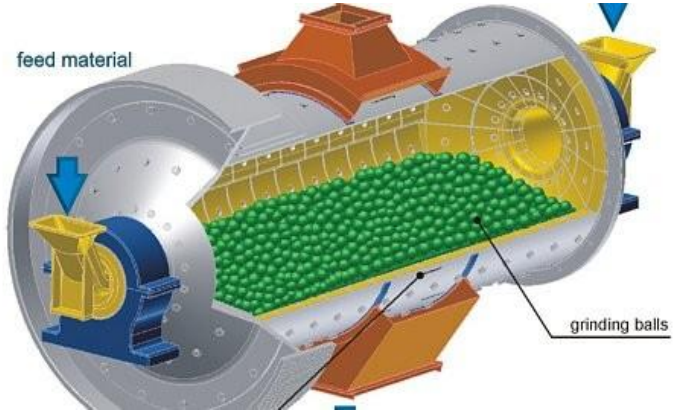
PtSA Production Technologies Association of South Africa

Harnessing TDM capability for Mining Equipment Manufacture



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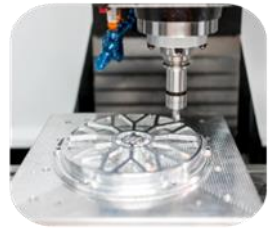
CONTENT

Rapid tooling
Die Casting
Hot forming
Cold forming
Stamping
Injection moulding

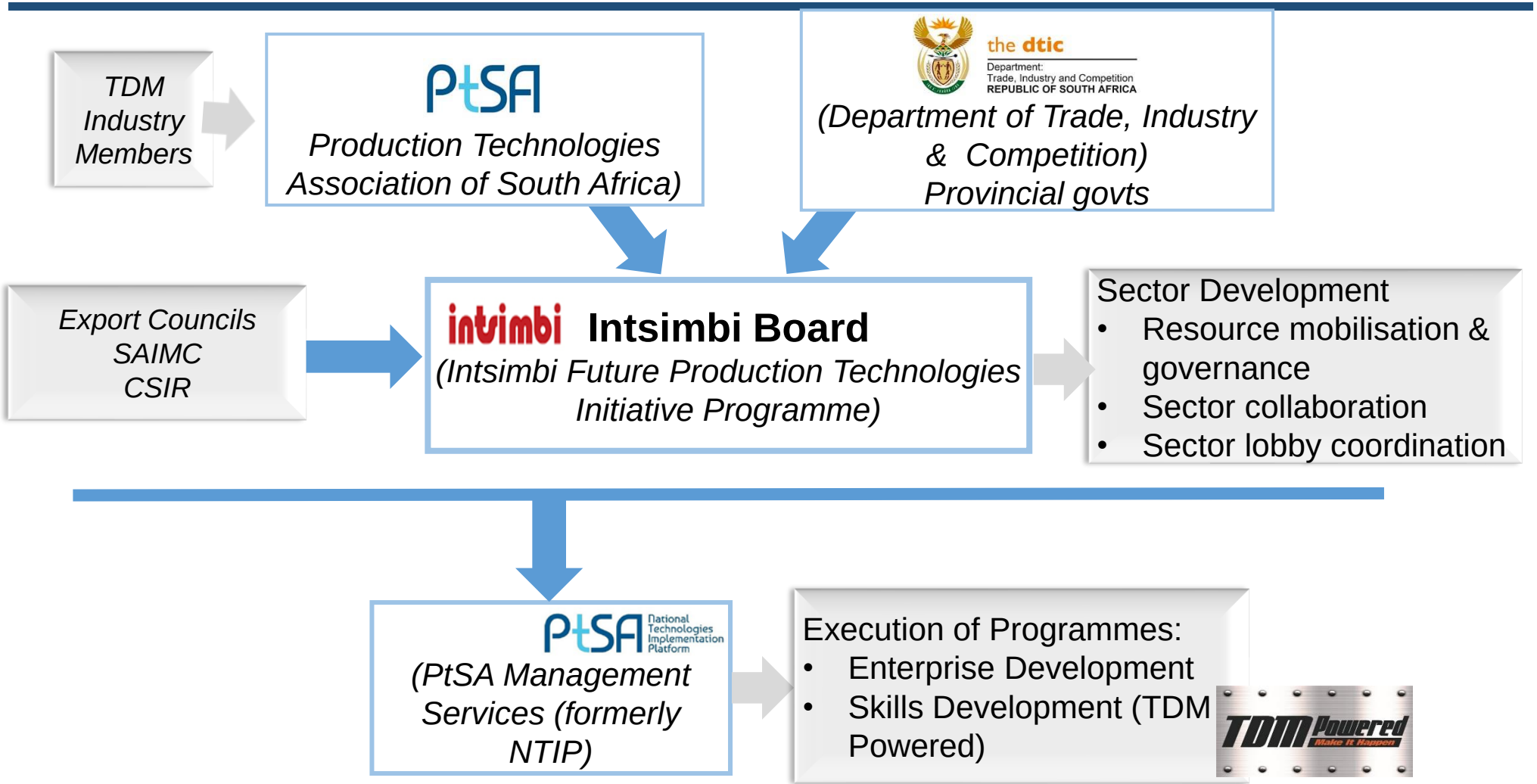
PART 1:PtSA

PART 2: TDM`s Applied Approach

PART 3: Modern assembly system impactors



Company Profile



PtSA Management Services (Pty) Ltd

The PtSA Management Services (Pty) Ltd. (NTIP) is a wholly owned subsidiary of the Production Technologies Association of South Africa (PtSA) and is also responsible for the application of project management resources and projects execution.

Skills Development

PtSA Management Services is highly experienced in the development and implementation of skills programmes for the Tool, Die and Mould (TDM) sector.

- Training Systems and Solutions
- Curriculum Content
- Career Guidance
- Recruitment and Selection of Students
- Life Skills
- Remedial Programme
- Advanced Training Support at Tooling Centres of Excellence
- Facilitation and Interface Management
- Execution Programmes
- **TDM students are available for workplace-based training at MEMSA Companies**

Enterprise Development

The objective of the Enterprise Development is to embark on robust rehabilitation programmes to put the local industry on a firm trajectory to international competitiveness.

This service is available to MEMSA constituency

PtSA Production Technologies Association of South Africa

Qualifications and Accreditations

PtSA has established 4 training Centres of Excellence in Pretoria, Cape Town, Gqerberha and Pietermaritzburg. The Centres are well equipped and accredited as Skills Development Providers and Trade Test Centres for the following qualifications and part qualifications:
Each Certificate consists of a Knowledge Module, Practical skills Module as well as a Work experience Module

Occupational Certificate	NQF Level	SAQA ID
Toolmaker	5	91796/103177
Tooling Machinist	5	103142
CNC Turning Machinist	4	103099
CNC Milling Machinist	4	102996
EDM Wire Operator	4	103017
EDM Plunge Operator	4	103016
CAD Operator	4	103091
Lathe operator	3	103156
Milling Machine Operator	3	103019
Surface Grinder Operator	3	103020
Manufacturing Workshop Assistant	3	103018

Programme highlights

Training programme (~3000)

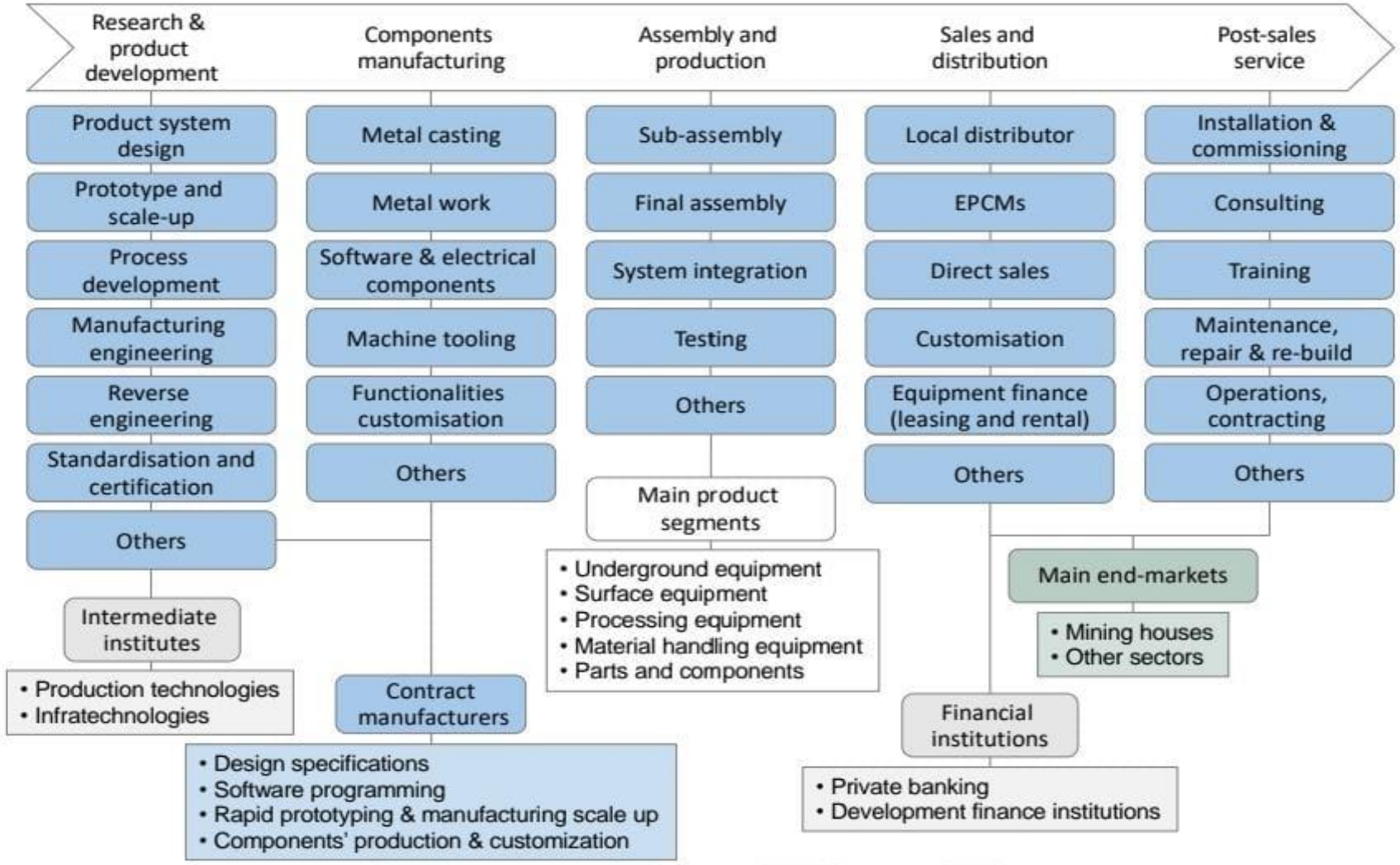
- 13 updated, globally aligned full and part qualifications developed, piloted and registered
- Internationally recognised – collaboration with NIMS and Fraunhofer Institute
- Toolmaker Artisan and Tooling Machinist flagship programmes
- Successful collaboration with industry – 95% of graduates employed upon completion
- 65% completion rate
- Increased access and diversity: 34% female, 98 % HDI/black, 98% <35 yrs
- ***Literally turned rural kids into rocket scientists***
- 4 fully equipped training centres of excellence established
- Trade testing capacity developed
- Lowered toolmaker age from about 70yrs to below 40 years in 13 years (estimate)
- Africa NIMS representatives

Enterprise Development

Over 200 companies assisted
Africa WBA representative

PtSA Production Technologies Association of South Africa

Mining Inputs Value Chain Framework



TDM SECTOR TOOLS, SYSTEMS & TECHNIQUES

TO IMPROVE MINING MANUFACTURING SYSTEMS

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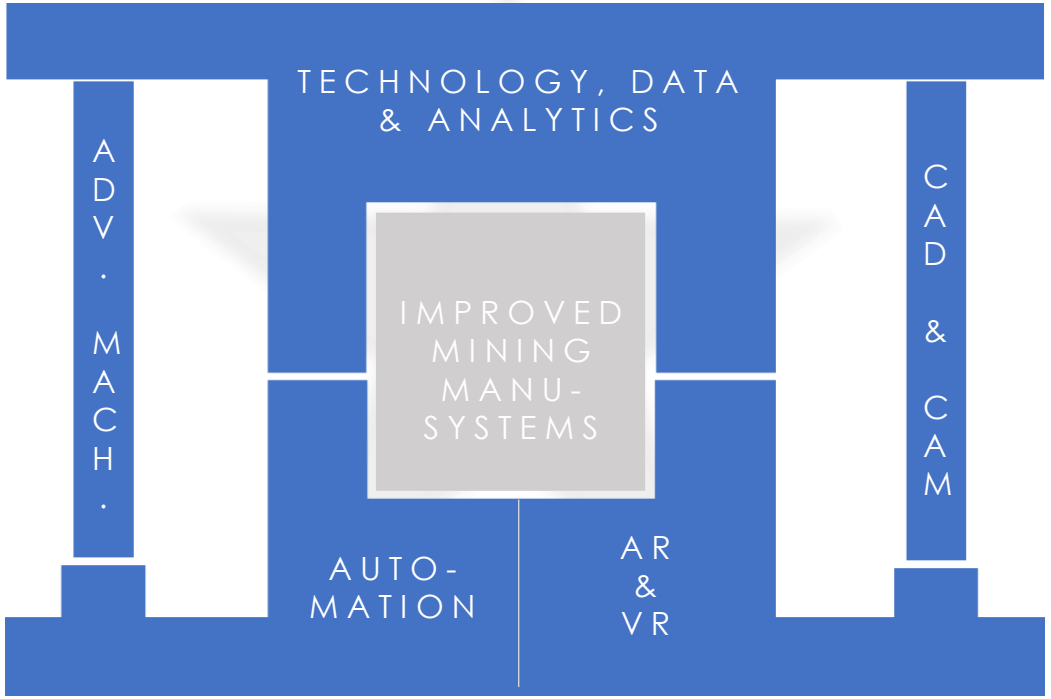
Key Question:

How can tools, systems and techniques in the TDM sector be used to improve mining manufacturing systems?

TDM`s Applied Approach

TDM`s Applied Approach

How can tools, systems and techniques in the TDM sector be used to improve mining manufacturing systems?



How can tools, systems and techniques in the TDM sector be used to improve mining manufacturing systems?

TDM sector tools, systems and techniques such as **Technology, Data and Analytics** can be used to improve mining manufacturing systems.

Through the use of *data analytics* and *machine learning algorithms* we can optimize processes and identify areas for improvement. By collecting and analysing large volumes of data from mining operations, companies can better understand factors such as *equipment performance, energy consumption, and production rates*.

This information can then be used to identify *patterns and trends, predict maintenance needs*, and *optimize production processes*.

How can tools, systems and techniques in the TDM sector be used to improve mining manufacturing systems?

Another important tool used in the TDM sector is **automation**.

By integrating robotics and other automation technologies into mining manufacturing systems, companies can *reduce labour costs, improve safety*, and *increase efficiency*.

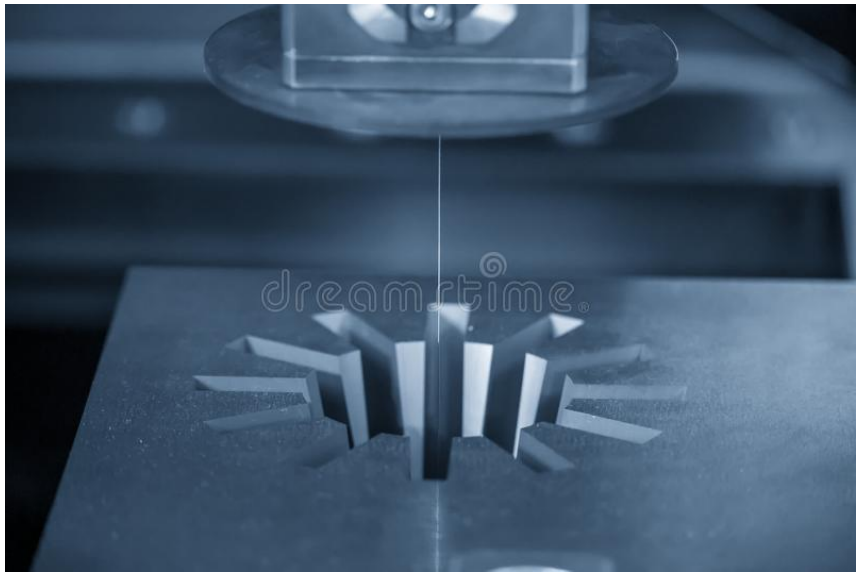
This can be accomplished with autonomous vehicles, drones, and other automated systems that can perform a wide range of tasks, from drilling and blasting to material handling and transportation.

How can tools, systems and techniques in the TDM sector be used to improve mining manufacturing systems?

Advances in technology such as **virtual and augmented reality**, as well as the use of drones for surveying and mapping, can improve the accuracy and speed of exploration and production activities.

This can lead to more efficient and profitable mining operations, as well as improved safety for workers.

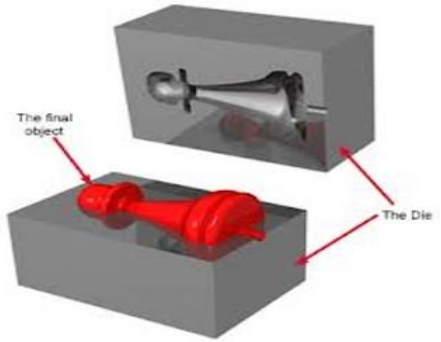
How can tools, systems and techniques in the TDM sector be used to improve mining manufacturing systems?



Another way that TDM tools can be applied to mining manufacturing systems is through the use of **advanced machining** techniques, such as wire EDM (Electrical Discharge Machining) and high-speed milling machines.

These tools can help to streamline the manufacturing process and reduce costs, which can improve the precision and accuracy of mining equipment components, which leads to improved performance, quicker turnaround times and reduced downtime.

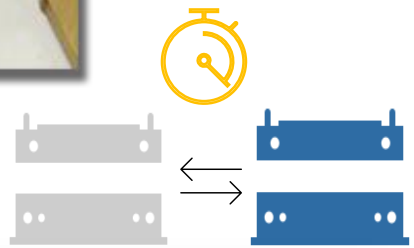
How can tools, systems and techniques in the TDM sector be used to improve mining manufacturing systems?



Another Tool, Die, and Mould sector application that can improve the mining manufacturing systems is Advanced **CAD (Computer-Aided Design)** and **CAM (Computer-Aided Manufacturing)** software which can be used to model and *simulate* mining equipment and processes as well as to create more precise and accurate moulds and dies.

This can help to *optimize designs* and *reduce the time and cost* associated with *prototyping* while also leading to *better quality control* and *faster turnaround times*.

How can tools, systems and techniques in the TDM sector be used to improve mining manufacturing systems?



TDM companies can also offer unique, broader expertise in areas such as **process improvement** such as *Single minute-exchange-of-dies or SMED* (within lean manufacturing & Six Sigma subjects).

SMED is *a system used to reduce the time it takes to complete tool changeovers in production.*

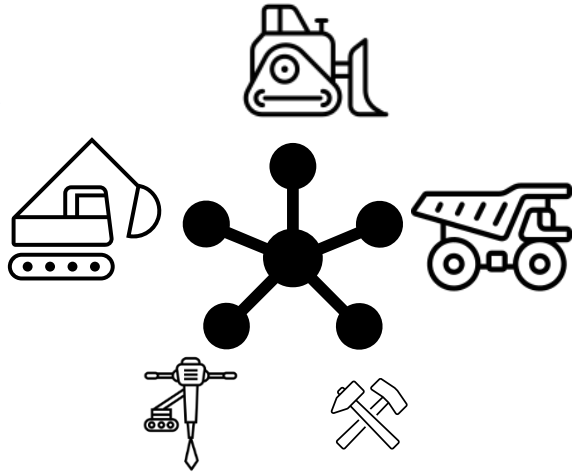
By leveraging such skills, mining manufacturers can *improve efficiency, reduce costs*, and *increase overall productivity*.

Modern assembly system impactors

Modern assembly system impactors

"The adoption of modern assembly systems can have a significant impact on mining equipment suppliers"

How exactly?



Through 5 modern assembly impactors

PtSA

Key modern assembly system impactors

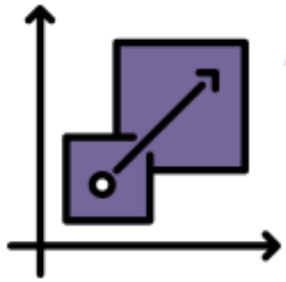
Increased efficiency

Customization

Improved quality

5

Scalability



Cost savings

Key modern assembly system impactors (1/5)

1 INCREASED EFFICIENCY:

Modern assembly systems can help mining equipment suppliers streamline their production processes, resulting in faster and more efficient manufacturing. This means that suppliers can produce more equipment in less time, which can help them meet demand and increase their profit margins.

Key modern assembly system impactors (2/5)

2 IMPROVED QUALITY:

By adopting modern assembly systems, mining equipment suppliers can improve the quality of their products. These systems often include quality control processes that ensure that each piece of equipment is assembled correctly and meets industry standards.

Key modern assembly system impactors (3/5)

3 COST SAVINGS:

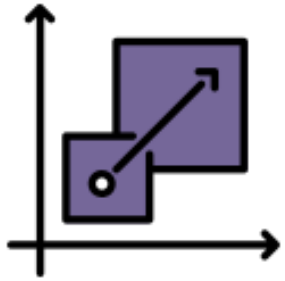
Modern assembly systems can help mining equipment suppliers save money by reducing waste and minimizing the use of resources. These systems use advanced technology and automation to optimize production, which can help reduce labour costs and increase the overall profitability of the supplier.

Key modern assembly system impactors (4/5)

4 CUSTOMIZATION:

Assembly systems can be tailored to meet the specific needs of each mining equipment supplier. This means that suppliers can produce equipment that is customized to meet the unique requirements of their customers, which can help them gain a competitive edge in the market.

Key modern assembly system impactors (5/5)



5 SCALABILITY:

Modern assembly systems are highly scalable, which means that mining equipment suppliers can easily ramp up production as demanded.

Thank You

Helping them reach higher and break barriers