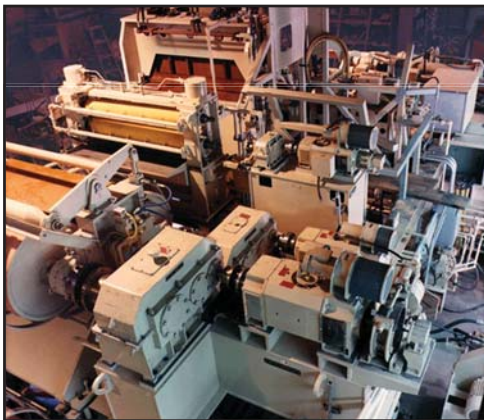


## Economics 101: SCS vs. P&O

SCS steel is seen as the new alternative to P&O flat-rolled steel. And why not? SCS inhibits rust with no surface coating and no special packaging or storage requirements. In one way the two processes are alike: Pickling removes scale by running the sheet through an acid bath. SCS removes all but a desirable microns-thin layer of scale, but uses a patented brushing process and ordinary water. However, with P&O, after the acid bath there remains rinsing, drying and oiling steps.

So P&O is a steel treatment process with an associated process cost and SCS is a steel treatment process with its own associated process cost. The important question is "What's the difference in cost?"



The exit end of a high-speed continuous pickling line shows the complexity of the process (photo from SMS Demag Ltd.)



The SCS Sheet Line employs engineered abrasive brushing rolls and ordinary water in a simple, compact, low cost process.

To answer that question, you'd examine the components making up the variable cost of each process: labor to run the process, materials and supplies consumed, energy required and waste disposal cost. These components vary among P&O lines based on technology, capacity and even location. Nevertheless, recent discussions with several operators of P&O lines show their variable process cost averages about \$15 per ton.

SCS variable process costs are:

- Labor:	\$ 1.00/ton
- Brushes:	\$ .84/ton
- Filters:	\$ .20/ton
- Electricity:	\$ 1.05/ton
- Maintenance:	\$ .39/ton
<b>TOTAL:</b>	<b>\$ 3.48/ton</b>

**Difference in Cost of Capital between P&O and SCS lines is dramatic (P&O is 4 - 5 times SCS), but is not factored into this analysis of variable cost.**

This \$11.52/ton variable costs difference is significant to steel finishers who often compete on price. They can sell SCS at the P&O price – *and often at a premium* – yet SCS variable cost is much less. That spells better margins for the steel processor. And the cost difference can become magnified as the two different processes are moved further along the steel supply chain. To see a complete SCS vs. P&O economics comparison for both end users and processors visit [www.scsprocess.com](http://www.scsprocess.com) and click the **ECONOMICS** link.

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## Upcoming SCS Events

**October 4 - Galvanizers Associations - Charleston, SC**  
USA's largest galvanizing conference, hosted by Nucor Steel.  
For details, visit [www.galvanizersassociation.com](http://www.galvanizersassociation.com)

**Coil Slitting and Cut-to-Length Workshop**  
**October 5 - Toronto & November 9 - Cincinnati, OH**  
A unique "Best Practices" seminar featuring industry experts and a tour of a state-of-the-art slitting line. A comprehensive overview of SCS technology is included. Visit [www.redbudindustries.com](http://www.redbudindustries.com)

## An Idea for Fabricators . . . Double Stack Laser Cutting

Is there an easy way to double the productivity of laser cutting flat sheet? One approach is to cut two sheets at a time, assuming your laser is powerful enough to handle the increased thickness. Same laser, same speed, same consumables – but two parts drop out of each cut!

Easier said than done – especially for thick parts and very small parts. But the culprit that most often limits the ability to laser double stacks is gaps between the sheets being cut. Any small gap or irregularity that prevents the sheets from being perfectly flat and parallel may cause the part cut from the top sheet to hang up, so it doesn't drop through the bottom sheet. Manually removing this part offsets the productivity gained from double stack cutting. However, if your sheets are consistently flat and parallel – no gaps – then double stack lasering becomes a possibility.

With P&O sheets the possibility isn't realized. The oil on both surfaces of the sheet creates a small gap itself. The stickiness of the oil holds dirt and small particles that become trapped between the sheets, creating small gaps. Finally, oil can make sheets stick together in such a way that small air pockets are trapped between the sheets (See Figure 1 below).

Even if the oiled surface didn't create gaps, the lasering process itself often does. The sheets you laser cut may look perfectly flat, but retain residual stress that is not removed, even by roller leveling. This stress causes the sheet or part (or both) to 'spring back' when they are lasered. The resulting deflection acts much the same as a gap, causing the top part to hang up instead of dropping.

It's no wonder that fabricators gave up on lasering double sheets a while ago. *But it's time to reexamine this idea, because trials performed on SCS show that double stack laser cutting of SCS is a viable fabrication practice.*

SCS overcomes the limitations of P&O:

- with no oil, you get "metal touching metal" (Figure 2);
- with no oil there are no dirt or air gaps created;

In addition, SCS sheets that are stretcher-leveled have no residual stress and do not spring back during lasering.

Trials of laser cutting double stacked SCS sheets yielded identical parts of excellent quality and there was no need to slow the laser speed. The best results were achieved when parts were first cut near the periphery of the sheets and then cutting moved toward the center. Beginning cutting in the center does not allow laser heat to dissipate quickly enough, and may cause a small gap to open between the sheets that hangs up the top part.

Figure 1: Double Stack "Sandwich" of P&O Sheets

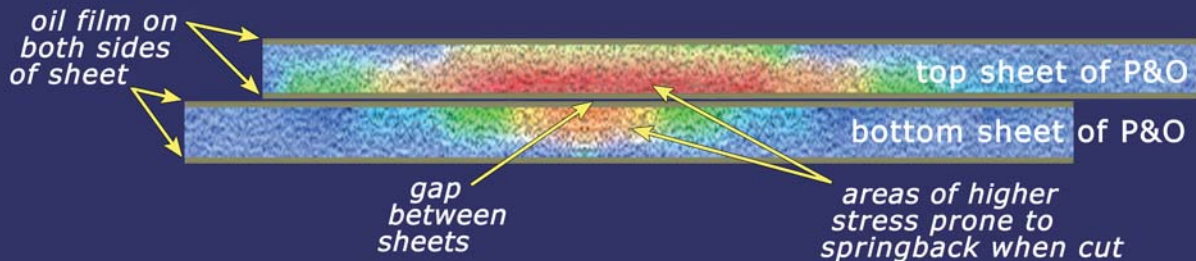
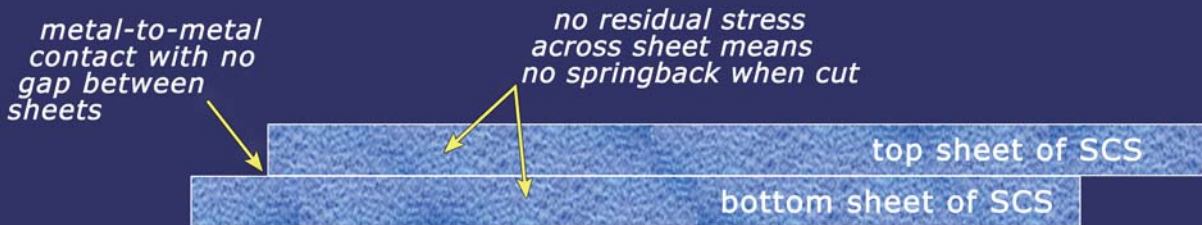


Figure 2: Double Stack "Sandwich" of SCS Sheets



**If your operations involve significant laser cutting, we urge you to try double stack lasering of SCS for your high volume parts. Contact us for additional information and visit [www.scsprocess.com](http://www.scsprocess.com), click on the "ADVANTAGES" link to view parts that were made by double stack laser cutting SCS.**