

# 10 WAYS

TO CUT MATERIAL WASTE



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Nothing cuts into cash flow or is a profit drain like wasted raw material. And nothing is more frustrating than seeing huge piles of scrap go out the door. It is these real, tangible costs that, with some foresight and creative thinking, can be turned into rewards.

Here are a few tips to start you down the road toward material savings.

### 1. KNOW YOUR MATERIAL USE RATE

It is surprising in this age of technology how many manufacturers don't know their material use rate. They cannot easily answer the question, "How much of each sheet of material is used for parts?" or "What percentage of your raw material is scrap?" In some cases they need to grab a pencil and paper and do some quick estimates. And that's fine if that's where you are. At least it is a start. The best place to start when reigning in your material waste is getting a handle on what kind of scrap rate you currently have. When calculating, be sure to look at a large enough production sample to extrapolate use over six months or a year to get a truer picture of reality. Remember you can't change what you can't measure...at least when it comes to material waste.

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### 2. DETERMINE A MATERIAL USE GOAL

What would be a reasonable goal to achieve? If you are currently getting 70% actual efficiency, is it possible to get 75%? What is a reasonable expectation for the processes – punch, laser, plasma – you are running? What would a 5% increase in material savings translate in to cost savings?

### 3. IDENTIFY SAVINGS CONSTRAINTS

What things hold you back from gaining more savings? Do you have really large parts that don't lend themselves easily to nesting? Are you working with a grained material that impedes rotation on a nest? Is there a limit to the amount of time you

can spend (manually) nesting to achieve higher efficiencies? Do hot parts and rush orders mess up your efficiencies? Are you shearing blanks? Make a list.

#### 4. IDENTIFY OPPORTUNITIES FOR SAVINGS

Now look for ways to reduce raw material costs. Have you evaluated all of the opportunities? Could savings be achieved with a smaller inventory on hand and ordering as needed ([just in time](#))? Is it possible to purchase fewer sheet sizes in greater quantities and get a better price on [standard sheet sizes](#)? Is it possible to get better use out of your more costly materials? Would there be savings opportunities if your production time window was opened to include more future orders? Could nesting automation improve your efficiency?

#### 5. MAKE USE OF THE TRIM STRIP

The trim strip on any piece of sheet metal is a golden opportunity to improve material usage. By placing additional parts in what could be a 3-4” strip the length of the sheet or [nesting beneath the clamps](#), you can increase your material usage significantly. Be certain to make accommodations for the clamps and any repositioning necessary.

#### 6. NESTING PARTS IN HOLES

Any part with a void or “hole” is an invitation to increase efficiency. Take every chance to place suitable parts in the holes. Doing so can make excellent use of scrap material and realistically take your actual efficiency for the sheet over 100%. Look for opportunities to mirror parts or create 180° pairs to increase the compactness of the part and fit additional parts in the holes.

#### 7. COMMON EDGE CUTTING

By placing parts with similar straight edges together in a laser cutting environment you can save not only material but cycle time with [common edge cutting](#). The reduction in material

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between parts can save as much as 15% on a sheet of material. Be certain to program the part path to avoid freed parts and potential head crashes.

## 8. COMMON EDGE PUNCHING

In the same manner as with laser cutting, parts with similar straight edges or like radiuses can be punched simultaneously saving material and tool wear. By programming the same tool, i.e. a 4-way radius or rectangular tool, to strike two part edges with one hit, the material that would otherwise be between the two parts is eliminated. [Common Edge Punching](#)

## 9. FILLER PARTS

[Filler Parts](#) take advantage of non-priority parts to make excellent use of sheet material and reduce waste. There are many strategies to make effective use of filler parts, but here are a couple.

- [Alternate materials](#) – when creating a nest on a high grade material, i.e. brushed stainless, take advantage of parts that would otherwise be created on a lower grade material to fill in the balance of the nest or sheet. The result is less of the higher grade material is wasted.
- [Stock Inventory/KANBAN](#) – If you regularly produce stock inventory of small parts, such as brackets, introduce them into your nesting process. The inventoried parts can be nested amongst the active orders to reduce waste. The key to this process is keeping track of your inventory part levels and knowing what quantities to produce when. Nesting software can aid with that.
- [Future Orders](#) - In a perfect world each sheet of material has 100% or greater efficiency using only the most urgent parts due today. But that isn't always possible. However, material waste can be significantly reduced by looking forward in time at the orders due tomorrow, next week, next month and bringing those part orders into the current sheet layout. You

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are not only meeting deadlines on those parts in advance of their due dates, but you're increasing material efficiency.

## 10. REMNANT MANAGEMENT & NESTING

A remnant is a large segment of sheet material left over after parts have been cut from the sheet. This can easily account for significant waste if not handled effectively. Ideally, each **remnant** should be saved and identified as a unique material (type & size).

Then as the next opportunity for creating a nest on that material arises, the remnant is given primary consideration for use. The faster the remnant is consumed, the less chance there is of sheet damage or loss.

### BONUS POINT: 11. BATCH NESTING

It goes without saying that the greater the part selection in a dynamic nesting environment the more opportunities a programmer or nesting software will have to find optimal part combinations and thus increase material efficiency. That's exactly the concept behind **batch nesting**. Throw a bunch – a batch – of your most urgent parts in an “order bucket” and nest. Make lots of nests. And they will inevitably have a higher efficiency than creating a nest with a smaller dynamic part selection. Don't want to be locked into running a series of nests in case something happens and you need to change something? Run the batch. Toss (delete) any nests that haven't run on the machine. Make the change. Batch nest again.

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## ABOUT OPTIMATION®

Optimation® delivers economic performance for fabricators through advanced nesting software. Optimation® develops and supports nesting and CNC part programming software for fabrication processes, which include punch, laser, plasma, Waterjet, router, and CNC knives. We cover the range from single-machine sites to sites with hundreds of machine tools with the highest possible automation.

Our automated approach to manufacturing solutions dates back to our beginning more than three decades ago. It is our belief that routine - and even not so routine - nest technology fabrication can be best achieved through a rules-based system that reduces not only material waste but programming time and error and keeps the manufacturer in control.