DESIGNPRO
AUTOMATION

# Precision Automation for **Orthopaedic Manufacturing**


INNOVATION MEETS MEDICAL EXCELLENCE

20+ years developing expertise in orthopaedic manufacturing processes.

INDUSTRY CHALLENGES

# Orthopaedic Manufacturing

Orthopaedic manufacturing operates under intense pressure to deliver life-changing products while meeting stringent regulatory requirements. These industry-specific pressures require specialised automation solutions that understand the unique requirements of medical device manufacturing.

01

**Manual finishing processes** create ergonomic risks for operators leading to repetitive strain injuries, while inconsistent manual techniques can compromise product quality.

02

**Environmental concerns** around waste and operator exposure from blasting media, while growing market pressures demand faster turnaround times and competitive pricing.

03

**Complex part geometries** demand precision that's difficult to achieve consistently by hand and increasing production volumes strain existing capacity.

04

**Regulatory compliance** adds another layer of complexity, requiring complete traceability throughout manufacturing processes.

OUR EXPERTISE

# Proven Solutions for Complex Requirements

DesignPro Automation specialises in finishing operations such as, laser marking, precision blasting and grinding/polishing. We understand that orthopaedic manufacturing isn't just about automation, it's about:

- Creating systems that meet FDA validation requirements.
- Maintaining clean room standards.
- Delivering the consistency that patient safety demands.

Our solutions integrate seamlessly with existing MES and ERP systems, ensuring complete traceability from raw material to finished implant. We don't just deliver machines, we deliver validated, production-ready systems that transform your manufacturing capabilities while maintaining the highest quality standards.

PRECISION IDENTIFICATION FOR COMPLETE TRACEABILITY

# Automated Laser Marking Solutions

Modern orthopaedic implants require precise identification marking for regulatory compliance and patient safety. Our automated laser marking solutions eliminate manual handling while ensuring consistent, high-quality marking across diverse product ranges.

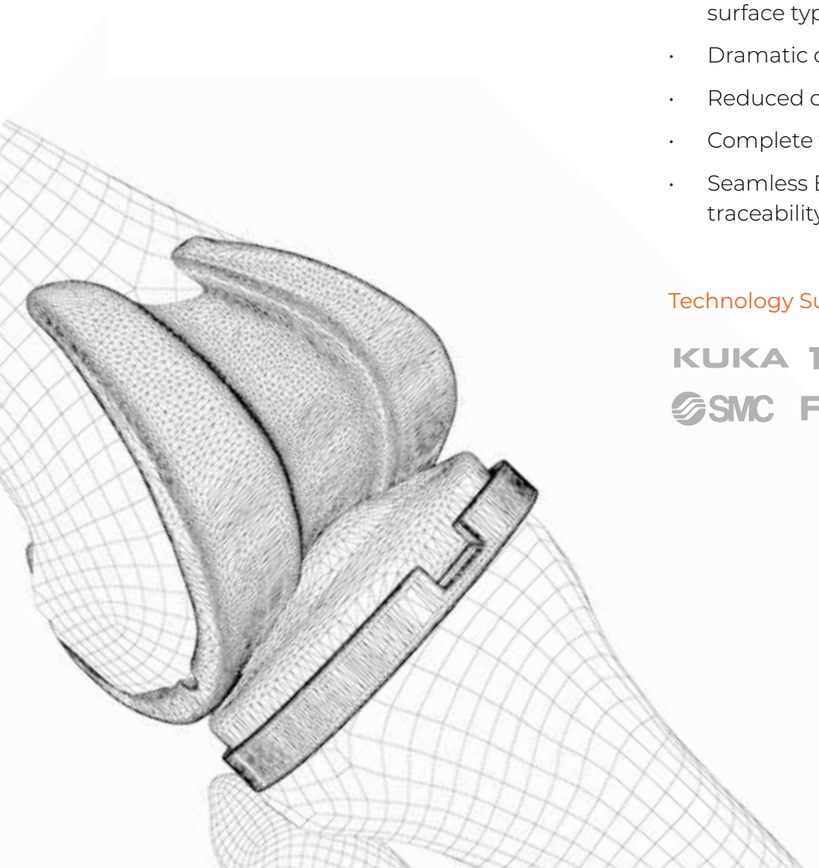
Our systems accommodate complex part geometries and multiple surface finishes, from polished chrome to matte titanium. Advanced vision systems verify marking quality in real-time, while seamless ERP integration maintains complete traceability throughout your supply chain.

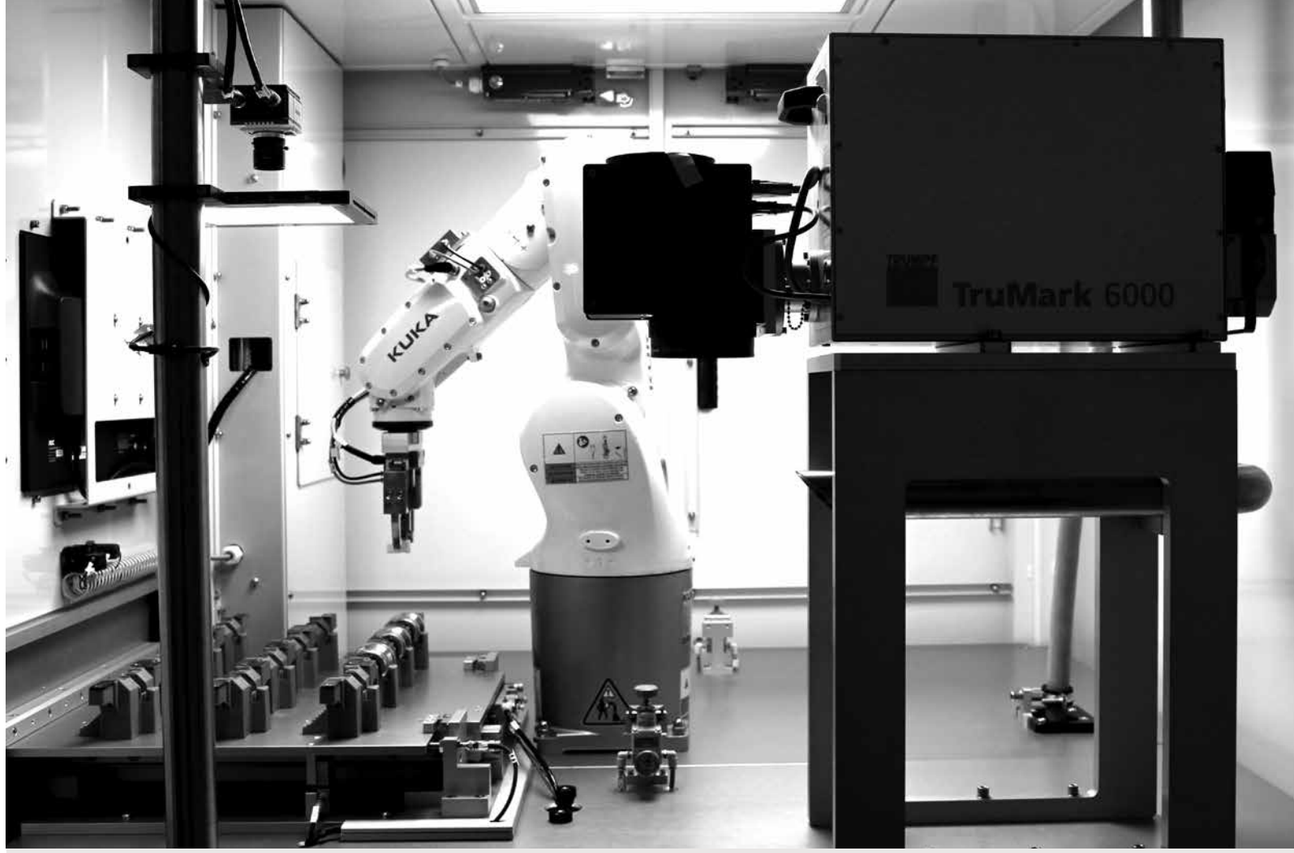
Key Benefits:

- Consistent marking quality across all surface types.
- Dramatic cycle time improvements.
- Reduced operator intervention.
- Complete validation documentation.
- Seamless ERP integration for full traceability.

Technology Suppliers:

KUKA TRUMPF COGNEX
SMC FESTO SICK






CASE STUDY

## Knee Implant Marking Revolution

Laser marking has a clear advantage over other marking systems when it comes to identifying medical & industrial parts. It's an ideal method for metals & plastics, has a high-resolution finish, is programmable and does not require ink or paint.

Our robotic laser marking system delivered extraordinary results for our customer; increasing cycle time by 4,000% while maintaining the quality consistency their global operations demand.

The compact solution features a 12-part drawer loading system with a KUKA six-axis robot handling complex movements within tight facility constraints. Advanced Cognex vision systems inspect markings on both chrome and matt finishes, ensuring quality across their diverse product range.

4000%

CYCLE TIME IMPROVEMENT

96+

PRODUCT VARIATIONS

FROM CONCEPT TO PRODUCTION

# Our Automation Project Lifecycle

Our comprehensive project approach ensures successful implementation from initial concept through production validation across 12 critical stages.

## 01 | PROOF OF CONCEPT

EXPLORING THE ISSUES

## 02 | DESIGN

Design engineers collaborate with internal teams to define a detailed URS and final concept.

## 03 | TECHNICAL DOCUMENTATION

Ensuring compliance with the highest safety standards.

## 04 | ASSEMBLY

Frames and stations constructed and tested for integration. Working concurrently with the control, electrical and automation teams to ensure all technology functions cohesively.

## 05 | CONTROLS

INFORMATION COMMUNICATION

## 06 | ELECTRICAL

Transforming complex designs into fully integrated electrical systems, ensuring every connection powers peak performance.

## 07 | PLC

Encompasses design, offline setup, tuning and safety checks.

## 08 | HMI

*"INTERFACES ARE DESIGNED FOR OPTIMAL USER EXPERIENCE"*

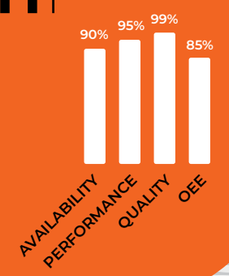
## 09 | ROBOTICS

Seamless integration of advanced robotics through virtual simulation, precise programming and meticulous commissioning.

## 10 | VISION

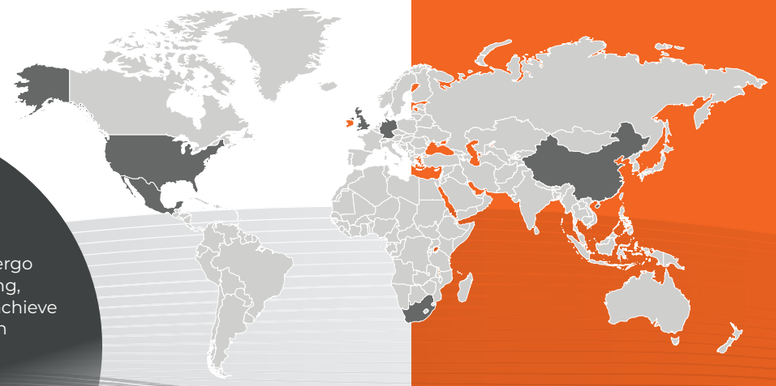
Vision systems undergo design, programming, and fine-tuning to achieve seamless integration within the overall automated system.

## 11 | DEBUG




## 12 | INSTALLATION

Worldwide installations across 4 continents backed by onsite support for vision, robotics, PLC and HMI systems.



### VALIDATION SUPPORT

- Complete validation documentation packages.
- IQ/OQ protocol development and execution.
- FDA compliance support.
- Risk assessment and mitigation planning.
- Change control procedures.

### ONGOING SUPPORT

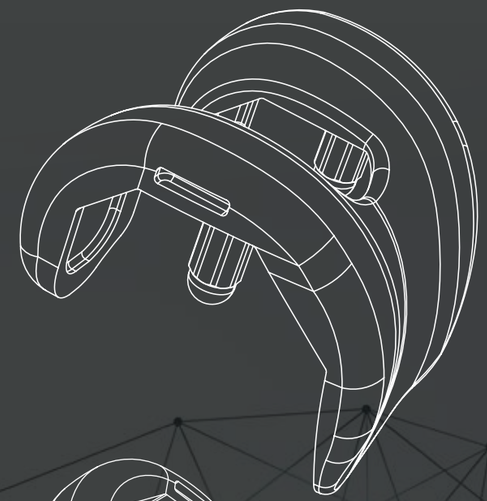
- Comprehensive operator training programs.
- Preventive maintenance planning.
- Spare parts management.
- Remote monitoring capabilities.
- System upgrade and expansion services.

TRANSFORMING SURFACE FINISHING OPERATIONS

# Robotic Precision Blasting Systems

Surface finishing through precision blasting is critical for orthopaedic implant biocompatibility and performance. Our automated blasting solutions eliminate ergonomic risks while delivering consistent surface preparation across complex part geometries.

Advanced filtration systems manage media containment and recycling, creating safer working environments while reducing material waste. Integrated monitoring systems track energy consumption and process parameters, ensuring sustainable operations that meet environmental standards.



Key Capabilities:

- Multi-variation part handling.
- Advanced media recycling systems.
- Real-time process monitoring.
- Comprehensive safety systems.
- Sustainable operation design.

Technology Suppliers:

ABB COGNEX LEERING SMC FESTO SICK

200%

INCREASE IN PRODUCTION CAPACITY

84+

PRODUCT VARIATIONS

CASE STUDY

## Automated Blasting Success

For this solution, our customer faced significant challenges with their manual knee implant blasting process, including operator injuries and production capacity constraints. Our automated machine transformed their operations, doubling production capacity while eliminating ergonomic concerns.

The system's sophisticated 4-drawer loading accommodates 24 parts per drawer, while an ABB six-axis robot precisely maneuvers parts through the blasting process. Specialised end-of-arm tools handle all 84 product variations, maintaining proper sealing during processing.

Environmental control through dual-stage filtration integrated with SMC vacuum technology effectively manages powder containment and enables material recycling, creating a safer, more sustainable manufacturing environment.

# Delivering Results for Industry Leaders

Our track record speaks for itself.

Across multiple projects with leading orthopaedic manufacturers, we've consistently delivered transformational results that exceed expectations.

stryker®

Medtronic

MERIT MEDICAL®

Boston Scientific

MERCK

FILTERTEK

COOK® MEDICAL

Johnson & Johnson

3M

Valeo

zimmer

elementsix™ a De Beers Group Company

"DesignPro took a complicated manual manufacturing process and developed it into a smoothly well-oiled automated manufacturing line. Price, timeline, communication and technical expertise were second to none throughout the project."

**ANDREW NEYLON,** SENIOR MANUFACTURING ENGINEER, 3M

# Talk to us about your next project

N21 Business Park, Rathkeale,
Co. Limerick, V94 E5C0, Ireland.

t: +353 (0)69 63842

e: sales@designproautomation.com

www.designproautomation.com