

Joy Mining Machinery



autodesk[®]
Manufacturing
Solutions

Customer Success Story



Turning Process into Value: A New Global Engineering Solution for Joy

Joy Mining Machinery Business Solution

Accelerated Creation

With Autodesk Inventor Series, Joy gets value beyond design—the sales configurator cuts customization engineering time dramatically.

Simplified Management

Autodesk Vault gives Joy engineering data management at no additional cost. Easy installation, instant efficiency.

Effective Sharing

Autodesk Streamline, the collaboration tool that simplifies how Joy shares data from design to the shop floor and suppliers, increases global team efficiency.

Autodesk Consulting

Consulting, training, and implementation support from Autodesk Consulting has reduced loading time by more than 70 percent and has helped move 400 people in a four-country engineering team to a new platform without compromising project schedules.

A leading manufacturer of mining equipment in a tough global market, Joy Mining Machinery faced a critical challenge: to create an engineering environment with enough process efficiency to integrate multiple design teams worldwide and accelerate their time to market. The answer? A comprehensive manufacturing solution from Autodesk. Joy partnered with Autodesk to create an engineering environment with seamless design data transfer among teams in the United States, United Kingdom, South Africa, and Australia. Why choose Autodesk over its competitors? Tim Morris, Director of Global Engineering Systems with Joy Mining Machinery, was clear: “Autodesk has the necessary strengths in design technology, plus the depth of global presence, to carry this off.”

Creating Competitive Advantage in a Global Market

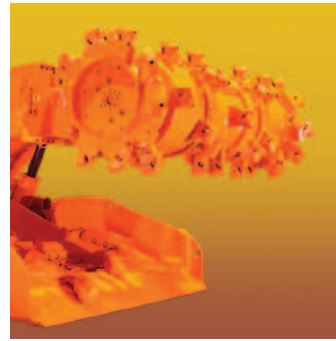
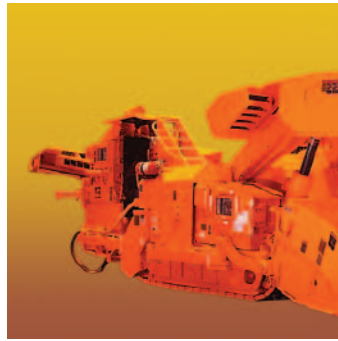
“If it’s not grown, it’s mined.” That’s the motto of Joy Global, a \$1.1 billion, 7,000-employee enterprise, and it highlights the importance of mined resources in a global economy. The company’s largest unit, Joy Mining Machinery, is a leading supplier of underground mining systems and services worldwide whose customers mine hundreds of millions of tons of coal each year. Why is coal so important? Electricity. Coal generates 56 percent of the electric power in the United States, represents 95 percent of the nation’s fossil fuel energy reserves, and offers a 300-year supply under our feet. But a downturn in the mining industry in the 1980s forced equipment manufacturers to respond to a newly aggressive competitive landscape—and get products to market faster and for less cost. To meet the challenge, Joy chose Autodesk® 3D modeling software and services over all other competitors.

Simplifying Process End to End

The Joy-Autodesk partnership focuses on four key parts of an integrated solution: establishing Autodesk Inventor® Series as Joy’s engineering platform, using Autodesk Streamline® to share design data across the enterprise, simplifying engineering data management with Autodesk® Vault, and gaining new technology implementation support as well as creating a global documentation standard with Autodesk Consulting.

With Autodesk technology and services, Joy moved away from traditional 2D design tools and legacy 3D tools to a new paradigm: Autodesk Inventor 3D modeling software plus online project hosting to improve collaboration—all strengthened by a range of Autodesk consulting, training, and support that helps simplify the entire manufacturing process.

Autodesk Customer Success Story Joy Mining Machinery



autodesk[®]
Manufacturing
Solutions



Data Value Beyond Engineering with Autodesk Inventor Series: A Joy Sales Configurator

The new Joy design environment is delivering a benefit beyond accelerated engineering. Joy is now using Autodesk Inventor as the engine for a sales configurator to develop product specifications during the sales process. The goal: to enhance the customer sales experience, close sales more quickly, and reduce engineering time needed to develop Joy's highly customized product offerings.

Joy engineering laid the groundwork for the configurator development by analyzing several years of sales data. Based on frequency of product feature choices, the company is developing a set of standard options that can cut customization engineering time dramatically.

Working face to face with the customer, the salesforce can now use a laptop to produce a product specification, a sales-level bill of material, a cost, a delivery date, and an interactive 3D model of the product that can be rotated and zoomed—replacing a long paper questionnaire with strong customer experience.

STEP
1

CREATE The Power of Integrated Design

Joy began with a fragmented process that needed repair: with 400 people in four distinct engineering teams, located in four countries, using five separate CAD systems, its multisystem CAD environment was inefficient. Engineering staff had to master multiple CAD systems (including more than 400 seats of Pro/ENGINEER, CADD5 V, Medusa 2D, Medusa 3D, and AutoCAD[®]). Data exchange, file sharing, and interpretation of design data were difficult.

The transition to a better engineering cycle began with 200 licenses of Autodesk Inventor Series software, a new foundation for Joy's integrated engineering process. Joy chose Autodesk Inventor Series because it offers the only complete 2D and 3D design software in a single package—a capability unmatched by any other vendor. The payoff: engineering teams at Joy are already using Autodesk Inventor to create a new electric-powered shuttle car to bring coal to the surface, a machine that requires maximum capabilities in minimum physical volume. Soon Autodesk Inventor Series will replace all other CAD systems at Joy.

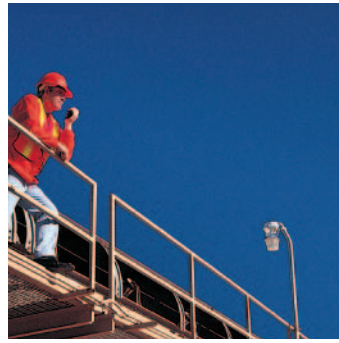
"Moving away from drawings to content-rich, versatile models," explains Tim Morris, Director of Global Engineering Systems, "is the key to many future improvements in engineering design, collaboration, manufacturing, and improved supplier relationships."

Joy engineers note the immediate benefits of Autodesk Inventor—its sophisticated solid-modeling capabilities, its large-assembly performance, and its fast learning curve. Robust visualization capabilities also make it easy to

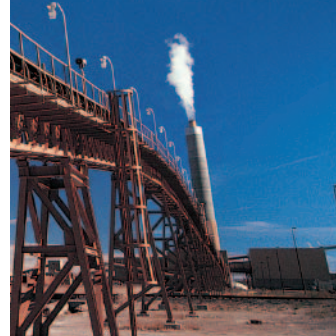
solicit input from both customers and management on a variety of shuttle car steering concepts during development. In feedback sessions, engineers use Autodesk Inventor to show concepts in 3D full-color animations, a new capability that's become a valuable part of design optimization. Tim Morris reports: "Inventor's ease of use is its biggest benefit."

But Joy chose Autodesk software for another key reason. The engineering teams work in a mixed 2D/3D environment, so they needed a software platform with versatility. Autodesk Inventor Series delivers sophisticated 2D design tools—AutoCAD and AutoCAD[®] Mechanical—that integrate readily with the 3D capabilities of Autodesk Inventor.

Tim Morris recognized that the company's use of Pro/ENGINEER was putting an undue emphasis on CAD user expertise. Worldwide adoption of Autodesk Inventor Series, with its easy-to-use interface and intuitive capabilities, helps Joy put the emphasis back where it belongs: on the creative, problem-solving aspects of engineering design.



“We want to hire engineers, not CAD experts.”
 — Tim Morris
 Director of Global Engineering Systems



STEP 2 **MANAGE**
Autodesk Vault Helps Joy Manage Their Development Engineering Data

With four distinct engineering teams in as many countries, Joy needed an efficient way to manage development engineering data. They found it in Autodesk Vault, an engineering data management application integrated with Autodesk Inventor at no added cost. Autodesk Vault offered easy installation, without complex deployment, and scalability for workgroups. And with an intuitive interface that’s easy to use, Joy gained immediate data management efficiency.

Today Joy is using Autodesk Vault to organize their multiteam, multilocation development engineering data into local repositories. The application gives engineering team members access to up-to-date data without spending time on data organization, extensive searches, and individual file sharing efforts. Working outside of the enterprise PDM system for development accelerates design cycles, improves reuse and repurposing of data, and enables better version control with fewer errors.

STEP 3 **SHARE**
Value Across the Enterprise

For the collaboration component of their integrated process, Joy adopted Autodesk Streamline, an online project hosting environment, to connect their global engineering teams and better manage their purchasing function and suppliers.

The first task was to link engineering teams in South Africa and the United States to facilitate the joint development of a new shuttle car. Team participants can now upload their work daily to the Autodesk Streamline server where it can be immediately accessed by other project members. Working with rich, real-time engineering data eliminates many collaboration problems traditionally associated with multilocation design.

Moving our products to market faster and cheaper requires managing and sharing design information across our entire manufacturing process—Autodesk is our global partner in helping us do this.

—Tim Morris
 Director of Global Engineering Systems

STEP 4 **EXECUTE**
Smooth Implementation, Sustained Productivity

Changing CAD systems in a multinational engineering organization is like changing a tire in midrace. Slowing down is not an option. At Joy, effective change management means moving 400 people in a four-country engineering team to a new platform—without compromising project schedules.

To ensure minimal disruption to the business, Joy chose Autodesk Consulting, a global consulting and training organization, to coordinate data conversion and training programs across the enterprise. Autodesk also supplies global web and phone support—capabilities that played a critical role in Joy’s overall platform decision.

Effective change management also involves software installation, maintenance, auditing, control, and budgeting—all simplified as much as possible. To stay focused on engineering while maximizing software effectiveness, Joy purchased Autodesk® Subscription for all 200 of its new Autodesk Inventor Series licenses. With Autodesk Subscription, engineers get access to the most current Autodesk software releases—plus personalized support and flexible training to use their software capabilities to the fullest.

Autodesk Customer Success Story Joy Mining Machinery



autodesk[®]
Manufacturing
Solutions



STEP 5 **UNIFY** Creating a Global Document Standard

To get the most out of their new engineering environment, Joy needed a uniform set of instructions for creating digital design engineering data—something crucial to its effective sharing and reuse. Joy's transition team began the process with lengthy negotiations involving key managers from all its engineering groups. The result: a clear set of parameters for a global CAD standard.

To execute its standards manual, Joy turned to Autodesk Consulting, which worked with INCAT, a major Autodesk reseller in Novi, Michigan. Joy now employs a comprehensive set of 2D and 3D standards and templates with the ability to expand the standards in the future. As Autodesk Inventor Series comes online for each of the engineering teams, the CAD standard will already be in place.

The key to this entire process was the selection of Autodesk as both our technology and global implementation partner. I don't know of another company that can provide the technology strengths, sophisticated software, and world-wide implementation services that make up this comprehensive solution.

—Tim Morris
Director of Global
Engineering Systems

Measuring the Bottom Line: Benefits of the Autodesk Partnership

Among a range of implementation services it offered, Autodesk provided a customized process for loading Autodesk Inventor Series and associated software on hundreds of Joy workstations worldwide. With an Autodesk-developed Visual Basic[®] script, Joy completely automated the process of loading multiple large applications. Bottom line: loading time reduced by more than 70 percent.

But even productivity doesn't tell the whole story. "Improvement numbers really don't do justice to the dramatic process changes we're making," Tim Morris explains. "Yes, we expected significant productivity improvements from replacing five CAD systems with Autodesk Inventor Series—and we're getting them. We're confident that our new engineering platform will deliver better designs, better reuse and repurposing of engineering design data, and faster time to market. But the real

value of this effort is the totality of our ongoing partnership with Autodesk. Implementing a global engineering platform is a huge task and we're relying on Autodesk to listen to our needs, to be flexible, and to work hard to accomplish the results we need. On all counts, Autodesk is there for us."

Joy knows the future lies in shifting from drawings to creating rich, digital, interactive 3D models that will provide the foundation for further automation improvements. The company chose Autodesk because it offers the technological headroom necessary to keep improving Joy's engineering processes for years to come.

Learn more about the complete manufacturing solution from Autodesk. Visit www.autodesk.com/manufacturing.

autodesk[®]

Autodesk, Inc.
111 McInnis Parkway
San Rafael, CA 94903
USA

Autodesk, AutoCAD, Autodesk Inventor, and Autodesk Streamline are registered trademarks of Autodesk, Inc., in the USA and/or other countries. All other brand names, product names, or trademarks belong to their respective holders.

© 2004 Autodesk, Inc. All rights reserved.

000000000000113693