



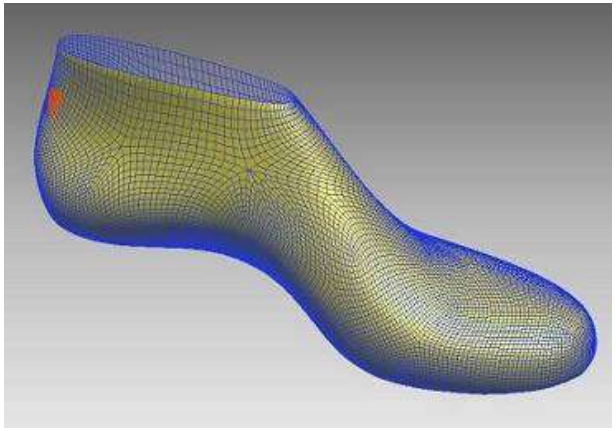


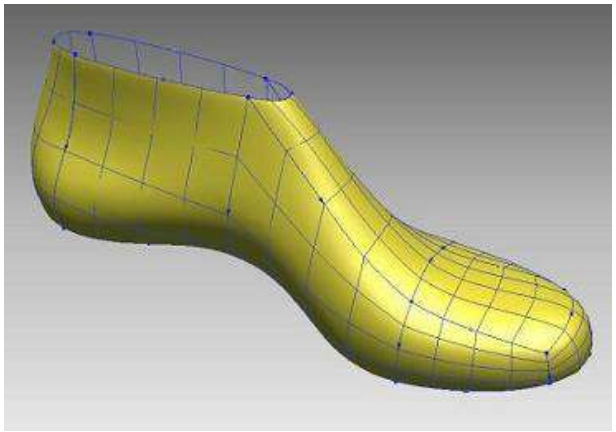


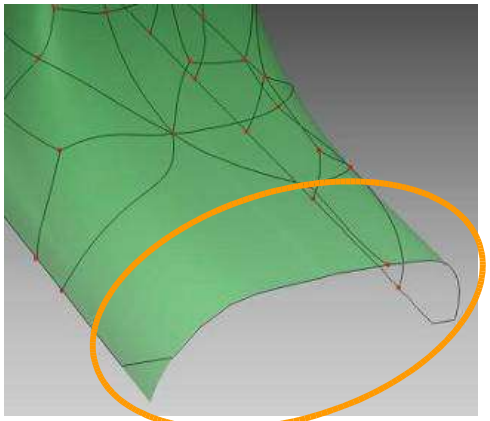


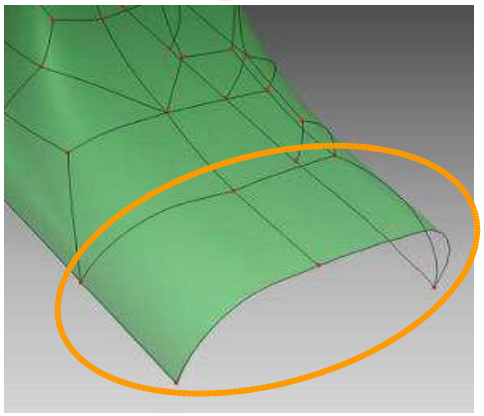
Pixform Pro/ LPX-1200 features

Auto Surfacing & Manual Sub-Surface editing









User examples

- Blister packaging
- Scanned data imported into CAD software
- 3D data archiving
- Create 3D data from scanned objects

User example: Blister Packaging

- Products are scanned with LPX-250
- Scan of product used to create mold for blister pack
- Reduces turn around time and quotation costs
- Scanned data is electronically archived to use again in future projects

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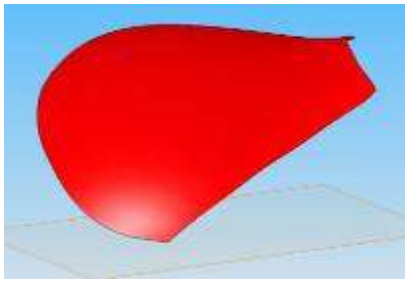
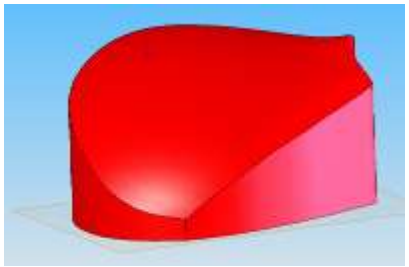
User example: Scan to CAD

- Requires clean, high resolution model data
- Advanced editing tools used to sharpen edges, define model faces and create curves from surfaces to use in CAD application
- Scanned/edited surfaces and 3D models import into CAD application using IGES format

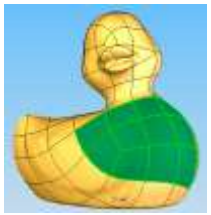
Example One: Scanned surface imported into CAD software as an IGES file.



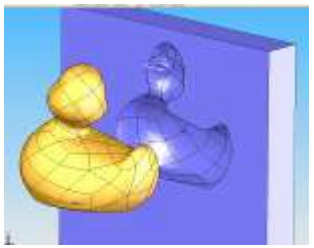
Using CAD software, surface edges copied to new sketch and extruded into a model feature



Example two: Scanned toy surfaces merged and edited in Pixform Pro



IGES file imported into CAD software. Solid model used to create mold cavity



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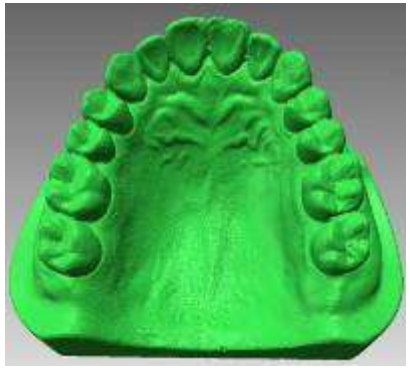
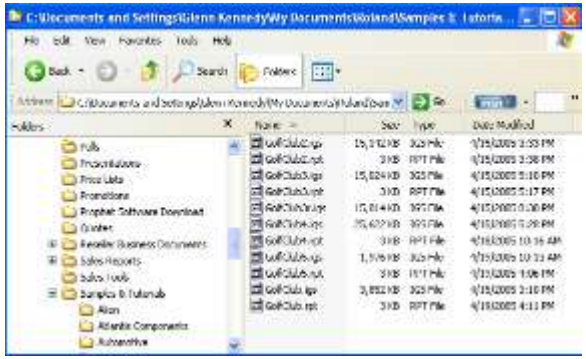
User example: Dental Archive

- **Dental offices and service bureaus**
  - Scan plaster models and archive electronically
  - Saves records electronically for future reference
  - Eliminates warehouse space for plaster castings
  - Fast throughput supports large daily volume of models

Scan plaster model

3D model archived electronically





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User example:
Rapid prototype users and service bureaus

- 3D data required to produce 3D parts but 3D CAD models are not always available
- Why model an item when you can scan and print to 3D?
- Scan existing geometry, modify (scale, mirror, delete/add features then create RP parts




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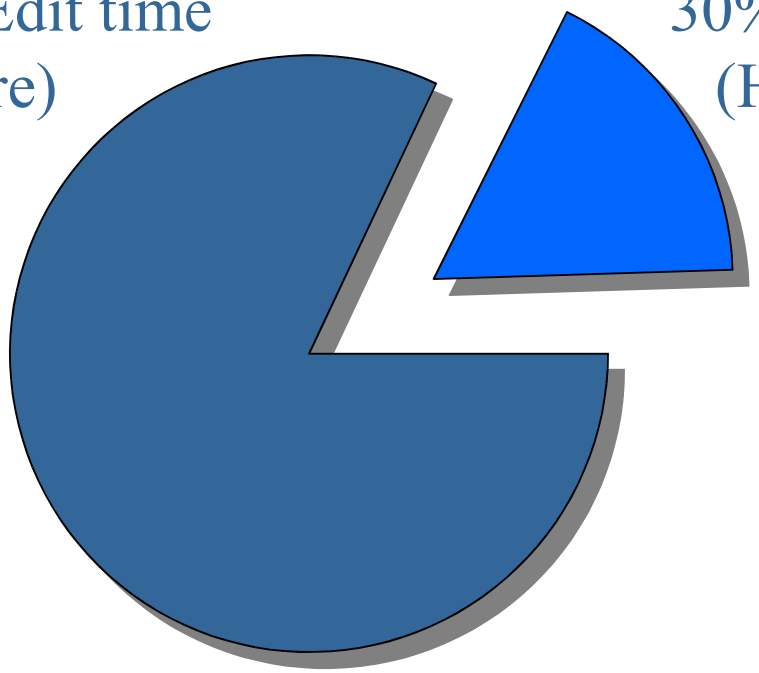
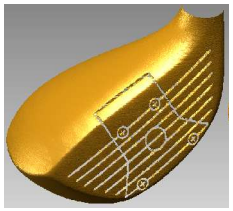
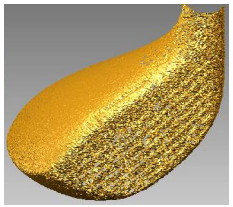
Scan process task/time

70% Process/Edit time
(Software)

30% Scan time
(Hardware)



Scan process time vs. labor cost

	Scan Model + Process Data = Total Time			**Labor Cost***
LPX-1200			1.5 hr + 1.75 hrs = 3.35 hrs	 **$90**
LPX-250			1.5 hr + 3.5 hrs = 5.00 hrs	 **$160**

*Assume .5 hr set up time plus software process time at $40/hr burdened labor cost

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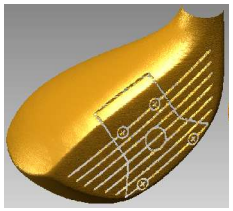
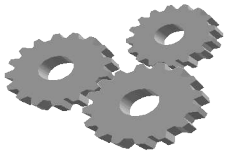
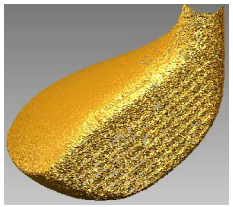
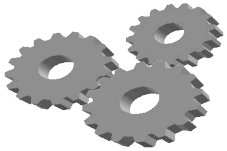
Processing time vs. productivity

	Scan Model	+	Process Data	=	Total Time	Scans/Day*
LPX-1200						
	1.5 hr	+	1.75 hrs	=	3.35 hrs	**2.4**
LPX-250						
	1.5 hr	+	3.5 hrs	=	5.00 hrs	**1.6**

*Assume 8 hour work day

Return on investment

Model	Cost	Scan time/hrs	Labor cost/hr	Labor cost/scan
LPX-1200	$21,995	2.35	$40.00	$94.00
LPX-250	$9,995	4.00	$40.00	$160.00
	$12,000			$66.00 savings/scan

- $66.00 labor savings per scan project
- $12,000/66=181 scan projects to break even
- 2.4 scan projects per day= 75 days to recover extra cost of LPX-1200

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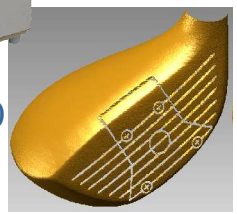
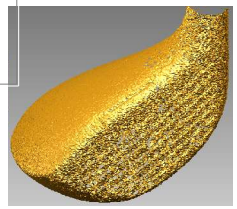
Conclusion

LPX-1200



- **LPX-1200**
- **MSRP: $21,995**
- **High productivity**
  - .004 scan resolution
  - Cleaner scan input, less processing time
  - Smooth / merge surfaces, decimate model
  - **Includes Pixform Pro** for advanced editing

LPX-250



- **LPX-250**
- **MSRP: $9,995**
- **High value**
  - .008 scan resolution
  - Smooth / merge surfaces, decimate model

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