Atlas is the metalforming industry leader in designing and building:

Die Change Systems; Die Storage and Retrieval Systems
including complete die cart/rack systems for individual or tandem line presses

Programmable Tri-Axis In-Press Transfers
including Flex 2000, the patented FLEX 5000® and FLEX Finger Tooling

Stacking and Destacking Automation
for sheet metal blanks or parts

At Atlas, our entire business is centered around the goal of optimizing the movement of sheet metal and dies during stamping processes—in short, solving your pressroom production problems and taking advantage of automation opportunities.

Atlas is a full-service resource, utilizing our 30 years of experience to provide objective-based engineering studies, examine alternatives, and find the most productive mixture of manual and automated operations.

We have complete in-house capability for total system responsibility, mechanical and controls design, fabrication, machining, assembly, test and installation.

Our team of approximately 200 professionals utilize over 100,000 square feet of modern manufacturing, engineering and office space. Manufacturing facilities are located in Fenton, Michigan, with regional sales offices in the UK and China.

ATLAS TECHNOLOGIES

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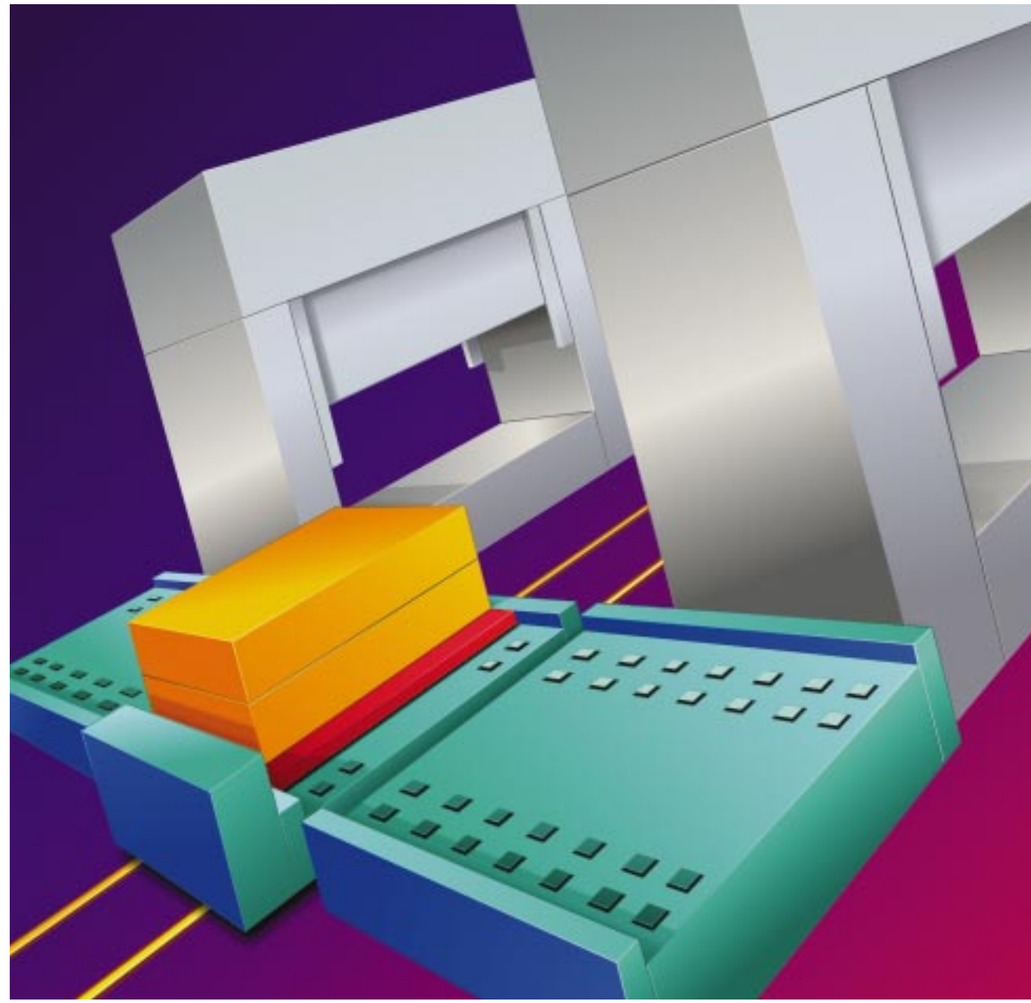
The Die Automation Cart (DAC): US Patent #5,643,615
FLEX 5000: US Patent #4,887,446 and #5,105,647

Die Handling Systems



ATLAS TECHNOLOGIES

Die Handling: The Objectives

Atlas Die Handling Systems give you complete control of the changeover process for:

- **Faster Response** to changing production schedules or sudden demands, since dies can be changed over in mere minutes.
- **Reduced Inventory**
  Reduce batch size cost-effectively, minimize work-in-process and meet Just-In-Time requirements.
- **Greater Press Uptime and Utilization**
  Reducing die change from hours to minutes can add hours of stamping productivity per day without added presses.
- **Control of Quality**
  Dies can be pulled and checked quickly without destroying your production schedule. Controlled handling means less chance for die damage.

Die Change Principles

Dies are pre-staged prior to changeover. Attaching every die to a common-sized subplate provides uniformity for die positioning in the press and all die movement on carts and racks.

Subplates: A Common Interface

Fundamental to Atlas die change systems is a common interface between the die, press and die change equipment. The use of subplates provides a common surface for all of your existing dies, allowing them to roll into and out of the press, a die cart or die table, and storage racks. The subplate, typically the same size as the press bed, becomes the die's tool holder. In some cases, new dies can be designed to have the same bottom surface, eliminating the need for a subplate.

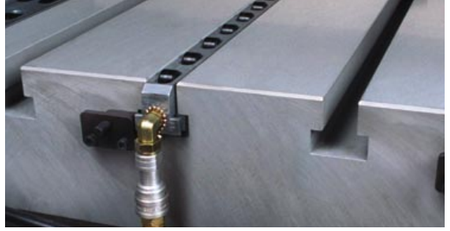
The common surface is also the key to fast, consistent die clamping. The consistent location achieved by pre-staging dies on subplates is maintained through the use of a keyway or side guides, which guide the die subplate into the press. The common height provided by the subplate makes either powered or manual clamping easier.

Rolling Dies: Maintaining Greater Control

When rolled, the force required to move a die is 1% of its total weight, as opposed to the skidding technique in which 70% of total weight is required. Rolling allows die movement to be more controlled.

Together, the use of subplates and the ability to roll dies results in:

- Time savings - no jacking or prying to load/unload the die or reposition it.
- Reduced danger of injury - die movement is under control at all times.
- Die protection - die surfaces are spared rough handling, which reduces maintenance and die resurfacing costs, and increases quality consistency.
- Simpler pre-staging - dies can be setup and checked on the subplate without interfering with the press.



LIF-T-ROLS are installed in your press bolster so dies can roll in and out of the press.

Die Lifters Allow Dies to Roll Out of the Press

Atlas bolster-mounted die lifters are rugged, non-powered rollers that allow dies to roll in and out of the press during die change. Hydraulic lifting pistons raise the rollers into place, and lower them below the bolster surface after die change.

LIF-T-ROLS are designed to fit in standard 1" ASA T-slots. MAX-ROLS, for heavier applications, provide greater roller area and can be built into the bolster or installed above bolster level to fit risers on the die's bottom surface or recessed slots.

Atlas supplies complete lifter packages as part of a die change system, or as a stand-alone installation kit.

Powered Ledge Clamps

Atlas powered ledge clamps provide low-cost automated die clamping while guiding die subplates onto the press bolster. Their unique design maximizes the die/subplate capacity of your press. Reliability is enhanced, since the main body is constructed in one piece, minimizing the number of parts and seals.

Anatomy of a Die Change

Many of the steps within a die change are bigger time wasters than you might realize. Steps shown with a clock ( ) can be the worst. Here's a breakdown:

1) Organizing tools and people

Significant time can be wasted deciding who's going to do what and when, then getting proper wrenches and equipment to the press.

2) Opening and locking out the press

3) Removing scrap chutes and automation (if applicable)

Automation can be designed to roll away from presses quickly, or be mounted in a common structure with the die cart (see Atlas DAC, page 5).

4) Unclamping the die

Clamping only amounts to 5 to 10% of changeover time; power clamping can help but is typically not the whole solution.

5) Removing the die

Delays caused by waiting for an available crane or fork truck are typically a big downtime factor.

6) Transporting new die to press vicinity

Having the new, incoming die next to the press - before you're ready to changeover - is a big timesaver. Having it pre-staged and checked is even better.

7) Putting the new die in the press

Rolling the die into the press significantly reduces this time factor.

8) Locating the new die in the press

This can represent up to 50% of changeover time. A common die mounting surface (such as a subplate) greatly simplifies this step.

9) Closing the press and adjusting shut-height

Motorized shut-height adjustment can minimize time needed.

10) Fastening the dies

Having a common mounting surface for all dies simplifies fastening; no time spent searching for the right size bolts.

11) Setup and adjustment of scrap removal and automation (if applicable)

The difficulty of resetting automation can cancel out other time savings. Consistently accurate die positioning (achieved with Atlas systems) can reduce or eliminate automation setup time.

12) Other setup (application specific)

A) Lubrication
B) Cushion pressure/pin locations adjustment
C) Press speed adjustment

13) Changing raw material

14) First part approval

Gentle, controlled handling of dies, and accurate die positioning, improves the chances of making a good part on the first hit.

Dual-station die cart quickly unloads outgoing die, then aligns and loads pre-staged incoming die to a blanking press in Monterrey, Mexico.

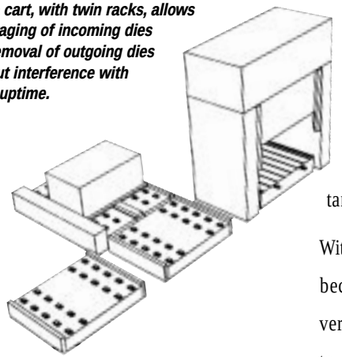
Tandem press line at Chrysler Sterling Stamping. The automotive industries' largest body panel stamping dies are handled by Atlas die carts.

Die Cart Configurations

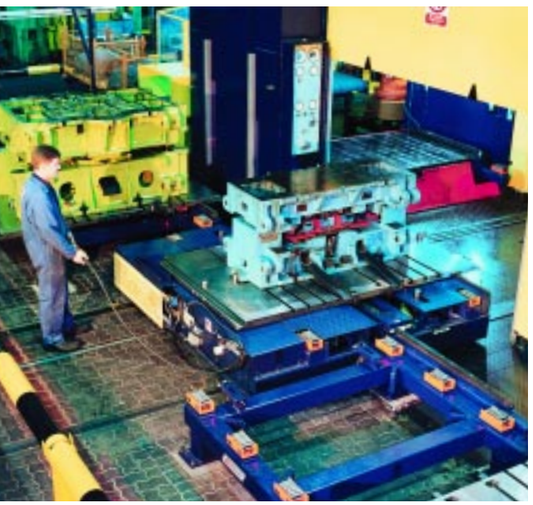
Dies Large and Small... Changed Over in Minutes

Atlas designs and builds the most comprehensive range of accelerated die change solutions in the industry. Systems utilizing powered die carts and integrated die racks are used in applications ranging from a single press or multiple independent presses, to sister tandem lines.

Single cart, with twin racks, allows pre-staging of incoming dies and removal of outgoing dies without interference with press uptime.



With these systems, handling of dies becomes highly predictable, manageable, and very fast. Die change is reduced from hours to minutes. Scheduling for reduced inventory becomes practical... Just-in-Time becomes possible. Stockpiles disappear and response time quickens. You no longer need to live with potential compromises to product quality due to the downtime required to pull questionable dies for checking.



A single cart and two racks can serve two stand-alone or tandem line presses.

The Die Cart Benchmark

Atlas die carts have become the industry benchmark. Installed on over 700 presses, Atlas has more cart-based applications in the field than all competitors combined.

Self-powered and controlled either by pendant or remotely, Atlas carts move on floor rails at speeds up to 30 feet per minute, transporting dies of almost any size to and from presses and die racks.

Precision ballscrew driven push/pull modules engage die subplates on either end, indexing one or more dies on or off the cart, and into or out of the press. For safety and long life, carts are built to handle much more weight than your highest load requirements.

Die racks become a "close-to-the-press" staging area. Equipped with rollers, they are ruggedly built like Atlas die carts. In many configurations, added racks extend the usefulness of each cart, maximizing the benefit of your investment.

One-Button Die Change

No cart operators are required on cart-equipped tandem press lines at more than a half dozen automotive OEM stamping facilities on two continents. These systems have completely automatic Atlas die cart systems. One button executes the entire die change sequence, including indexing of part handling automation. Atlas works with the leading controls manufacturers to create these breakthrough systems to your specifications.

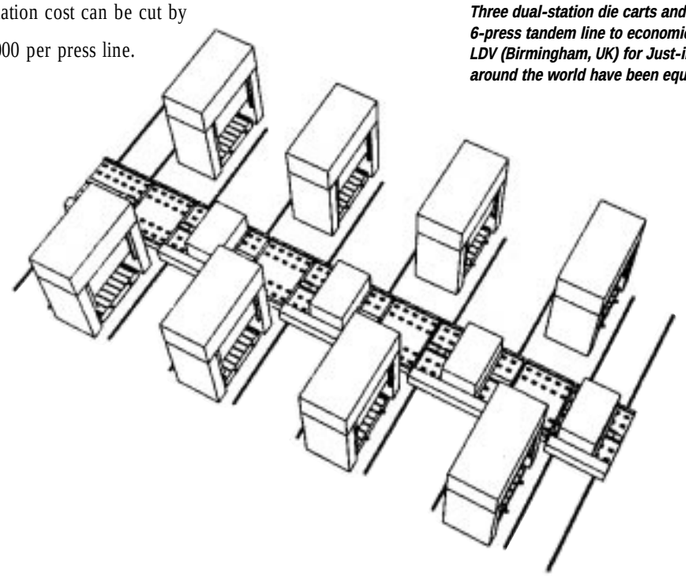
Die/Automation Innovations

The patented Atlas Die/Automation Cart (DAC) combines part-handling automation and a die cart into a single piece of equipment that becomes a mobile, between-press cell. The result: outer aisles remain clear of automation during changeover. And automation cost can be cut by $400,000 per press line.

"Look boss, no die cart operators." One of many Atlas "one-button" systems used by US and European automakers for completely automatic die change.

These systems can utilize Atlas patented FLEX 5000® tri-axis transfers to achieve transfer press speeds and productivity on a tandem line of presses.

Three dual-station die carts and 12 die racks are integrated with a robotically-loaded 6-press tandem line to economically achieve an 80% reduction in changeover time at LDV (Birmingham, UK) for Just-in-Time operations. Over 140 tandem press lines around the world have been equipped by Atlas.



Sister tandem lines can be changed over by one set of die carts and racks. The "domino" configuration, with simultaneous load/unload of all presses, yields the industries' fastest changeovers.

Die change in progress on a 3-station T-Table at John Deere's Ottumwa, Iowa facility.

Elevating die cart with die storage rack.

Comprehensive Die Handling Solutions

Based on your production objectives and plant floor geography, Atlas integrates the most appropriate, most cost efficient level of die change equipment into your fabricating process. Elements often include quick-change die tables, die carts and racks (see previous pages), die separators, and complete automated die storage and retrieval systems including elevating die carts.

Die Tables

Atlas die tables utilize a combination of push/pull modules and powered conveyors to automatically unload and load dies to and from a press. They are often mated with elevating die carts for automatic die storage and retrieval.

Die tables, including the Atlas T-Table (see below), provide complete, cost-effective die change capability in situations where floor space and/or economic constraints prohibit the use of die carts.

T-Table Changeover:
Incoming die is delivered to Station 1 and conveyed to Station 3 for pre-staging and/or waiting for changeover. The out-going die is pulled to Station 2, then the conveyor indexes both dies to the left to move the outgoing die to Station 1 for pick-up, and move the incoming die to Station 2 and then into the press.

Adjustable-height tables can service two adjacent presses of varying heights. The table itself is moved by fork truck or crane.

Separators/Turnovers

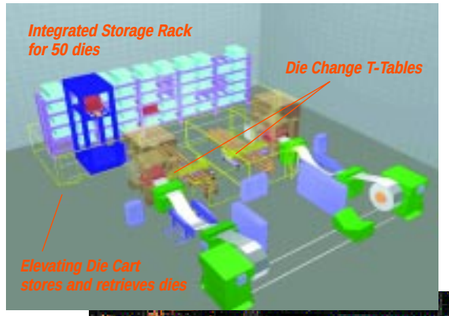
Atlas separators/turnovers provide complete control and positioning of dies, and are designed so that they can do double duty as a blank stack turnover. They reduce the potential for die damage and make it easier and faster to perform frequent maintenance, inspection, or pre-staging (setup) of die tooling. Employee safety factors can also be improved.

The powered barrel turnover feature rotates the upper die 180°, allowing tooling details to be presented to the die setter at a common height. Re-mating upper and lower dies is simple and fast. Mis-positioning that can cause binding is eliminated.

Automatic Storage and Retrieval Systems

Maintaining the shortest distance between frequently-used dies and your presses is the key to achieving fast production response. In order to change dies faster, especially when an unscheduled change occurs, you need to get them out of storage faster without waiting for cranes or fork trucks.

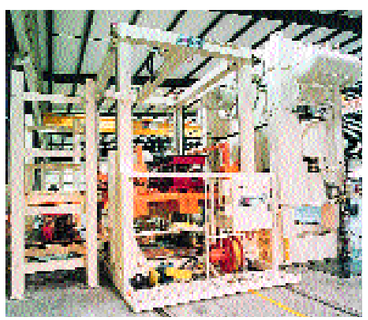
Atlas Automated Storage and Retrieval Systems (ASRS) are the answer. They utilize unused vertical space for storing dies (and/or stacks) in multi-tier racks that are accessed by an elevating die cart, which, in turn, interfaces with die tables or directly with your presses. This can create a completely automatic, uninterrupted path for dies to flow to and from your presses on demand.



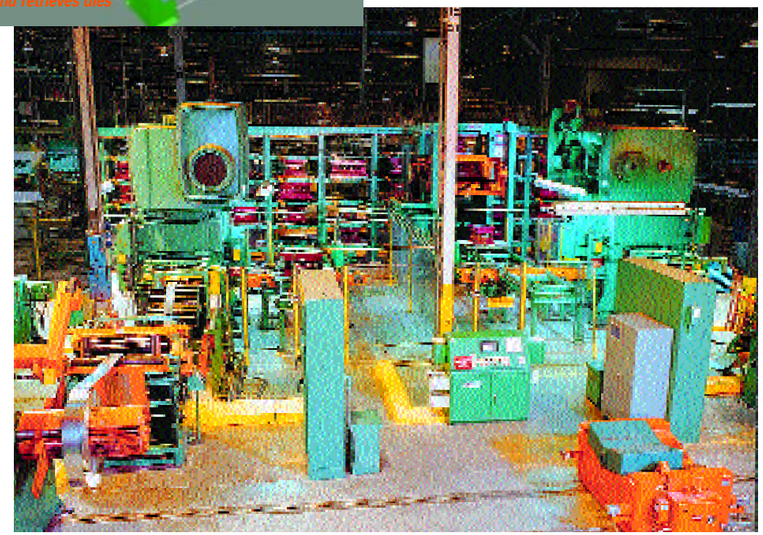
Die change and die storage processes are separated, so they can occur simultaneously, eliminating the time wasted waiting for dies.

The press uptime gained can actually eliminate the need to add presses to meet increased production demands. Plant expansion may become unnecessary. In addition, reduced manual handling of dies helps to reduce die damage.

Other processes, including, die separator/turnovers, die wash stations and maintenance areas can be put in-line with die transports to make totally integrated die handling systems.



Elevating die cart travels to and interfaces directly with three individual presses and corresponding racks.



Two presses, with T-Tables, are served by one elevating die cart that accesses multi-tier storage rack for up to 50 active dies. Atlas supplied the entire system (including coil feeds and coil car) to this appliance manufacturer. At the control panel, the operator merely selects the die and the press, then walks away. When he returns a few minutes later, the new die is on the T-Table standing by for changeover...or in the press. Die exchange time on the T-Table is two minutes.

An Atlas ASRS can also automatically store stacks of sheet metal blanks (in Atlas pin pallets), and/or palletized coil. Systems can be programmed to re-assign available slots to a combination of dies and material.