➤ WHITE PAPER

3 STRATEGIES TO INCREASE
MATERIAL EFFICIENCY USING FILLER PARTS

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How to make valuable parts out of scrap material.

One key to successful material usage is making smart use of filler parts. A filler part is a part that you need soon that can only be produced now if and only if it is produced out of material scrap.

An example would be that you need to produce a part with a large interior hole. No other currently due part will fit inside the hole; so a filler part is used to convert the material in the hole from scrap to a usable part. This document details three strategies to intelligently identify opportunities to use filler parts.

In all strategies described below, the presumption is the current workload (part orders and quantities) has created a nest (sheet layout) that has sufficient scrap material as to warrant the consideration of filler parts.

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Filler parts strategies can also have the benefit of eliminating remnants.

STRATEGY #1: FUTURE ORDERS

Consider a nesting environment where the engineer wishes to produce all of the parts due today only. As nests are being built, the number of parts remaining get smaller and smaller. Toward the end of this nesting process there will be fewer parts to nest and the nest efficiency will decrease; this is know as tail-off. To increase the material efficiency, he can allow the system to look ahead at tomorrow's orders and treat them as filler parts. The nesting system will only include the filler orders in locations in the nest where material would otherwise be scrapped. This strategy blends the end of today's production with the beginning of tomorrow's production in a smooth and material efficient series of nests.

Material that would otherwise be scrap has been turned into parts due in the immediate future.

STRATEGY #2: ALTERNATE MATERIAL GRADE

➤ The second filler part strategy is to make good use of all of the higher grade material scrap whenever possible.

Many manufacturers use multiple grades of material; some more costly than others. In the case of a manufacturer of industrial kitchen equipment, he may use brushed stainless steel for the exterior visible surfaces of the cabinets and a plain finished stainless for the unseen back panels and interior parts. The brushed stainless is more expensive but has the same engineering properties as the plain finish.

In the above example the product design calls for the fewest number of expensive brushed parts as possible. A practical result of fewer parts is that nests of those parts generate more scrap due to fewer parts. The second filler part strategy is to make good use of all of the higher grade material scrap whenever possible. To do this the manufacturer can use the scrap to make parts that would otherwise be made of a lower grade stock by treating them as filler parts for the higher grade stock. In the case of the kitchen equipment manufacturer, he would make back panels and interior parts out of the brushed stainless to prevent the expensive material from being wasted. Of course, only parts that can be made from scrap are produced; no prime material will be used for filler parts. At the end of the nesting process, the filler parts that were not nested automatically return to their normal order status on the plain material.

Expensive, high grade material destined for the scrap bin has been salvaged and made into product components.

STRATEGY #3: INVENTORIED PARTS

Creating inventoried parts from scrap material is the third strategy for filler parts.

➤ **Kanban:** An inventory control system for tracking the flow of in-process materials through the various operations of a just-in-time production process. Kan means visual and ban means "card" in Japanese; or "Visual Card"

Sometimes manufacturers carry part inventories of stock items to reduce setup cost or reduce response time from order to shipment. Alternatively, their production line may integrate a Kanban system, where part orders are cued when the part "card" indicates a need.

In either approach, these parts are ideal to be used as filler parts. When a nest has unused material, extra space on the nest can be filled in with parts that will be used for inventory.

Intelligent nesting software will report back to the order or scheduling system the number of parts created for each stock item. The scheduling system will then update the "quantity needed" before any additional parts are ordered to avoid overproduction.

Inventory levels of standard parts are easily maintained using scrap material.

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.