AXIOM VE™
THE NESTING ENGINE

Optimation®
WE DELIVER ECONOMIC PERFORMANCE

Material efficiency, part priorities (i.e. today's orders, hot parts, and filler parts), setup costs, order completion, labor, machine throughput, and a host of other factors are considered as the nesting process begins.

AxiomVE™ is the only nesting engine that is able to think about the real manufacturing problem and factor into its nesting solution all of the demands inherent in the real manufacturing world. Obsolete nesting systems are unable to even think about even material efficiency (see the white paper, "Understanding Nesting Strategies & Tactics").

AxiomVE is an expert system that is able to think about material efficiency, schedule adherence, order cohesion, machine efficiency, and many other production details as it creates the nest. AxiomVE creates an optimal real time production schedule making the best use of a finite machine capacity; no other system can directly consider even one of the above requirements.

> **The Optimation® Advantage**
> The software's ability to use several intelligent tools to create the nest is one of our primary advantages and, ultimately, the feature that enables you to get the parts you need, when you need them, in their exact quantities, at the lowest cost.

PLANNING AHEAD AND MEETING CHANGING DEMAND AUTOMATICALLY

It is rare that you can have your cake and eat it too, but with AxiomVE you can — have a planning tool optimizing efficiency and the flexibility to adapt to real world changes. Often you need to know the workload on your machine(s). To do this, some manufacturers create a number of nests ahead of time. The nests are then used to determine the amount of work to be accomplished in machine hours. A plan for manpower scheduling and overtime can be developed from the information. However, it is a rare manufacturer that can run for hours without a change in what is need to be produced. Hot parts, schedule changes, machine breakdowns, and thousands of other variables require a new plan to be created.

When a new plan is needed, the old nests that have not been run can be rejected and a new series of nests based upon the new requirements can be

The Nesting Module nests single part shapes, pre-defined kits or sub-assemblies, and connected groups on rectangular or irregular shaped raw material.

created in a very short period of time. This ability to quickly change the plan, yet see the future demand can be very useful in planning production.

TAMING CHAOS IN REAL TIME WITH JIT (JUST-IN-TIME) NESTING

Often changes occur so fast that it is impossible to keep up using long term plans. In these environments you can tame the chaos by responding to all changes within one machine cycle. Plans that create a large number of nests often perish because of the time frame it takes to produce the nests. JIT (Just-in-Time) nesting solves the problem by creating only one nest each time a machine is available.

- Rapidly Respond to Changes
  Each time a machine becomes available to run another nest, a new nest is created taking into account all of the changes since the last machine cycle. On demand, AxiomVE™ creates a new optimal production plan for the next machine cycle. All changes are responded to within one machine cycle.

- Dynamic Machine Balancing
  Another advantage is when several machines are running; they are dynamically balanced to run the most important parts on a continuous basis. If a machine goes down, the remaining machine capacity is used to produce the most important parts.

- Material Efficiency
  Additionally, with JIT nesting you get improved material efficiency. When a large number of nests are created ahead of time, the nesting system may run out of parts and material efficiency suffers. In some cases remnants must be created because there are not enough parts to fill the raw material.

JIT nesting solves both problems – rapid response and material efficiency. As nests are produced and run one at a time, more parts become available. Since the nesting system has more parts available, better, more efficient nests are created. There is less likelihood that you will run out of parts therefore there are fewer remnants.

Only AxiomVE is intelligent enough to run optimally in this advanced strategy.

INTELLIGENT MATERIAL MANAGEMENT

AxiomVE™ can automatically choose the best material size or remnant per nest pattern. To find the optimal fit, the Nesting Module automatically tries multiple combinations of parts as well as multiple angle orientations for each part with each material size available. If at any point during its evaluation of a nesting combination, the software realizes that it will not beat the material efficiency of the previous nests, it aborts that layout and moves on to the next.

Any part not restricted (such as by grain direction), can be rotated up to 360-degrees to be optimally placed in a nest in all contour applications and punch machine tools with auto indexing stations or rotary ram. With Vision Emulation, the software evaluates the part and the nesting opportunity and places the part intelligently in the same way you would – but automatically.

SMART LEAD-IN MANAGEMENT

AxiomVE automatically adds lead-ins/outs based on the user's preferences. By waiting until the nest is created, then placing the lead-in intelligently on each part, the nest is more compact and efficient. With an extended lead-in library AxiomVE can insure the optimal placement of each lead-in.

MANAGING ORDER FLOW

The Nesting Module automatically reads the priorities (due date, order status, urgent need) that were included with the order at Order Entry. It then weighs a number of factors to determine the best nest, including labor, setup, schedule adherence, order cohesion, machine utilization, inventory, and tooling requirements. Each part within each order is nested based on its schedule — ensuring that only the most critical parts will be nested first. A hot part can be in the very next nest. This ability to respond to schedule can be extended to running kits. Often manufacturers want to have single unit flow and need to produce all parts in a variety of materials that make a single product before starting to make the next unit. AxiomVE has the intelligence to handle these complex and very demanding requirements.

Contact Optimation® for more information.

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.