

Predator Tool Crib™ – White Paper

Features and benefits for automating and organizing a tool crib

Abstract

This paper outlines the specific features and benefits of implementing Predator Tool Crib software to manage tools, cutters, inserts and kits with all of tooling processes for manufacturers worldwide. Predator Tool Crib can be configured to address the unique requirements of each manufacturer with an off the shelf shrink-wrapped software based solution. Every feature, menu, toolbar button and dialog can be configured with a set of permissions per user. Combine this with support for three database platforms; Microsoft Access, SQL Server and Oracle to provide flexibility during the implementation process and an upgrade path as your needs grow.

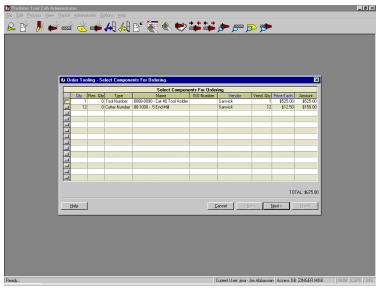
Predator Tool Crib runs stand alone or fully integrated with Predator Gage Crib™, Predator Travelers™, Predator MDC™, Predator DNC™ or Predator Desktop™. Predator Tool Crib is a member of a suite of applications all designed to share data and resources. They all share a common design and philosophy based on our unique understanding of manufacturing processes. Collectively they are known as Predator SFC™ or shop floor control.

Predator SFC is designed to manage the manufacturing details of every shop floor and can be integrated with a manufacturer's higher level ERP or MES systems to form a seamless management system.

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This document is based on features in Predator Tool Crib v1.3.



32 bit Windows based application

What is Predator Tool Crib?

Predator Tool Crib is a software application that creates, organizes, and manages tools, cutters, inserts and tool assemblies electronically. With the motto "You can only improve what you organize", Predator Tool Crib helps improve manufacturing processes by empowering tool room personnel, shop floor personnel, engineers and management with an automated, interactive method of tool management that runs 24x7x365.

Predator Tool Crib provides real-time answers to a manufacturer's toughest questions, including:

- What tools do we already have?
- Where is all of our tooling?
- How much disposable tooling are we consuming?
- How many tools, cutters and inserts do we need to order?
- Who is accountable for lost, broken and scrapped tooling?
- What tools are used for specific part numbers or materials?
- What tools need to be re-certified for use?

Answers to all of the above can be solved with Predator Tool Crib and displayed from any PC with the ability to drill down to any level of detail at any of your manufacturing facilities. For example, a manufacturing engineer in the United States can query the status of tooling in Mexico and find out the current inventory of tools and then plan an improved method to be rolled out in the next three months. Details are kept indefinitely and current tool crib activities or tooling statuses can be compared with previous methods or practices. Real-time tooling answers leveraged against actual production history of tool usage are becoming critical as enterprises rely more on their engineering and manufacturing resources as they go global. Answers based on actual tooling details facilitate faster decisions and increase productivity for every manufacturer.

What tools do we already have and where are they?

Often an excess of tooling is ordered simply because nobody knows how many inserts and cutters are scattered about the shop floor or kept in individual toolboxes. Predator Tool Crib provides an accurate inventory of every tool and can identify where individual tooling should be at any time. Most manufacturers save 10% of their tooling costs by just maintaining a computerized inventory of every tool, cutter and insert.

How much disposable tooling are we consuming?

Predator Tool Crib tracks disposable tooling separately from standard tooling. By definition, inserts are always disposable. With a few mouse clicks consumption reports with costs and quantities can be run by tool, person, or machine within weekly, monthly, quarterly, or yearly periods.



How many tools, cutters and inserts do we need to order?

Predator Tool Crib maintains a minimum re-order level for every tool, cutter and insert number, it then compares this with the current inventory levels and a wizard automates the re-order process. History is maintained and tooling costs and vendor performance can be analyzed over time.

Who is accountable for lost, broken, reworked, repaired or scrapped tools?

Predator Tool Crib tracks lost, broken, reworked, repaired and scrapped tools. A history of lost tools, who reported them being lost, who last checked them out, and where they should physically be found is maintained. Tools can be found and returned to the tool crib and become available for future use. Broken and scrapped tools are officially scrapped only after an official IRR (Inspection Rejection Report) process is completed. IRR processes provide a tracking mechanism for rework. Rework can be performed in-house or by outsourcing. Finally, if all else fails tools can be scrapped. Optionally, a conditional use mechanism is also in place to allow tooling to be used for a limited amount of time to complete a specific run or job prior to completing the IRR process.

What tools are used for specific parts or materials?

Manufacturing engineers or shop floor personnel can use Predator Tool Crib to maintain lists of reference tooling to be used for specific materials or part numbers. New personnel can quickly capitalize on proven processes. With a few mouse clicks these reference reports can quickly identify preferred tools, cutters, and inserts per part number. Finally as tools fail, these reports can be run to identify which part numbers will be affected by the lack of available tools.

What tools need to be re-certified for use?

Certain tools need to be periodically re-certified or reworked. Predator Tool Crib insures that your tooling quality standards will be maintained by adhering to ISO and known best practices. Predator Tool Crib will automatically identify which tooling by specific serial numbers need certification or rework. Predator Tool Crib maintains step-by-step work instructions that can include reference drawings, pictures and even video clips. Work instructions can be broken down to specific steps for initial and periodic work with some steps being required and other being optional. The tool room manager can add or modify work instructions as needed, and a series of reports tracks certifications and all rework processes.

Why use Predator Tool Crib?

Historically, manufacturers rely on the memory of personnel, sheets of paper in a clipboard, an Excel file, an ERP/MRP inventory system, or some custom application. Predator Tool Crib is a shrink-wrapped, open architecture database application that organizes and maintains your tool crib, tooling, and tooling processes. Traditional paper or file-based methods tend to be easy to create, but very difficult to maintain. For example, it is not uncommon for manufacturers to try and manage thousands of individual tools, cutters, inserts, and tooling processes with pencil and paper or 3x5 cards. With thousands of tools, inserts, and cutters, how does one improve a tooling process or document an engineering change? Typically these systems quickly fall behind what is really happening on the shop floor and only stay up-to-date by very dedicated and motivated personnel. Larger companies that have implemented an MRP/ERP system often try to classify tooling as a standard inventory item. This typically fails due to tooling's constant use, the need for tooling to be checked in and out of inventory, lack of usage tracking, etc. Often this compounds with additional cards, paper, files, or processes to complete the level of detail required.

Predator Tool Crib uses a highly relational database, which introduces structure and simplified input. It automates tooling processes to swiping bar codes and a few mouse clicks. New tooling, revisions to existing tooling, and every tooling related process can be done simultaneously by multiple personnel in real-time with Predator Tool Crib on a Windows-based PC. Interfaces between Predator Tool Crib and MRP/ERP systems can be developed and implemented on a time and material basis.

Shop floor personnel are empowered by simplifying check in and check out reporting of lost or broken tools to insure that actual activities and shop floor feedback is reported correctly. By adding bar code readers, tooling processes can be automated to the point of simply swiping bar codes.



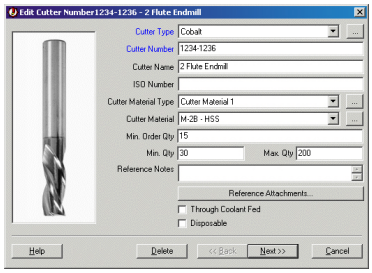
With a few mouse clicks, manufacturing engineers can query the status of tools, identify tools for specific materials or parts right from their PC. Engineers can continue to design and document improved tooling methods and processes that will be used in the future.

Management or administrators can automate ordering of tools, performing inventories, scrapped tooling reports, tooling certifications, and many other processes.

How does Predator Tool Crib work?

Predator Tool Crib organizes and maintains all of your tooling processes. The following flow diagram provides an overview to Predator Tool Crib.





Traditionally, tooling processes are managed using a variety of manual or semi-automatic methods become very difficult to maintain over time. If a physical tool crib or centralized area is not used, manufacturing personnel are forced to store tooling within individual toolboxes and workspaces. By implementing Predator Tool Crib thousands of dollars of excess tooling can be saved with a centralized inventory and re-order process. Predator Tool Crib simplifies all tooling processes and tool crib maintenance to a few mouse clicks. Ordering a new tool, cutter, or insert is a simple process, which has been automated with the use of wizards. The dialog on the left is the first step in a wizard. Additional wizards automate the process of receiving tools, certifying tools, checking tools in and out, etc.

Optionally, each user can be responsible for specific areas. For example, Bob heads up the tooling department and can be the only one that can create or edit new tool numbers. John heads up the grinding department and he has ownership of tool certification, sharpening and grinding processes within Predator Tool Crib.

Tooling supports different levels of detail. For example, sand paper is one of the simplest tools found in a shop, while a kit of tools designed to machine a family of part numbers will have many related tools, holders, cutters, and insert components and specifics. There is no limit to the number of components within Predator Tool Crib. Many customers have tens of thousands of tool kits, tool numbers, cutters and inserts. In addition, Predator Tool Crib is very aware of disposable tools and is aware of their unique

re-order requirements and consumable nature.

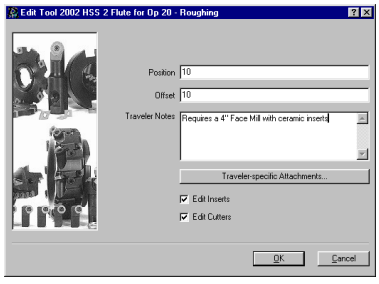
Predator Tool Crib also allows users to assign any electronic file as a reference attachment to specific kits, tools, cutters or inserts. For example, a streaming video clip of general tooling safety instructions can be associated as a reference attachment. Any operator working with any tool could then watch the common safety instructions as well as those for either specific or particular type of tool. This is because Predator Tool Crib also supports specific attachments. For example, a bitmap of the finished tooling assembly can be associated as a specific attachment only when the particular tool assembly is used.

Tools can be revised as engineering changes are made with complete date and time based history. Alternate tools can be created to facilitate expedited or backup manufacturing methods. All of these processes can be implemented enterprise-wide with date and time based histories automatically completed with just a few mouse clicks.

Predator Tool Crib can make dramatic changes to a shop's most basic processes. Instead of maintaining a tool list per part number in a file or setup sheet, Predator Tool Crib can optionally print a tool list report, export an HTML file, or export an Excel spreadsheet. In a paperless environment, an operator (using the Predator Tool Crib Client) can view tools, cutters and inserts with a few mouse clicks. Should a manufacturing engineer desire to stop using 2-flute HHS end mills and start using 4-flute coated cobalt end mills, Predator Tool Crib can advise the engineer on which materials would be affected based on the knowledge built by using Predator Tool Crib within the shop. Depending on the number of tools, cutters and inserts that must be maintained, Predator Tool Crib can save weeks as manufacturing processes are improved and tens of thousands of dollars by lowering tooling costs and inventory levels.

Finally, a complete history of changes is maintained for the lifetime of each tool, cutter, insert, and kit. The history of changes provides a complete audit trail of every tooling process.

What specific data does Predator Tool Crib organize?



Predator Tool Crib is designed to track and organize every aspect of kits of tools, tools, inserts, and cutters. At a minimum, standard tooling information is recorded and tracked in a series of step-by-step wizards or operations. Highlights include:

- Tool Types and Sub-Types
- Tool Number and Name
- Serial Numbers
- Tool Status
- Rework Frequency Information
- First Issue Date and Last Rework Date
- Part References
- Material References
- Multi-Media Attachments
- Notes

- Multiple Vendors with Catalog Numbers and Costs
- ISO Tool Number
- Crib Locations
- Minimum and maximum inventory levels
- Checked out location and user

For every cutter, additional details can be added. Highlights include:

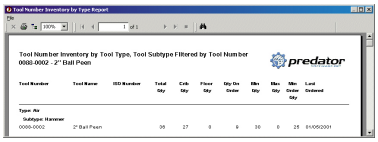
- Type of Cutter
- Cutter Number
- Cutter Name
- ISO Number
- Cutter Material
- # of Flutes
- Cutter Shape

For every insert, additional details can be added. Highlights include:

- Type of Insert
- Insert Number
- Insert Name
- ISO Number
- Insert Material
- Insert Shape

NOTE: Additional details for materials and part numbers are supported but not listed.

What kinds of reports are included with Predator Tool Crib?



117 reports are included standard with Predator Tool Crib. Highlights include:

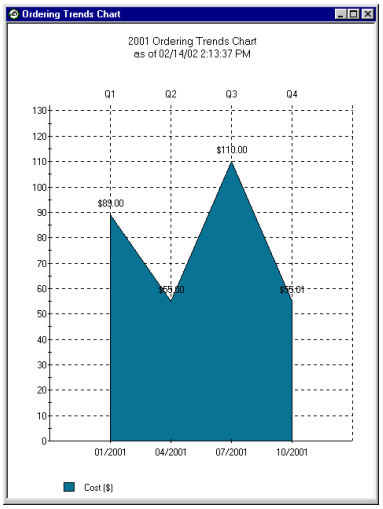
- 4 Tool List, Cutter List, Insert List and Serial Number List Reports
- 2 Tool History Reports
- 3 Production History Reports
- 2 Checked Out Tool Reports
- 3 Consumption Reports
- 2 Quantities per Crib Location Reports
- Lost and Scrapped Reports
- Rework Information and IRR Reports
- 6 Part Reference Reports
- 6 Material Reference Reports
- 2 Kit Reports
- 8 Summary Reports
- 8 Ordering Reports
- 6 Rework Reports
- 5 Inventory Reports
- 8 Security Reports
- 4 Miscellaneous Reports

- 22 Component Reports
- 22 Component History Reports

NOTE: Each of the above reports has numerous options and filters to drill down to the appropriate data. For example, the Tool List Report can be filtered to a specific department, location, group, machine, and 12 other items.

All reports can be exported to Microsoft Excel or HTML documents for further analysis or processing. Additional Predator Tool Crib Client applications can be licensed just for the manufacturing engineers to view specific Tool Crib reports. Custom reports and graphs are available via several third party report and charting applications such as Crystal Reports.

What kinds of charts are included with Predator Tool Crib?



17 charts and graphs are included standard with Predator Tool Crib. Highlights include:

- Rework Summary Chart
- Crib Transaction Summary Chart
- IRR Summary Chart
- Purchase Order Summary Chart
- Lost vs. Found Chart
- Active vs. Inactive Chart
- 3 Tool Inventory Charts
- 2 Cutter Inventory Charts
- 2 Insert Inventory Charts
- Vendor Purchases Chart
- Ordering Trends Chart
- Consumption Trends Chart
- Periodic Calibration Trends Chart

NOTE: Each of the above charts has numerous options and filters to drill down to the appropriate data. For example, the Ordering Trends Chart can be filtered to a specific tool type, sub-type, and number with results for both cost and quantities.

All charts can be copied to the clipboard and saved as JPEG graphics. Additional Predator Tool Crib Clients can be licensed just for the manufacturing engineers to view specific Tool Crib charts. Custom charts and graphs are available via several third party report and charting applications such as Microsoft Access, Crystal Reports or Oracle Reports.



One of many

Predator Tool Crib is a stand-alone database driven application built on Predator's common database platform. This common platform is a shared foundation to an entire suite of Predator applications. Shared common data improves overall productivity and minimizes implementation time when adding additional applications. For example, edit a machine's properties and every Predator application is immediately updated including Predator Tool Crib, Predator MDC, Predator DNC, Predator Desktop, Predator Gage Crib and Predator Travelers.

Predator's common database platform is an open architecture structure and independent of the actual database server. Currently, it supports Microsoft Access, SQL Server and Oracle depending on the customer's requirements. Predator's common database platform is fully relational and supports powerful object-based design to support an unlimited number of tools, cutters, inserts, kits, crib locations, parts, personnel, machines, departments, etc.

What are the main features of Predator Tool Crib?

One of its major design goals is to provide a flexible tool crib environment that supports discrete manufacturers to work more productively. The following features achieve this goal:



- Multiple simultaneous users from any Windows based networked PC.
- Powerful object-based database design to support an unlimited number of tools, inserts, cutters, and kits of tools.
- Multiple manufacturing plants can be supported within a single Predator Tool Crib database with reports and charts that span the enterprise or drill down to each plant.
- Open architecture design with native database and SQL query support for Microsoft Access, SQL Server and Oracle.
- Supports tool, cutter and insert ordering, re-ordering, receiving, initial certification, check in, check out, rework, scrapped, and lost tooling processes.
- Complete revision tracking and tooling history.
- Common components include tool types, tool sub types, cutter types, insert types, material types, departments, crib locations, groups, work instructions, machines, materials, parts, and all associated files and media.
- Comprehensive ISO 900x history of edits/changes.
- Easy to use wizards for all tooling processes.
- Edit common components with an automatic update. For example, change tool number details and every related serial numbered tool that has the same tool number is updated.
- Query and print reports based on current statuses. For example, display all checked out tools.
- Linked multimedia can include a file on the network with additional viewers for

Microsoft Excel, Word, PowerPoint, RTF, AutoCAD, DXF, HTML, PDF, text and bitmaps included with Predator Tool Crib.

- Predator Tool Crib includes a *secure* browser based on Microsoft Internet Explorer for corporate Intranets.
- Automatic database integration with:
  - Predator DNC
  - Predator Desktop
  - Predator PPM – Parametric Part Manufacturing
  - Predator Travelers
  - Predator Gage Crib
  - Predator MDC - Manufacturing Data Collection
- Includes 117 standard reports
- Includes 17 standard tool management charts
- Custom reports and graphs are available via several third party report and charting applications.
- Comprehensive HTML based on-line help that leads the industry
- Automatic database migration as each software version is released.
- Real-time transaction based processing to minimize database corruption with automatic rollback when power is restored.
- Flexible licensing including SIMs, network cards and floating network licenses.

For More Information

For the latest information on Predator Tool Crib, check out our World Wide Web site at http://www.predator-software.com

