HYPERTHERM ASSOCIATES™

Plate Saver™ technology for XPR™

White paper

Introduction

Plasma cutting thick plate 0.5 – 1.25 in. (12 – 32 mm) requires increased lead-in lengths and therefore increased part spacing, causing decreased plate utilization and less usable plate remnants and skeletons, compared to cutting thinner plates. As such, shorter lead-ins are preferred to reduce plate scrap.

The longer lead-ins are required to establish cutting and provide space for the pierce and pierce puddle, so they do not interfere with the part itself.

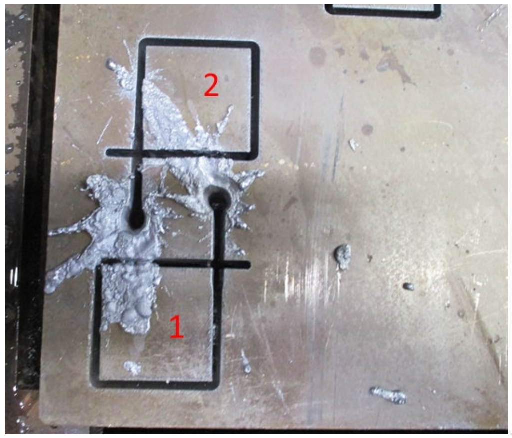
Further, the longer the leads are on a part, the more space is needed between parts, so the leads and pierce do not affect adjacent parts.

Using standard leads introduces another concern: Pierce puddle locations tend to lack predictability. Without knowing where a pierce puddle will be, the cutting torch head may crash into the solidified pierce puddle or plate, and the edge quality of a part may be poor.

Plate Saver™ technology addresses these issues by using a shorter dog-leg style lead, moving lead locations such that plate edge or skeleton is impacted rather than pending cuts, and using smaller spacing values compared to standard nests.

SureCut™

Figure 1 – Using traditional leads, the pierce puddles have negatively impacted adjacent parts (1 and 2), reducing part quality



The Hypertherm XPR® Power Supply includes an Advanced arc stability feature, which quickly stabilizes the plasma torch arc and enables shorter lead-ins to establish the cut. Used with the XPR, the Plate Saver process strategically places the specially designed exterior leads, positioning the pierce such that the pierce puddle avoids impacting another part. Additionally, parts with Plate Saver leads are nested initially without regard to leads, and then Plate Saver leads are positioned on the part with a directed moving pierce and shortened lead length.

This process allows for closer part spacing, providing:

- better material utilization and thereby more parts per plate and reduced cost per part,
- reduced setup time required for loading and unloading additional plates, and reduced scrap.

In Hypertherm's ProNest® nesting software, using Plate Saver leads is a quick and automated process, requiring little to no additional work for the user, aside from installing the machine setup and updating the ProNest software to version 14.2.0 or later. Hypertherm provides an updated machine setup, which includes adjustments to the Exterior Leads and Process Parameters Spreadsheets, along with the Plate Saver style lead macros. Once the Plate Saver leads are applied to a part (automatically during part import or manually in Advanced Edit), ProNest will automatically apply the technology to the nest.

Plate Saver parts may be nested with parts that use traditional leads or have other technologies applied, such as bevel or True Hole™. While Plate Saver leads may exist on a beveled part, applying pass profiles for the bevel will replace the Plate Saver lead-ins with bevel lead-ins.

Summary

Plate Saver technology does the following:

- Uses shortened lead lengths due to rapid XPR torch stabilization, allowing closer placement of parts.
- Directs the pierce puddle away using a moving pierce, thereby reducing the impact on pending cuts and allowing the pierce point to be closer to pending cuts.
- Places leads to maximize the distance between pierce-to-part and pierce-to-adjacent parts.

Benefits

Compared to using industry standard lead styles, using Plate Saver leads:

- Improve nest utilization and cost savings, by strategically positioning parts closer together and using Plate Saver shorter lead lengths.
- Helps create better cut parts, by using a moving pierce and directing the pierce puddle away from uncut parts and toward the plate edge when possible.

Figure 2 – Sample cut showing results from nesting with standard leads (left of the dashed line) compared to Plate Saver leads (right of the dashed line). Skeleton with Plate Saver leads highlights reduced scrap around parts

Minimum System Requirements

Using Plate Saver requires ProNest version 14.1.0 and an EDGE® Connect CNC system running Phoenix® version 10.18.1 or later. A Plate Saver machine setup is required, and a Plate Saver class needs to be applied to a part.

Plate Saver is supported for plasma cutting with an XPR power source on 0.5 – 1.25 in. (12 – 32 mm) mild steel material (exact thicknesses vary by amperage).

Table 1 – Supported class amperages and material thicknesses

Amperage	Thickness
130 A, 220 A	0.5 – 0.75 in. (12 – 20 mm)
170 A	0.5 – 1.25 in. (12 – 32 mm)
300 A	0.625 – 1.00 in. (16 – 26 mm)

Limitations, Equipment, and Safety Hazards

Plate Saver technology uses a moving pierce, and using this technique results in a "rooster tail" of molten material and hot gases that can cause personal injury, damage to equipment, and fires if proper precautions are not taken. Guards may be required to protect operators and to prevent the molten material from reaching any flammable materials (flammable materials should be kept away from plasma cutting operations). Moving pierce direction should be planned such that the molten material is not directed at the lifter, gantry, adjacent torches, controller, or other sensitive equipment. Molten material accumulated on the plate can impact subsequent cutting paths, so you may be required to either carefully plan cutting paths that avoid the slag pile or to stop the cutting process (after the arc has penetrated the plate) to scrape the slag pile from the plate.

A low line voltage condition to the XPR power source may impact the Plate Saver piercing operation in some situations resulting in a 620 "Arc stretch detected" alert and failure to complete the pierce. If this condition occurs, temporarily disabling the XPR ramp down error prevention (RDEP) function should resolve this. Note that disabling RDEP may result in reduced consumable life and should be re-enabled as soon as possible.

When cutting a large series of small 2 in.^{2} (50 mm^2) parts, there is a potential accumulation of a slag buildup on the torch tip that may need to be flicked off to avoid affecting auto height control.

Limitations in ProNest

While Plate Saver parts can be nested with other parts that do not use Plate Saver technology, some limitations apply when attempting to use Plate Saver technology on the same part when other part modifications are present.

The following modifications are not compatible on parts that use Plate Saver technology:

- Bevel
- Common line cut
- Open profiles

Additionally, Part Separation should not be modified because the Plate Saver part separation values are dialed in for supported thicknesses, which are embedded in the technology.

Terminology

Puddle Jump Height is the height of the torch above the workpiece at which the torch travels after the pierce but before lowering to the Cut Height. Puddle Jump Height allows the torch to clear the top dross puddle caused by the pierce. The torch will remain at this height until the Cut Height Delay has elapsed. Puddle Jump Height is used in many cutting applications outside of Plate Saver, however, due to its moving pierce technique, Plate Saver uses *Puddle Jump Height Override*, which is the same value as the Pierce Height. This prevents the CNC from unintentionally moving to Puddle Jump Height before the moving pierce has been completed. Puddle Jump Height and Puddle Jump Height Override are columns in Process Parameters spreadsheets in ProNest and are specific to machines using Phoenix. Machines not using Phoenix can simulate the Puddle Jump Height Override by maintaining the torch at pierce height (in Table 2 this occurs during [6] and [7]).

Projected Splash Zone is the area on the plate affected by the Plate Saver moving pierce. It is calculated by a 60° pie-shape with radius of 4x the Pierce Separation. Values are derived from the actual moving pierce test cuts. When placing leads, Projected splash zones are consulted to ensure pierce puddles impact plate skeleton of previously cut parts or plate edge.

Figure 3 – Splash Zones modeled in ProNest accurately translate on an XPR300™ configuration (20 mm mild steel, 170 A)

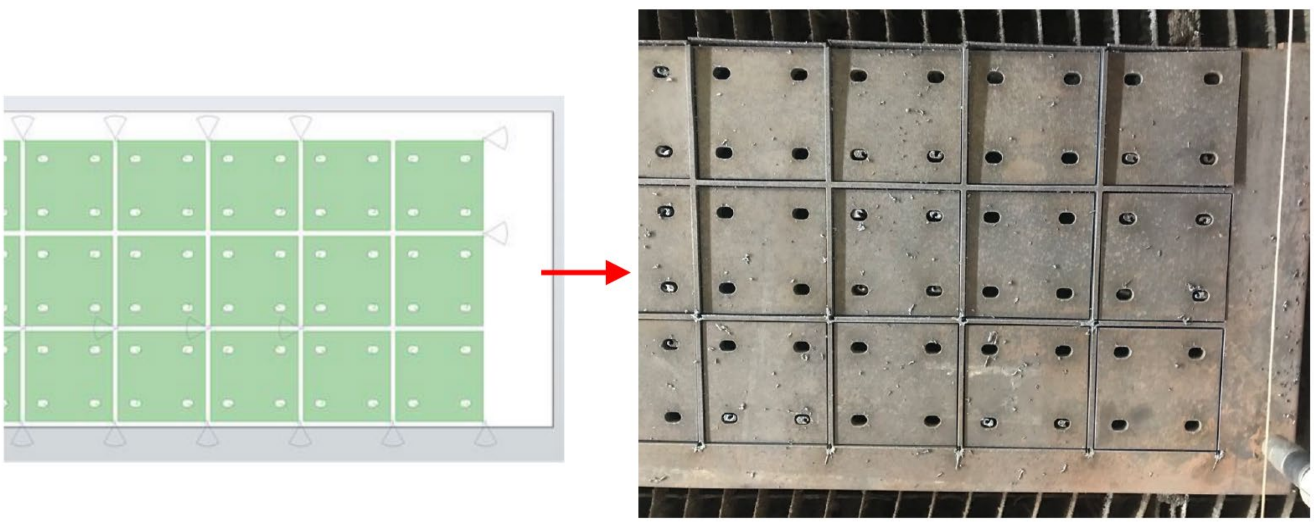
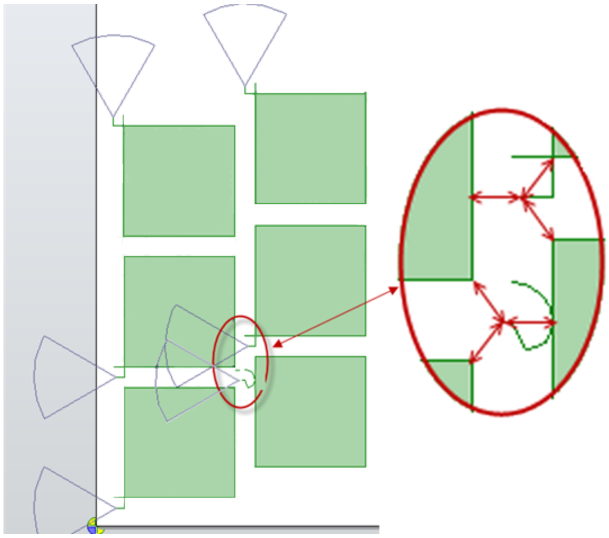


Plate Saver Max Pierce Separation is the minimal optimal spacing of the pierce to the part and two adjacent parts. This value is 62.5% of Part/Pierce Separation.

Figure 4 – *Max Pierce Separation*: Plate Saver leads positioned to be at a minimum of 62.5% of Part spacing between parts. The point equidistant to each of the three parts nested in staggered columns.



ProNest Settings

Lead-in Scale Set to half of 75% of Material Thickness (37.5%) or 50% of part spacing (values from the Exterior Leads spreadsheet).

Part Separation Standard ProNest default set to 75% of Material Thickness (values from the Process Parameters spreadsheet).

Pierce Separation Standard ProNest default set to 75% of Material Thickness (values from the Process Parameters spreadsheet).

Leads Spreadsheet

PlateSaverCorner and *PlateSaverSide* lead-in names are added to the CornerIn Name and SideIn Name selection List in the Exterior Leads spreadsheet for ProNest settings.

Figure 5 – Exterior Leads spreadsheet with Plate Saver parameters

Row	Material	Thickness	Class	Tab Lead	CornerIn Name	Nominal CornerIn Scale	CornerIn Scale	CornerIn Angle	CornerIn Extension	CornerOut Name	Nominal CornerOut Scale	CornerOut Scale	CornerOut Angle	CornerOut Extension	CornerOut Overtravel
1	inch	4			External Corner Lead Positions										
2	Part Attributes			Tab	Leadin(s)					Leadout(s)					
26	MS	0.3125	*		Linear	0.375	0.375	0	0.00	Linear	0.188	0.188	0	0.00	0.00
27	MS	0.3750	*		Linear	0.375	0.375	0	0.00	Linear	0.188	0.188	0	0.00	0.00
28	MS	0.5000	* (PlateSaver)		PlateSaverCorner	0.500	0.188	0	0.00	Linear	0.250	0.188	0	0.00	0.00
30	MS	0.5630	* (PlateSaver)		PlateSaverCorner	0.563	0.211	0	0.00	Linear	0.282	0.211	0	0.00	0.00
32	MS	0.6250	* (PlateSaver)		PlateSaverCorner	0.625	0.234	0	0.00	Linear	0.313	0.234	0	0.00	0.00
34	MS	0.7500	* (PlateSaver)		PlateSaverCorner	0.750	0.281	0	0.00	Linear	0.375	0.281	0	0.00	0.00
36	MS	0.8750	* (PlateSaver)		PlateSaverCorner	0.875	0.328	0	0.00	Linear	0.438	0.328	0	0.00	0.00
38	MS	1.0000	* (PlateSaver)		PlateSaverCorner	1.000	0.375	0	0.00	Linear	0.500	0.375	0	0.00	0.00
40	MS	1.1250	* (PlateSaver)		PlateSaverCorner	1.125	0.422	0	0.00	Linear	0.563	0.422	0	0.00	0.00
42	MS	1.2500	* (PlateSaver)		PlateSaverCorner	1.250	0.469	0	0.00	Linear	0.625	0.469	0	0.00	0.00
44	MS	1.3750	* (PlateSaver)		PlateSaverCorner	1.375	0.516	0	0.00	Linear	0.688	0.516	0	0.00	0.00
46	MS	1.5000	* (PlateSaver)		PlateSaverCorner	1.500	0.563	0	0.00	Linear	0.750	0.563	0	0.00	0.00
47	MS	1.5000	*		Linear	1.500	1.500	0	0.00	Linear	0.750	0.750	0	0.00	0.00
48	MS	1.7500	*		Linear	1.750	1.750	0	0.00	Linear	0.875	0.875	0	0.00	0.00
49	MS	2.0000	*		Linear	2.000	2.000	0	0.00	Linear	1.000	1.000	0	0.00	0.00

Row	SideIn Name	Nominal SideIn Scale	SideIn Scale	SideIn Angle	SideIn Extension	SideOut Name	Nominal SideOut Scale	SideOut Scale	SideOut Angle	SideOut Extension	SideOut Overtravel	User Created
1	External Side Lead Positions											
2	Leadin(s)					Leadout(s)						
26	Arc	0.375	0.375	180	0	Arc	0.188	0.188	90	0.000	0.000	
27	Arc	0.375	0.375	180	0	Arc	0.188	0.188	90	0.000	0.000	
28	PlateSaverSide	0.500	0.188	90	0	Arc	0.250	0.188	90	0.000	0.000	
30	PlateSaverSide	0.563	0.211	90	0	Arc	0.282	0.211	90	0.000	0.000	
32	PlateSaverSide	0.625	0.234	90	0	Arc	0.313	0.234	90	0.000	0.000	
34	PlateSaverSide	0.750	0.281	90	0	Arc	0.375	0.281	90	0.000	0.000	
36	PlateSaverSide	0.875	0.328	90	0	Arc	0.438	0.328	90	0.000	0.000	
38	PlateSaverSide	1.000	0.375	90	0	Arc	0.500	0.375	90	0.000	0.000	
40	PlateSaverSide	1.125	0.422	90	0	Arc	0.563	0.422	90	0.000	0.000	
42	PlateSaverSide	1.250	0.469	90	0	Arc	0.625	0.469	90	0.000	0.000	
44	PlateSaverSide	1.375	0.516	90	0	Arc	0.688	0.516	90	0.000	0.000	
46	PlateSaverSide	1.500	0.563	90	0	Arc	0.750	0.563	90	0.000	0.000	
47	Arc	1.500	1.500	180	0	Arc	0.750	0.750	90	0.000	0.000	
48	Arc	1.750	1.750	180	0	Arc	0.875	0.875	90	0.000	0.000	
49	Arc	2.000	2.000	180	0	Arc	1.000	1.000	90	0.000	0.000	

Plate Saver Settings in an XPR Process Parameters Spreadsheet

Values from the spreadsheet are defined as:

Plate Saver Pierce Time: 10% of standard XPR pierce time.

Plate Saver Feedrate: 20 ipm (500 mm/min).

Plate Saver Pierce Dwell: $(Standard\ Pierce\ Time) - (PlateSaver\ Pierce\ Time) - (Moving\ Pierce\ Time)$

Plate Saver Cut Height Delay: 90% of standard XPR pierce time.

Puddle Jump Height: 150% to 250% of the Cut Height, depending on the plate thickness. (Plate Saver uses Puddle Jump Height Override instead of Puddle Jump Height.)

Puddle Jump Height Override: 100% of Pierce Height.

Note: For side leads, the post processor splits the final arc 60% of the way before applying Auto Height Control.

Figure 6 – Example Process Parameters Spreadsheet for Plate Saver-capable XPR machine

	A	B	C	BX	BY	BZ	CB	CC	CD	CE	CF	CG	CH	CI	CJ
1	inch	5	Hypertherm SHAPING POSSIBILITY™												
2	Set Console:	OptiMix													
3	Part Attributes						PlateSaver leads							Cut Properites	
4															
5	Material	Thickness	Class	Ar Marking Current	Ar Marking Current Override		PlateSaver Pierce Time	PlateSaver Feedrate	PlateSaver Pierce Dwell	PlateSaver Cut Height Delay	Puddle Jump Height	Puddle Jump Height Override		XPR Process Features	Min Viable Console
320	MS	0.5000	130Amp O2/Air (True Hole) (PlateSaver)	15			0.05	20	0.37	0.45	0.22	0.26		1	Core
321	MS	0.5000	130Amp O2/Air (True Hole) (PlateSaver)	15										1	Core
322	MS	0.5000	130Amp O2/Air (True Hole) (PlateSaver)	15										1	Core
323	MS	0.5000	130Amp O2/Air (True Hole) (PlateSaver)	15										1	Core
324	MS	0.5000	130Amp O2/Air (True Hole) (PlateSaver)	15										1	Core
325	MS	0.5000	130Amp O2/Air (True Hole) (PlateSaver)	15										1	Core
326	MS	0.5000	130Amp O2/Air (True Hole) (PlateSaver)	15										1	Core
327	MS	0.5000	130Amp O2/Air [Underwater]											1	Core

Plate Saver Settings: Avoid plate edges

When Plate Saver technology is applied, leads—and therefore projected splash zones—may be repositioned. In ProNest, a setting is available that allows users to select up to three plate edges that projected splash zones should avoid, when possible. The centerline of the projected splash zone is used to determine which edge is impacted.

In some scenarios, leads may be unable to move to an alternate location and splash zones may not avoid edges defined in this setting.

Green edges ( ) indicate splash zones will not attempt to avoid the edge.

Red edges ( ) indicate splash zones will attempt to avoid the edge.

Figure 7 – Example setting configuration, where projected splash zones are set to avoid left and right edges

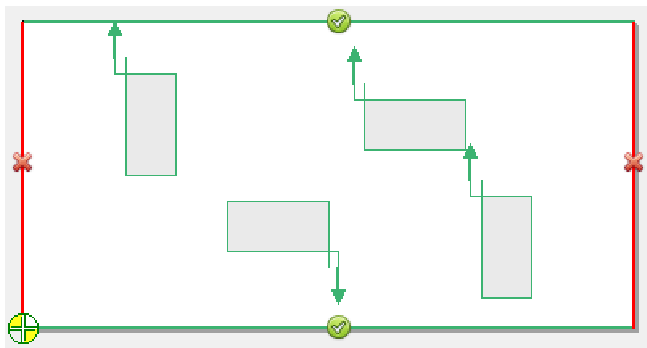
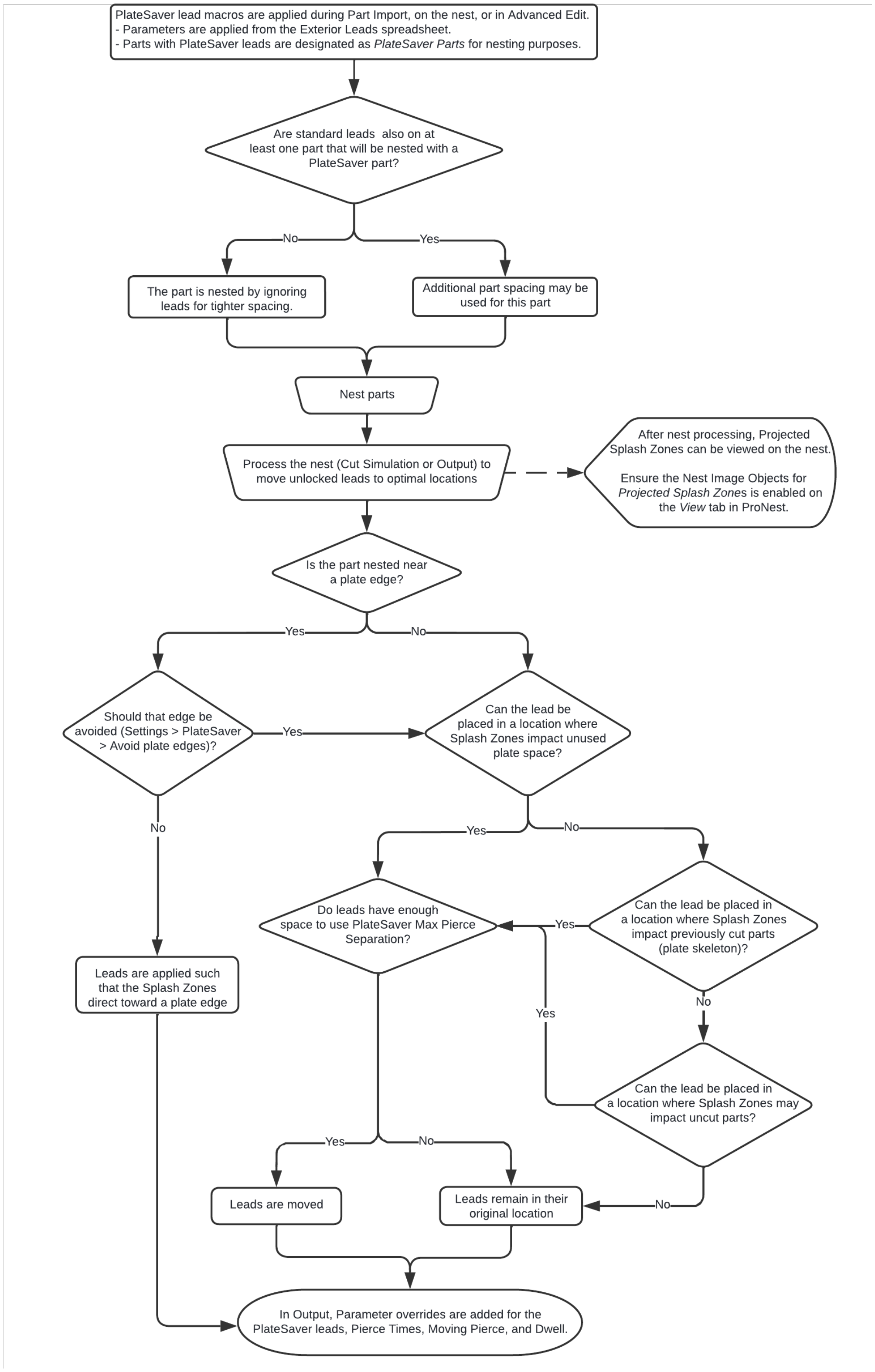


Figure 8 – Flowchart showing an overview of Plate Saver technology logic in ProNest



Automatically applied

- Plate Saver leads can be applied automatically during import using Process Parameters and Exterior Leads spreadsheets setup with Plate Saver macros.
- Plate Saver leads can be applied by using a supported Plate Saver material, thickness, and class, or by presetting Plate Saver Leads prior to import in the Edit Part List > Properties > Leads > Use custom leads below.

Figure 9 – Plate Saver is selected automatically from the Exterior Leads spreadsheet

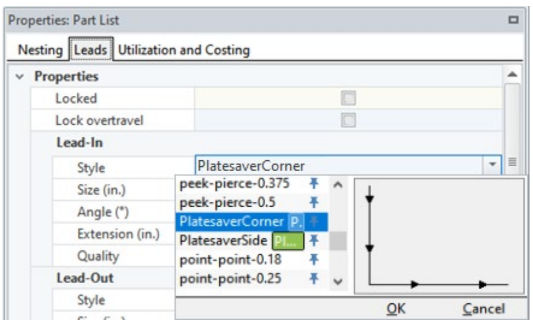
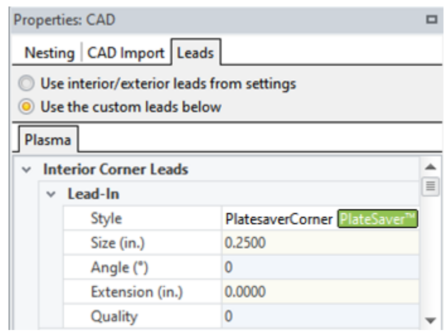


Figure 10 – Plate Saver is the preset lead style prior to part import



Manually applied

- Plate Saver leads can be applied, moved, or locked wherever leads can be modified in the Edit Part List, Advanced Edit, and the main nesting screen.

Figure 11 – Plate Saver style can be set in Advanced Edit after part import

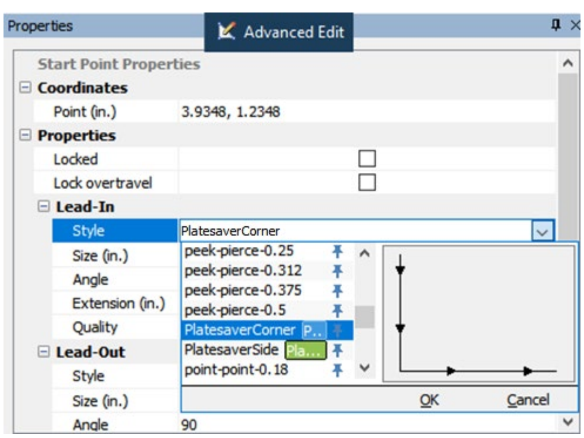
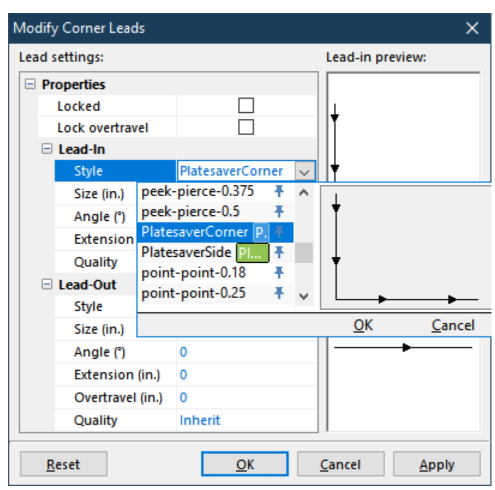


Figure 12 – Plate Saver style can be set in Modify Leads mode on the nest



Viewing Plate Saver in the ProNest Technology Panel

Once a Part with Plate Saver Leads is nested, the Technology Panel will display the Plate Saver technology label.

Hovering over the Plate Saver label will identify which parts have Plate Saver leads applied.

Figure 13 – Plate Saver label appears on the Technology Panel when a Plate Saver part is nested

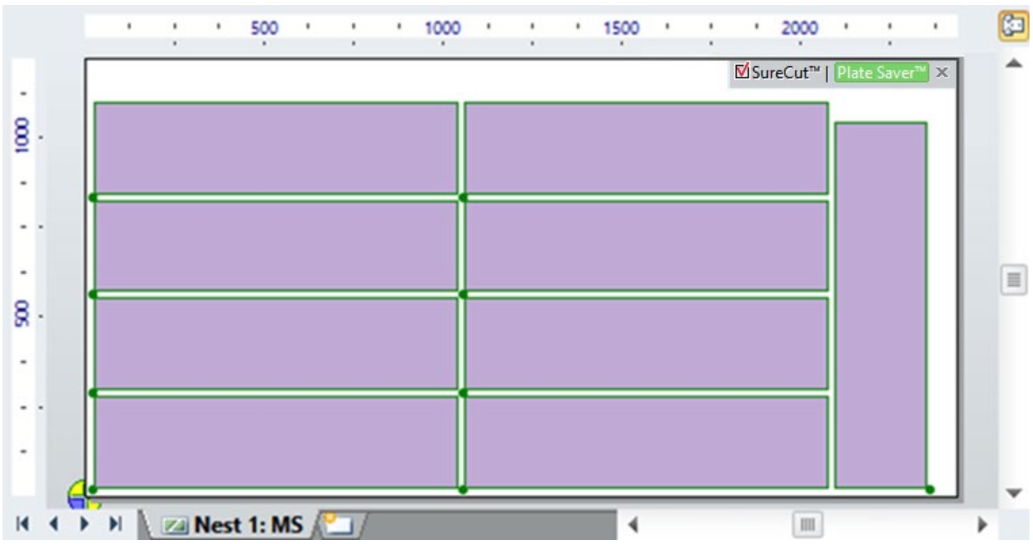


Plate Saver Leads and Lead Macro Sample CNC Code

There are two Plate Saver macros: one for a corner intersection location, and one for a side location. Table 2 shows sample code for each lead macro.

Figure 14 – PlateSaverCorner lead

Figure 14 – PlateSaverSide lead

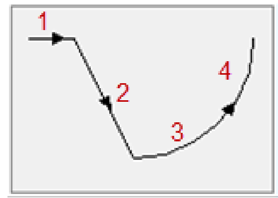


Figure 16 – Directed Moving Pierce segment

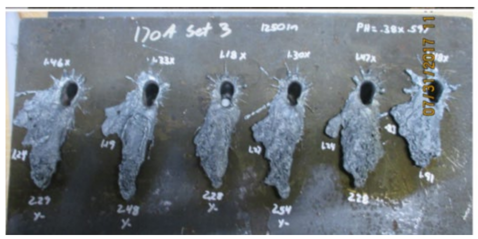


Table 2 – Sample NC code of Corner Plate Saver, Side Plate Saver, and a corresponding description

	PlateSaverCorner.mli	PlateSaverSide.mli	Description
1	G00X0.7258Y0.632	G00X5.8438Y16.1796	[3] Pierce: Plate Saver Settings Plate Saver Pierce Time Override (PTO, in seconds: 10% pierce time), Puddle Jump Height (PJH, in inch or mm: 100% pierce height), & Cut Height Delay (CHD, in seconds: 90% pierce time) overrides. [4] AHC Turn off. [5] Set Plate Saver Moving Piece feedrate: Plate Saver Settings, Plate Saver feedrate (20 ipm or 500 mm/min). [6] Directed Moving Pierce segment: Torch remains at pierce height. Motion starts before the piercing process is completed, causing a rooster tail effect that can be strategically directed. The recommended moving pierce length is 5.625% of the plate thickness. [7] Dwell: Plate Saver Settings Plate Saver Pierce Dwell (as described on p. 7). A pause in motion to verify pierce is thru the material. After dwell elapses, the torch lowers to Cut Height. [8] Standard Feedrate. [9] Second lead-in segment: Clears the pierce slag and establishes cut. The length of this segment is at least 30% of Part Separation. [10 – 11] Set standard XPR Kerf offset. [12] Third lead segment: Corner-Line, Side-Arc at 40% of the distance to the start of the part. This segment is 22.5% of the plate thickness in length. [13] Turn on Auto Height Control, by inserting an AHC command. [14] Forth lead-in segment: Continuation of the third segment leading into start of Part (line or arc for corner or side lead-in, respectively). This segment is 15% of the plate thickness in length. Note: Third and fourth segments are at least 50% of the Part Separation.
2	G59 V509 F11412	G59 V509 F11412	
3	M07 HS PTO0. 1 PJH0.38 CHD0.9	M07 HS PTO0. 1 PJH0.38 CHD0.9	
4	M50	M50	
5	F20.	F20.	
6	G01X0.0562	G01X-0.0563	
7	G04X0.731	G04X0.731	
8	F75.	F75.	
9	G01X0.225	G01X-0.1625Y0.25	
10	G43X0.175	G43X0.175	
11	G41	G41	
12	G01Y0.225	G03X-0.1768Y-0.0732I-0.J-0.25	
13	M51	M51	
14	G01Y0.15	G03X-0.0732Y-0.1768 I0.1768 J-0.1768	
15	G01Y10.	G01Y-5.4226	
16	G01X5.	G01X-5.	
17	G01Y-10.	G01Y10.	
18	G01X-5.	G01X5.	
19	M50	G01Y-4.5774	
20	G01X-0.375	G03X0.375Y-0.375I0.375J0.	
21	M08	M08	
22			

Sample Macros and Code

There are two Plate Saver macros: one for a corner intersection location, and one for a side location. Table 3 shows sample code for each macro.

Figure 17 – PlateSaverCorner.mli: Selecting the Plate Saver Corner macro style in ProNest

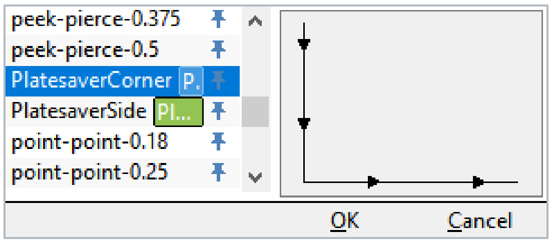


Figure 15 – PlateSaverSide.mli: Selecting the Plate Saver Side macro style in ProNest

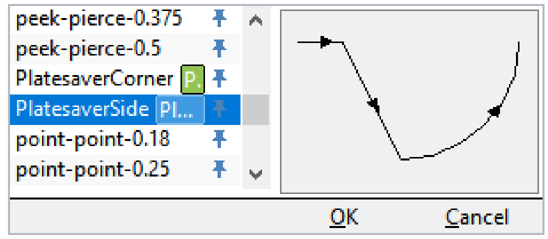


Table 3 – Sample macros of Corner Plate Saver, Side Plate Saver, and a corresponding description

	PlateSaverCorner.mli	PlateSaverSide.mli	Description
1	START	START	1. Marker
2	GOTOXY 3 1.0 -0.75	GOTOXY 2 0 -1.25	2. GoTo Pierce Point
3	START_LEADIN	START_LEADIN	3. Marker
4	PLATE_SAVER_LEAD	PLATE_SAVER_LEAD	4. PLATE SAVER Flag
5	CFF_SECTION DISABLE AHC	CFF_SECTION DISABLE AHC	5. Disable AHC
6	CFF_SECTION START MACRO LEADIN	CFF_SECTION START MACRO LEADIN	6. Marker
7	TORCHON	TORCHON	7. TorchOn insert PLATE SAVER Cut Height Delay
8	CFF_SECTION Plate Saver Pre Pierce	CFF_SECTION Plate Saver Pre Pierce	(Pierce Time)
	Lead	Lead	8. PLATE SAVER Pierce Time Override (10% Pierce
9	GOTOXY 3 1.0 -0.60	GOTOXY 2 0.0 -1.1	Time)
10	CFF_SECTION NORMAL FR	CFF_SECTION NORMAL FR	9. Directed Moving Pierce Segment .2
11	CFF_SECTION Plate Saver Pierce Dwell	CFF_SECTION Plate Saver Pierce Dwell	10. Get normal feedrate
12	CFF_SECTION FEED 100	CFF_SECTION FEED 100	11. Dwell to verify pierce is through the material
13	CFF_SECTION END MACRO LEADIN	CFF_SECTION END MACRO LEADIN	12. Output feedrate
14	GOTOXY 3 1. 0.0	GOTOXY 3 .6666 0.6666	13. End marker
15	KERFLEFT	KERFLEFT	14. Second lead-in segment: Clears the pierce slag
16	GOTOXY 3 0.4 0.0	; The next section call enables AHC so we	15. Set standard XPR Kerf offset
17	CFF_SECTION ENABLE AHC	don't call it here	16. Third lead segment: Corner-Line, Side-Arc
18	GOTOXY 3 0.0 0.0	CFF_SECTION Plate Saver Split Arc	17. Split Arc Segment and Auto Height Control on
19	CFF_SECTION NORMAL FR	GOTAN 2 0.0 0.6666	18. Fourth lead-in segment to part:
20	END_LEADIN	CFF_SECTION NORMAL FR	19. Set running at normal feedrate
21	END	END_LEADIN	20. Marker
22		END	21. Marker

Viewing Projected Splash Zones on a Nest

In ProNest, it is possible to view projected splash zones (drawn in triangular shape) on the nest, which show a generous estimate of where the moving pierce puddle will blow on the plate.

1. Nest at least one part with Plate Saver leads and class.
2. Click the **View** tab.
3. Click the **Nest Image Objects** menu.
4. Ensure **Projected Splash Zones** is checked (Fig. 19).
5. Run Cut Simulation or Output to generate the splash zone images on the nest.

Figure 16 – Ensure Projected Splash Zones is checked in the Nest Image Objects menu

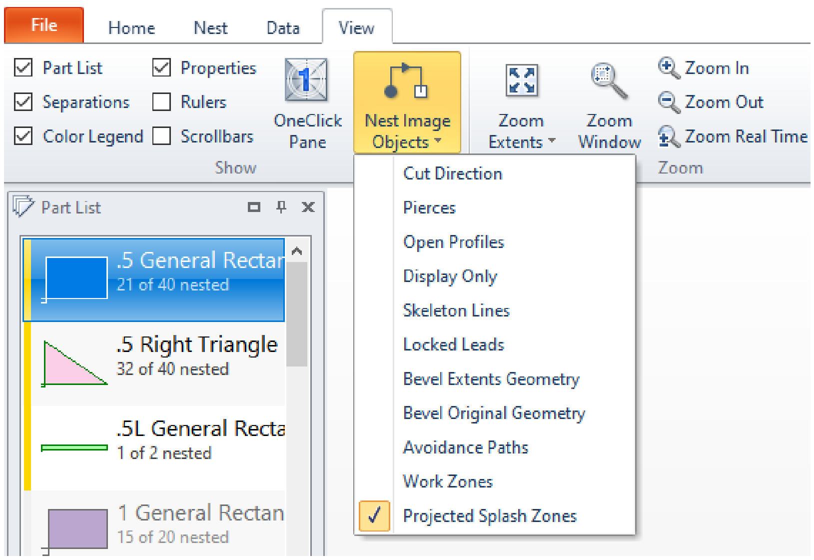


Figure 20 – Projected Splash Zones will appear on the nest, after running Cut Simulation or Output

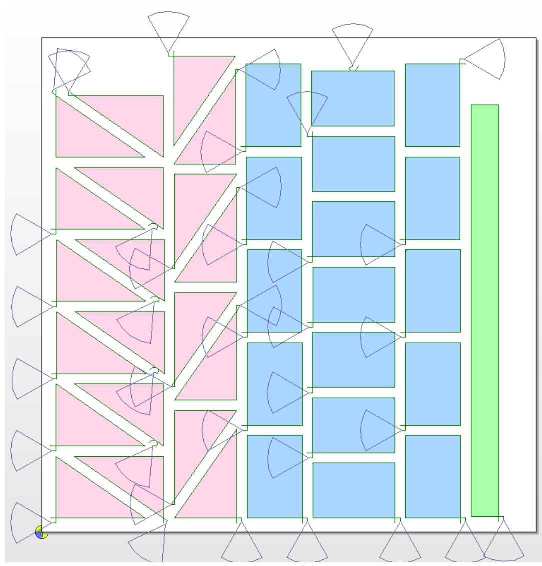
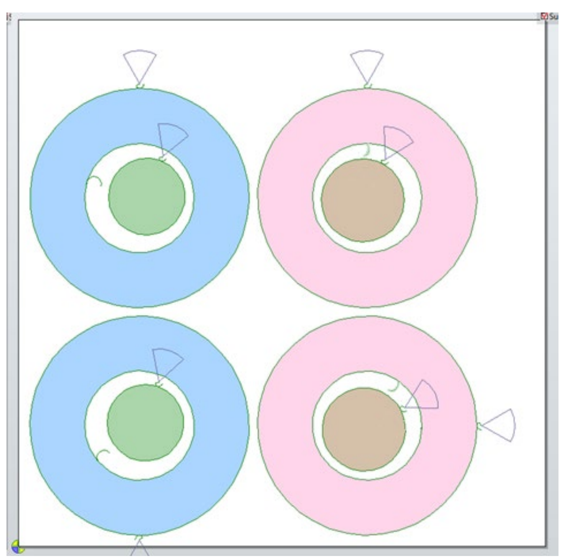
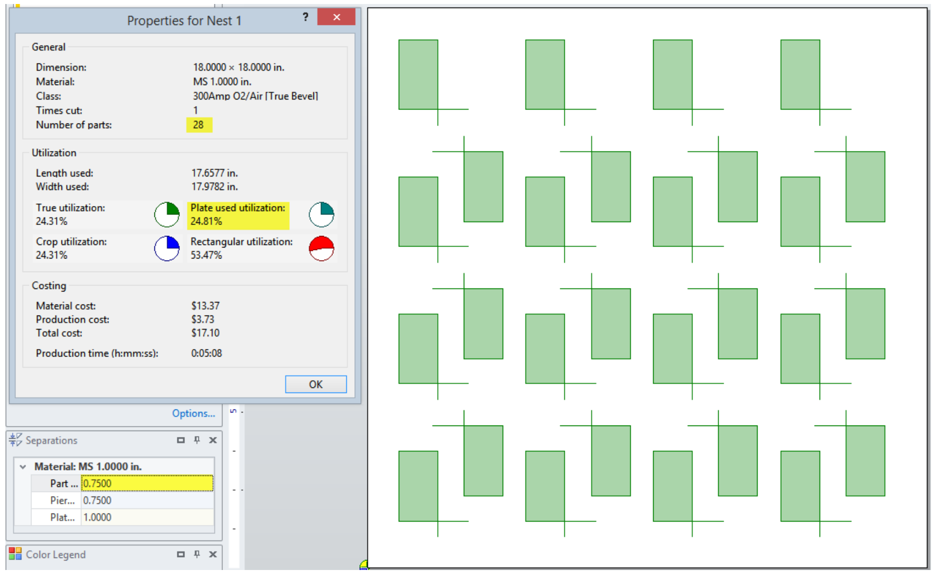


Figure 21 – Example nest showing Plate Saver leads and Projected Splash Zones on exterior profiles of parts nested inside other parts. While the splash zone of the interior parts may impact the exterior parts due to the drop order, shortened Plate Saver leads allow the interior part to fit in the exterior part's cutout, which would not be possible with standard leads.



Using standard lead styles on a 1 in. thick, 18 x 18 in. plate, 28 rectangular parts can fit on the nest with a utilization of 24.8%.

Figure 22 – Example nest that uses standard leads has poor nest utilization, resulting in much unused scrap material



When Plate Saver leads are applied to parts on the same plate, 40 parts fit on the plate, with an improved utilization of 40.1%.

Figure 23 – Example nest that uses Plate Saver leads has better nest utilization and can fit more parts on the plate

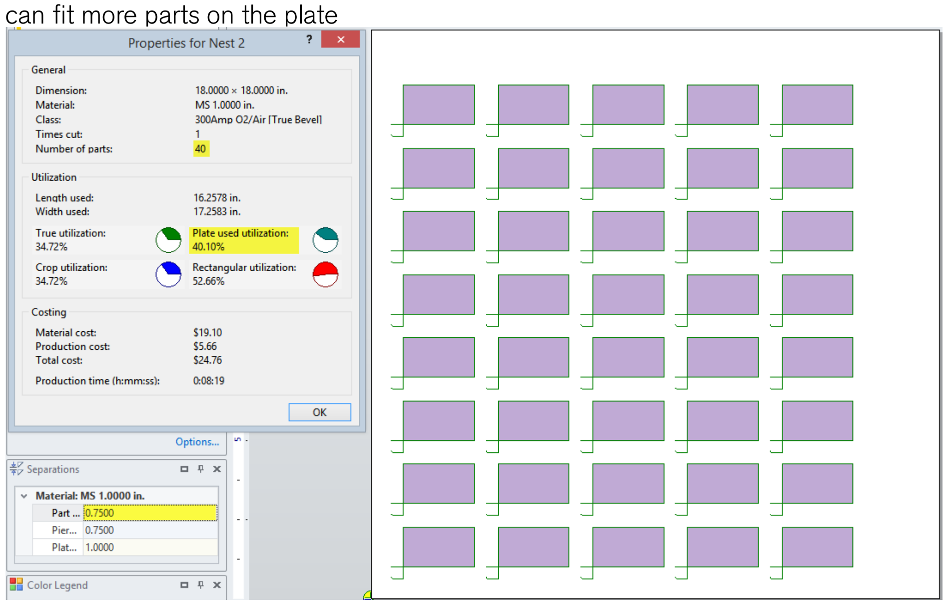


Table 4 – Utilization and cost comparison between a nest using industry standard leads versus Plate Saver leads

	Qty. Parts	Nest Utilization	Utilization Gained	Parts Gained	Part Cost*
Traditional leads (Fig. 22)	28	24.8%	---	---	$3.57
Plate Saver (Fig. 23)	40	40.1%	+15.3%	12	$2.50

* Cost based on $100 plate.

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