

# PROCESS DESIGN & AUTOMATION

## VISION

To be the trusted design, automation, simulation and scheduling turnkey solutions provider - strongly based on building long term partnerships.

## MISSION

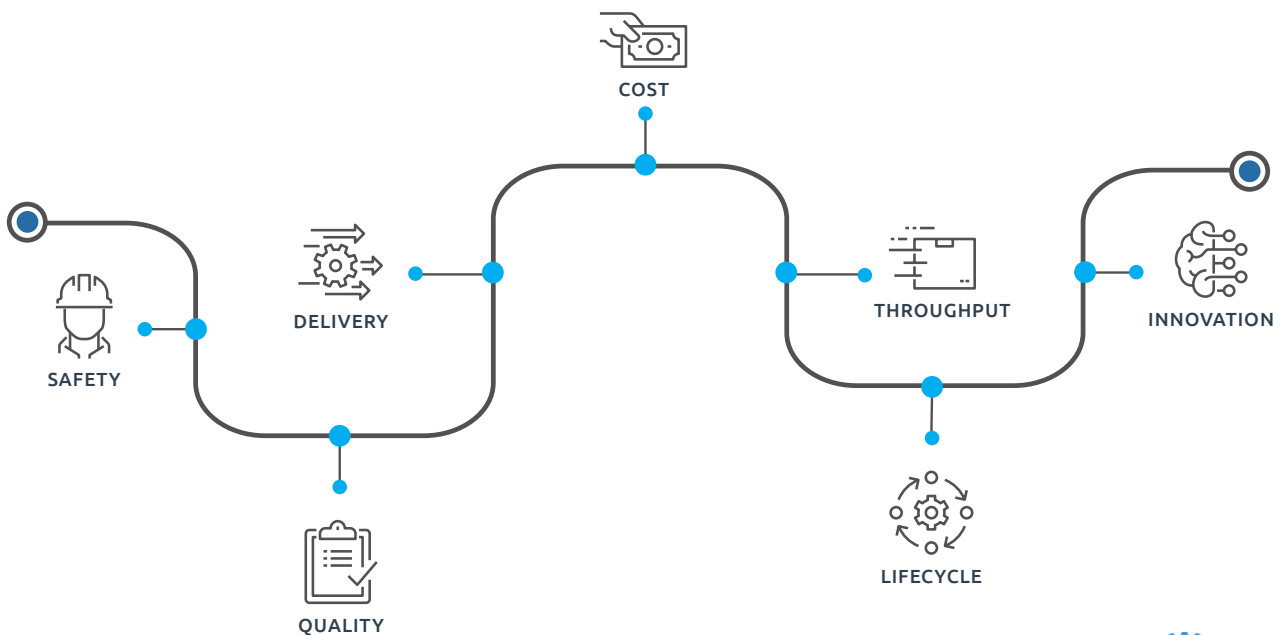
Enabling organisations to be SMART through engineering solutions driven by your unique requirements.

## STRATEGY

Competitive advantage is about optimizing your entire value chain, incorporating all elements of the Manufacturing and Supply Chain functions to timeously deliver the highest possible quality at the lowest possible costs. To achieve this, organizations require highly efficient operations and processes, as well as accurate, succinct information that is easily accessible and is available, when and where required. PDA's product strategy applies leading edge technologies that provide the solutions you require together with total visibility on a real time basis to optimally execute business activities.

## THE SUCCESS PARAMETERS

- Improved quality and safety audit results
- Improved consistency (repeatability) of manufacture
- Reduction of manufacturing cycle times
- Reduction of usage variances
- Reduced inventory levels
- Lower energy costs
- Implementation of green and renewable energy strategies/ Improved carbon footprint
- Real-time data capture, ensuring error free, event driven system updating.
- Real-time pertinent information availability to all participants in the extended enterprise.
- Shop floor to ERP and business system integration including quality and maintenance management.
- User-friendly data capture, information interrogation and report formulation.
- Flexible system design for fast, cost effective customisation and implementation of exact-fit solutions that reflect customer specific conditions and needs.
- Eliminate guesswork and make the right decisions by using business process simulation
- Improve on-time delivery and asset utilization with planning and scheduling solution, including automated risk analysis



# OUR RANGE OF SOLUTIONS

PDA enables business systems to become real time and integrated with their value adding processes. We are a single source solution company that provides tools to support the application of world class strategies and constraints-based management principles. This empowers clients to optimise efficiencies, maximize throughput and improve customer service levels while minimizing operational expenses and inventory levels.



**AUTOMATION & CONTROL SYSTEMS**



**PROCESS, PLANT & EQUIPMENT DESIGN SERVICES**



**PLANT/PRODUCTION INFORMATION & EXECUTION SYSTEMS (MIS/MES)**



**OPTI-PICK WMS & PICKING SOLUTIONS**



**INTEGRATION WITH BUSINESS SYSTEMS (ERP INTERFACES)**



**PRODUCT TRACKING SYSTEMS**



**RFID SYSTEMS & PERIPHERALS**



**BESPOKE SOFTWARE DEVELOPMENT**



**BUSINESS MODELING & SCHEDULING**



**RENEWABLE ENERGY SYSTEMS**



**TEST BENCHES FOR VARIOUS INDUSTRIES**



**DIGITAL TRANSFORMATION - INDUSTRY 4.0**

# SPECIALIZED SERVICES & PRODUCTS

PDA provides Consulting, Project and Program management services that drive the performance of your business. From small/medium sized stand-alone turnkey projects to broad-based cost reduction programs which drive Gross Margin or Operating Profit improvement, we have the expertise to assist your company to deliver sustainable results.



**PROJECT MANAGEMENT**



**PROCESS, PLANT & EQUIPMENT DESIGN**



**TURNKEY PROJECTS**



**RISK-BASED PLANNING & SCHEDULING**



**SIMULATION MODELING & OPTIMISATION**



**PROCESS OPTIMIZATIONS**



**SUPPLY CHAIN MANAGEMENT**



**INDUSTRIAL ENGINEERING CONSULTING**



**SUPPLY & MAINTENANCE OF PDA PRODUCTS**



**PROCUREMENT EXCELLENCE**



**TECHNICAL SYSTEMS AUDITING**

# INDUSTRIAL DIVISION

## PROCESS CONTROL & AUTOMATION

“You can’t control what you can’t see!” This is the rationale behind any control system. The first step is to monitor all parameters that are important to the process or indicate the state of the process.

The use of PLC’s (Programmable Logic Controller) and SCADA (Supervisory Control And Data Acquisition) systems enables process visualisation and high-level control of the process. The SCADA system communicates with the PLC, automates process controls and provides highly visible graphical representations that is easily interpreted by the operator. It is also be used to perform historical data logging, batch control, recipe management, etc., depending on the requirements and nature of the process.

### THE POTENTIAL PRODUCTION BENEFITS OF SUCH CONTROL SYSTEMS ARE:



## PROCESS & PLANT DESIGN

With our combined experience of 90+ years in the industry, together with our knowledge of Material flow through the manufacturing process and our Automation capability mentioned above, we can design any process. Best practices and designing from first principles gives the optimum blend of elegant and cost effective solutions. By specialised engineering design software, we can develop from Process Flow, P&ID through to 3D models of the design and fully developed manufacturing drawings to ensure a seamless installation.



## MANUFACTURING EXECUTION SYSTEMS (MES)

"If you don't measure, you don't know where you are and you don't know where you are going!" MES (Manufacturing Execution Systems), a buzzword in many manufacturing environments today. It is a broad term referring to the measurement of outputs or results that are the Key Performance Indicators of the manufacturing process as a whole. The implementation of these measurements compliments both the business and production modus operandi, while enforcing business rules.

PDA believes that a clear knowledge/understanding of the process is essential to support streamlining or improvement

of operations. Therefore, tools that enable the process to be monitored and later analyzed or even controlled are essential building blocks. Typical basic MES solutions involve product tracking, job tracking, machine & personnel utilisation monitoring, and quality tracking. Such systems enable more accurate forecasting of delivery dates, materials consumption and job costing. The effect of change on a company's most important asset, its people, is often underestimated. At PDA we strive to engage with all levels of the business to minimize the impact of these changes.

## MANAGEMENT INFORMATION SYSTEMS (MIS)

In this age of data overload, the management of data within organisations is essential. Whether this information be historical or real-time, e.g. production summaries, or alarms requiring immediate response, it all has its place within the organisation. One must ensure the prompt transmission of vital production & business information to the relevant role-players.

Often there is little or no interaction between business and production systems. Historically, this has always been the case, since each dedicated system served its purpose independently of the rest. This trend has changed, with the evolution of

business software towards enterprise-wide (ERP) systems, as well as open software standards. However, many industrial and manufacturing companies still sit with their proprietary systems, and with no apparent means of integrating this information. This need no longer be the case!

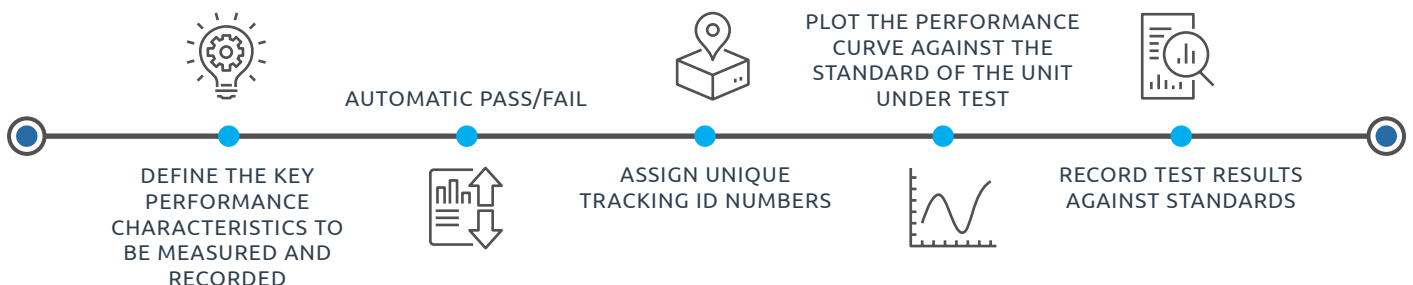
One can automate certain business processes in response to production events and activities, and vice-versa, e.g. the triggering of invoicing upon completion of a particular job, or the launching of a production order on the shop floor in response to an order placed electronically via the web – the sky's the limit!

## INDUSTRIAL TEST BENCHES

Certification of performance on new and refurbished equipment is increasingly important as companies strive to improve quality standards and implement Quality Management Systems. The Consumer Protection Act also increases the responsibilities of manufacturers and service providers to demonstrate and track manufactured items on an individual basis.

From instrumentation testing to structural strength assessments and from pumps to jet engines, PDA will design and build a system to your specification and required level of automation. We can create test certificates and maintain a database of performance characteristics that will support your needs for quality system accreditation.

### YOU CAN:



# WAREHOUSE MANAGEMENT DIVISION

## RFID SYSTEM

PDA provide Radio Frequency Identification technology for a wide range of product tracking and identification applications. Industries where we are currently using RFID are:

- Cattle farms, tracking and logging cattle weight, dosing etc.
- Production tracking of car seats built for BMW and Daimler Chrysler. Here we are tracking each seat set with all the safety parameters logged during the manufacturing process by VIN number.
- Rose tracking on a flower farm in Kenya tracking approximately 800,000 roses per day.
- Dustbin tracking for city councils that ensures contractors is only paid for the dustbins emptied each day/week.
- Asset identification and tracking.

## WAREHOUSE MANAGEMENT SYSTEM & PICKING SOLUTIONS

PDA provides advanced warehousing solutions that can operate as “stand alone” or integrate seamlessly into major ERP systems. Stock location, Lot Control, Cycle Counting, Stock counting and Order Picking functions are among the functions provided. Specialized solutions for picking of multiple small volume orders and high speed “pick to light” requirements exist.



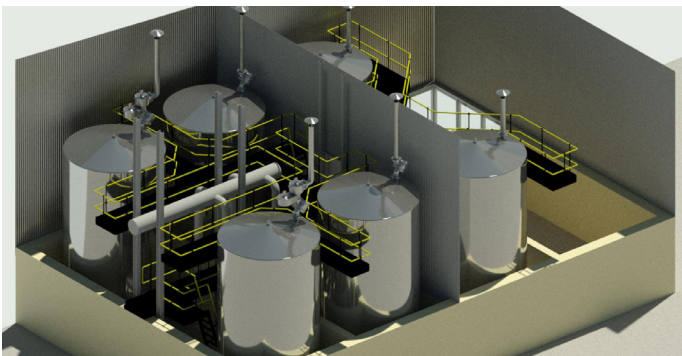
# DESIGN DIVISION

## DRAFTING

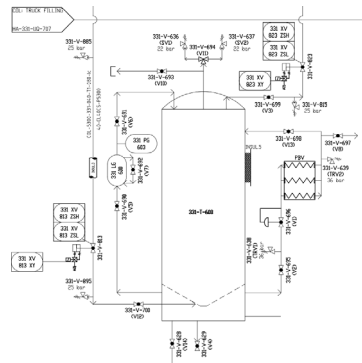
Design documentation and drawings are important to establish the blueprint for every process and manufacturing plant. Keeping all documentation current ensures safety of personnel and assists engineers in understanding the plant's operation.

From conceptual design up to the final product, PDA delivers the following services to its clients which meets industry standards and increases manufacturing capabilities:

- Process and Instrumentation Diagrams (P&ID)
- General Arrangement Drawings (GA)
- Mechanical Design (CAD) Drawings
- Plant 3D Drawings



**3D DESIGN AND PLANT 3D WALKTHROUGH SIMULATIONS**



**GA DRAWINGS, PFD'S, P&ID'S, ELECTRICAL DRAWINGS, MECHANICAL DRAWINGS**

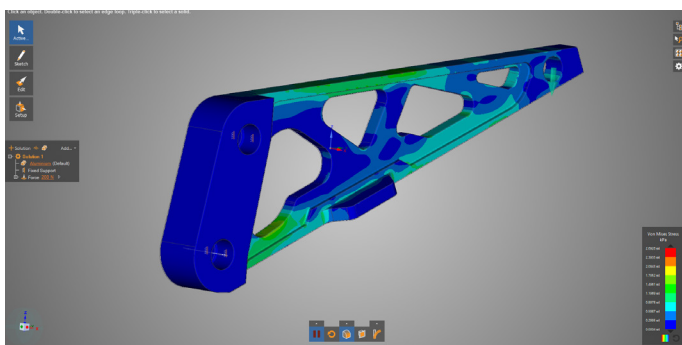
## SIMULATION

The increased complexity of products and manufacturing processes presents world-class manufacturers with "time-to-market" and asset optimization challenges. Preliminary product or process design decisions by engineers are also often required based on limited amount of information.

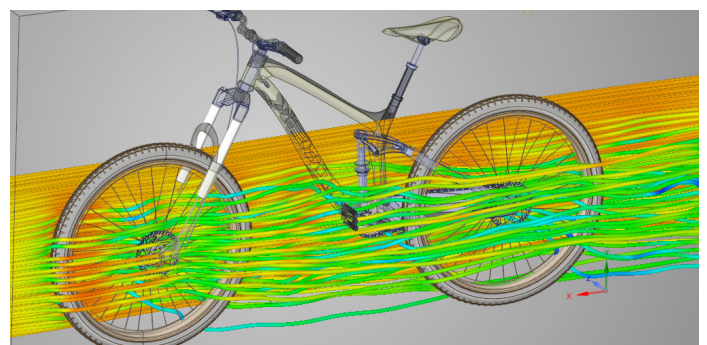
To eliminate these challenges, design and simulation software are used to provide visual representation of optimal solutions and to virtually validate their manufacturing processes upfront.

PDA can assist you with the following services to ensure that your design meets quality as well as overall efficiencies as required:

- Plant 3D walkthrough
- Finite Element Analysis (Structural, Thermal, Motion and Modal simulation)
- Computational fluid dynamics (Flow Simulation)



**STRUCTURAL ANALYSIS (FINITE ELEMENT ANALYSIS)**



**COMPUTATIONAL FLUID DYNAMICS SIMULATION (CFD)**

# ANALISTA DIVISION



## WHAT DO WE DO?

We help companies, who experience operational problems or want to improve their efficiency, but don't have enough insight into their business processes, to get clarity, take the guesswork and risks out of decision making, planning and scheduling, so that they can improve their profits.

## BUSINESS PROCESS SIMULATION

Using computer simulation models, we focus on the business processes that are part of every organization.

Simulation of a business process (manufacturing facility, supply chain, bank, airport, etc.) requires modelling and recreation of the behavior and performance of each individual process and system. It effectively 'concertinas' time, allowing simulation of operations that may take days to run to be compressed into just a few seconds. Further, the simulation model can be easily adjusted when the effects of scaling up or down need to be studied.

In this way, **Simulation** helps to



**VISUALISE AND UNDERSTAND THE SYSTEM**



**ANALYZE SYSTEM PERFORMANCE**



**MINIMISE RISK OF IMPLEMENTATION**



**INTEGRATE ENTERPRISE DATA SOURCES**

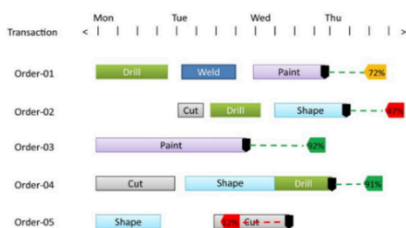
Simulating a business process provides the insight required to make the right decisions on how to improve that process and guarantees a successful implementation.

Our clients include companies in virtually all industries including mining, petro-chemical, manufacturing, banking, airline, agriculture and transportation for e.g. SASOL, Petra Diamonds, Harmony Gold, Emirates Airline, Capitec, SARS, Ghana Ports and Harbours Authority and many universities. We have clients in South Africa, West Africa, the USA, Canada and the Middle East.



**ANIMATED 3D SIMULATION MODELLING**

## SIMULATION-BASED PLANNING AND SCHEDULING



- Deliver services on time and budget in the presence of uncertainty.
- Add automated Risk Analysis to assess plan feasibility.
- Correctly allocate resources and material to improve daily operations.
- Improves on-time delivery and asset utilization.



## DIGITAL TRANSFORMATION TO INDUSTRY 4.0

In partnership with other PDA divisions, Analista assists companies with Digital Transformation to enable Industry 4.0 implementation.

Conceived in Germany, Industry 4.0 is being internationally hailed as the latest, or Fourth, Industrial Revolution. Industry 4.0 is the common name used to describe the current trend towards a fully connected and automated manufacturing system, or Smart Factory.

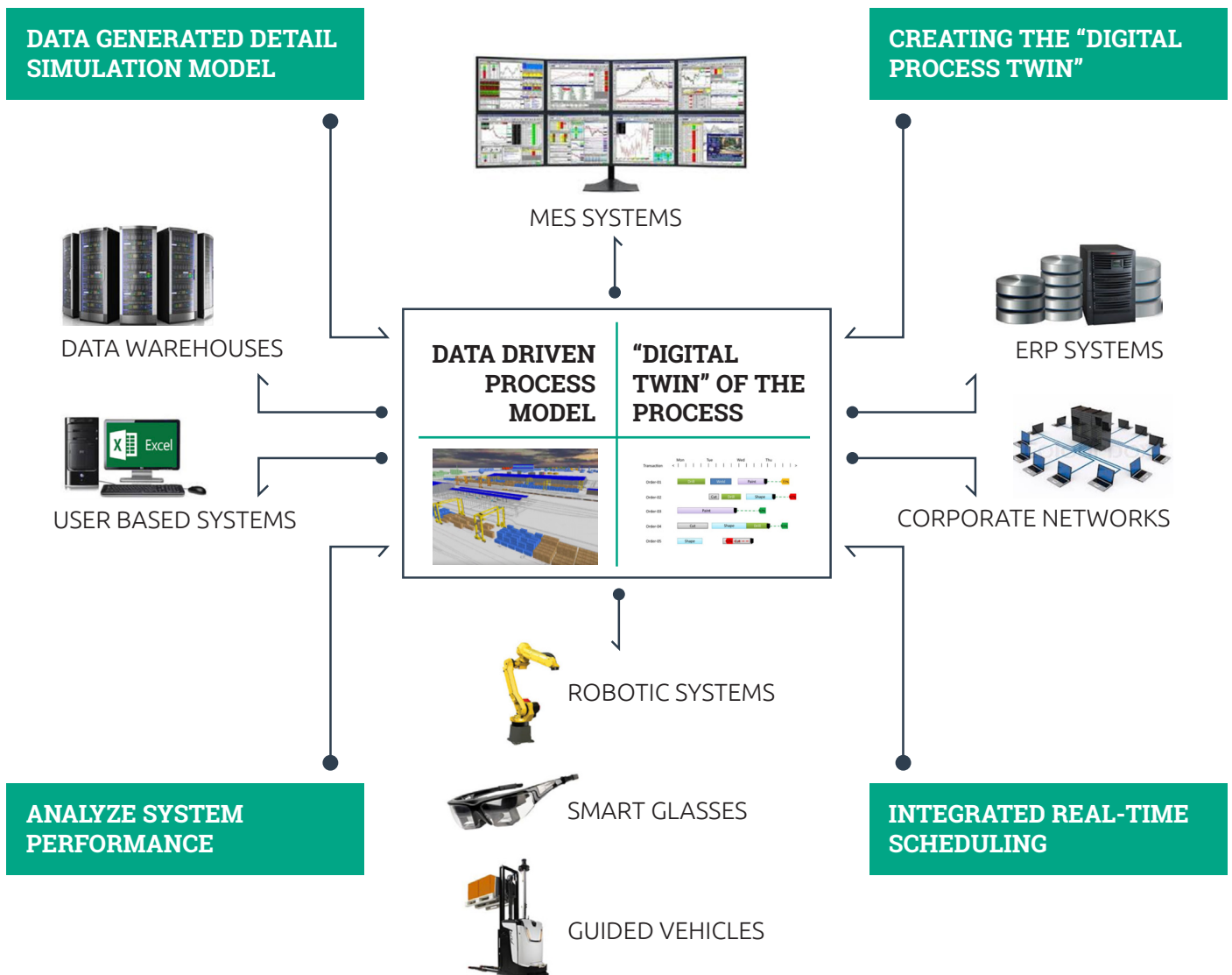
Smart factories allow cooperation between virtual and physical

systems, allowing the creation of Digital Twins for diagnostic and productivity improvement.

A Digital Twin, sometimes referred to as a Device Shadow, provides a virtual representation (model) of a product, part, system or process that allows you to see how it will perform, sometimes even before it exists.

Simulation-based scheduling stands out as the best solution for Industry 4.0 applications. The resources, in terms of equipment, tools and workers, can be represented, as well as the materials consumed and produced in the process.

## ENABLING THE SMART FACTORY



Analista is the South African distributor of Simio and Arena simulation software as well as Simio Risk Based Planning and Scheduling software.



# SUPPLY CHAIN DIVISION

## COGS REDUCTION MANAGEMENT

The engine room of any business is the ability to drive down Cost of Goods. Savings generated improve the bottom line of the business or can be partially re-invested in growth producing strategies/marketing. A business wide approach coordinated in a top down focus, but bottom up idea generation and delivery is a very powerful tool.

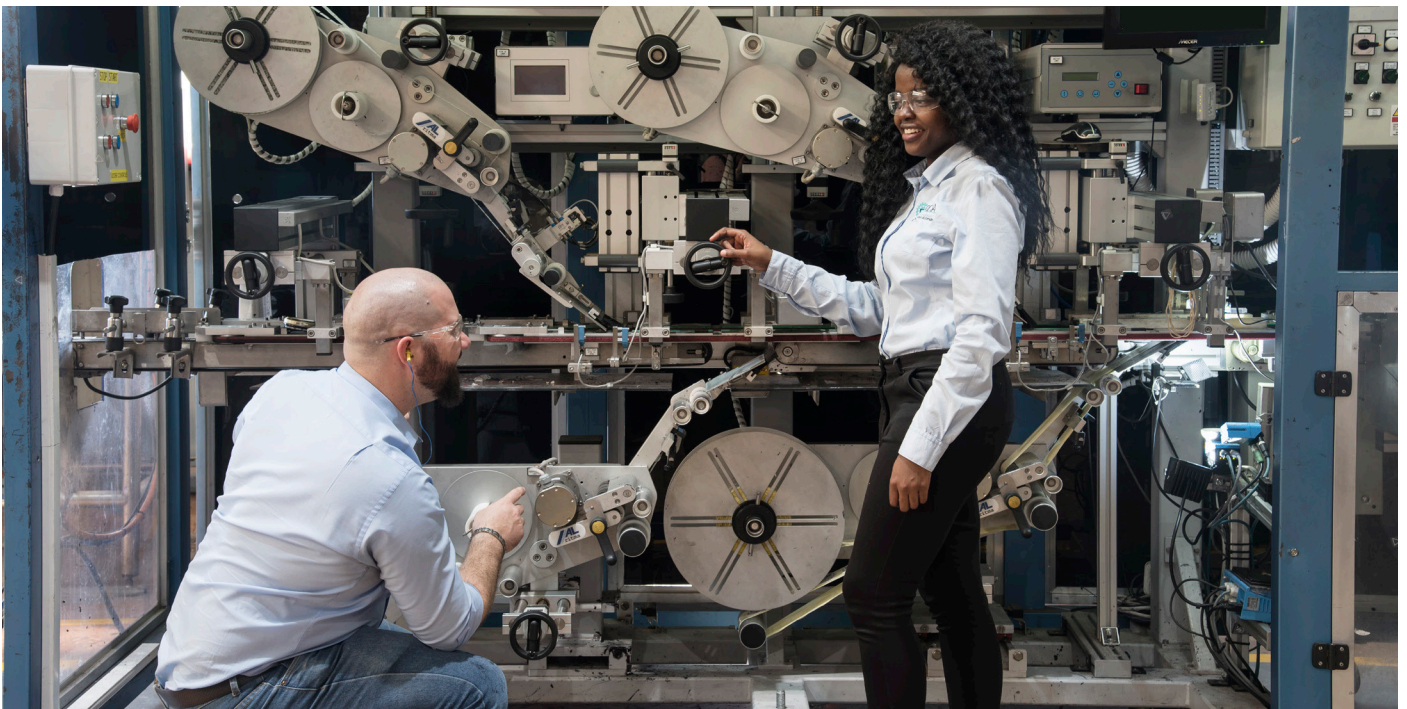


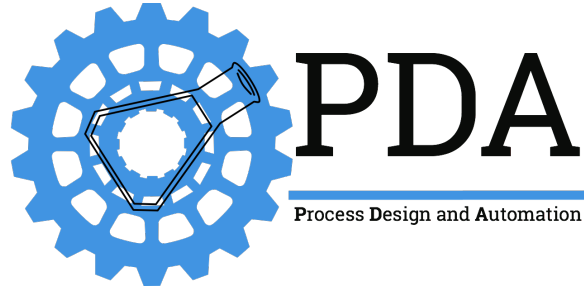
## PROCUREMENT EXCELLENCE

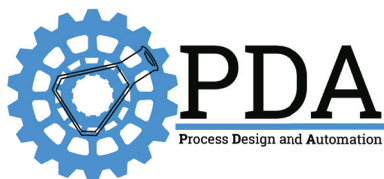
Our specialist Procurement Partners Mayan Procurement Specialists work in close conjunction with PDA and yourselves to develop and improve procurement skills, to leave a lasting legacy. Our specialist Procurement Partner, Mayan Procurement Specialists(MPS), work in close conjunction with PDA to develop, improve and sustain your procurement systems. Through MPS, PDA offers wide ranging experience within a global procurement structure. Our extensive international supplier base result in an extremely powerful and transparent procurement system that's proven to save you costs and improve performance. With our customized performance monitoring tools, you'll be sure to be in control of your production and non-production spend.

## PROCESS DESIGN AND TURNKEY PROJECTS

With a background in Chemicals, FMCG and Pharmaceuticals, our Engineers work with your staff to identify and upgrade manufacturing process designs. We are ideally positioned to see these upgrades through to successful implementation and delivery







We at PDA look forward to interacting with all interested parties, including clients, future clients, business partners and other interested people. **Kindly direct your enquiries to the following addresses:**

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