

*IMPETUS BUSINESS PROFILE*  
*Industrial Engineering Consultancy*

Business Reg no. .88/12503/23

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## **About Us**

Impetus was founded in 1988 by Marie Marais and was then known as “MC Marais Bedryfsingenieurswese” (trading as Impetus). Impetus’ initial focus was on optimising the materials handling processes within the Defence Industry. In 1997 the company switched over to the agricultural sector in and around South Africa with the aim of providing cost effective solutions to improve overall business profitability. With more than 30 years’ experience in the industry, Impetus has now expanded to operate in South Africa, Mozambique and Mauritius.

### **Objectives**

As a market leader in the industrial engineering and consultancy sector, Impetus can provide:

- An in-depth analysis of the clients special needs using an integrated systems approach to find tailored solutions.
- A holistic approach to considerate all the clients’ requirements..
- A unique and creative solution that meets the clients’ expectations.
- A seamless integration of new and improved processes and infrastructure with existing resources.
- Hardware and software solutions only after optimisation and designing has occurred to ensure that the solution is requirement driven, simple and low total life cycle cost.
- The ability to utilise and apply the available resources to increase productivity.
- And instil the confidence to tackle new business ventures head on.
- A close working relationship with the client to ensure the clients’ understanding of the basic business principles in order to make changes sustainable.
- An understanding in implementing the needs of the employees to enable increased performance and maintain a satisfied work force.
- Professional and friendly services of the highest standards and quality by a highly motivated consultancy effort.

### **Overview of Expertise and Services**

The following services are provided individually or as a combined set of services by Impetus:

- Detailed Requirement Analysis
- Value System and Trade off analysis
- Organisation design
- Process optimisation and design
- Facility optimisation design
- Material handling design
- Specification of resources required
- Logistic design
- Project management

## Successes and Achievements

### ■ Optimizing Manual High Volume Production line (20 tons/hour)

Impetus was part of a project team in Limpopo where the productivity of the employees improved by approximately 50%. Before optimisation, 200 employees were required to pack 18 tons of produce per hour. After optimisation the workforce was reduced to 150 strong, packing 20 tons per hour. No jobs were lost as the excess employees were moved to the fields as pickers. The same processes were implemented in other warehouses securing at least 200 job opportunities in the agricultural sector. Employees also received the advantage of an increased remuneration brought about by the improvement of their productivity.

### ■ New Central depot

Impetus was also the drive behind the construction of a central depot in Lanseria for farmers from Limpopo for the despatch of fresh produce throughout Gauteng to retail depots, with the aim of optimising transport efficiency and improvement of availability.



Impetus followed a holistic approach, based on a sustainable development philosophy that brings about balance between the operational needs and the economy of the despatching depot. The following factors were taken into account:

- Friendly working environment addressing the physiological as well as the psychological needs of the employees, thereby increasing productivity;
- Ecosystems of the natural environment, and
- Affordability of the building, being the primary driver of the decision-making.

### ■ Optimising labour intensive baby corn production line



The table below indicates the impact made by the involvement of Impetus on the processing of baby corn in Mozambique. The optimisation process did not only increase the productivity of the employees, but also decreased the utilised floor space by 50%. The floor space that became available due to the optimisation process enabled the client to diversify and thus creating more job opportunities.

Criteria	Before optimisation	After optimisation	% Improvement
Time to complete 1 pallet	90 min	10 min	800%
Maintaining cold chain - baby corn temp before dispatch	15 degrees	7 degrees	114%
Productivity per cleaner (average)	26 kg per day	33 kg per day	27%
Cling wrap machine utilisation	10 000 punnets per day	14 000 punnets per day	40%

Table1: Illustration of Baby corn process improvement.

### ■ New Pack houses with Mechanised Production line

Impetus was involved with two projects in Limpopo by developing the concept designs for the new pack houses and mechanised production lines.

The highlight of the project was the optimum design of the structure. The roof span is 55m with only 3 columns in the middle for support – the result of the optimum structure design is 25 % less steel usage than a conventional steel structure. Also a combination of the latest technology in roof isolation was used which is at least 50 % cheaper than conventional isolation panels. The new method of roof isolation also allows a more elegant solution for allowing natural light into the building.

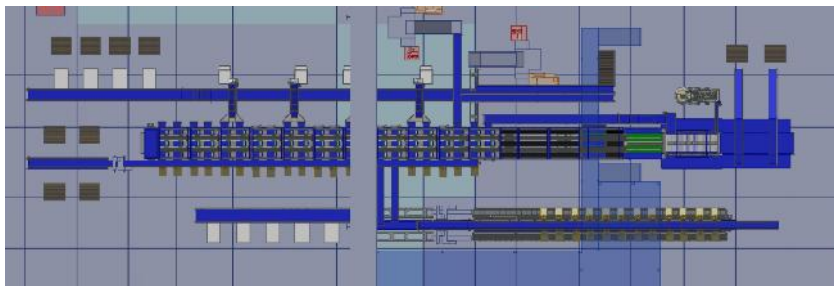


The latest technology in quality sorting equipment has been implemented in the pack houses. The box filling system was designed in such a way that the machine needs fewer outlets than a conventional production line with the added advantage of a smaller building to accommodate the machine. The overseas suppliers of this machine were very surprised to see how the machine has been adapted for the unique South African needs and our market opportunities.

### ■ New mechanised Bagging Production Line for potatoes

In South Africa, we have the challenge to pack small quantities of a variety of packaging for a number of retailer groups. These limitations make it almost impossible to fully mechanise the process and/ or to utilise standard imported packing machines do not fulfill these requirements.

The optic sorting pack line was designed in conjunction with a local manufacturing company utilising optic sorting technology from Europe. The pack line does have the capability to sort and pack potatoes as well as other product according to the different retail specification. Bagging units were developed to accommodate various packaging material such as paper, plastic, fox bags or loose in crates.



## Clients of Impetus

ZZ2, ZZFresh , Marlo , Farmwise , Country Mushrooms , Harvest Fresh , Graceland , Vanduzi Mozambique , Medine Mauritius , Hydrotec , Mount Carmel , Sunherbs, Gwanzi Pineapples , Simply Salads, Rosaly Farms

## Member Information

### Marie Marais – Principal member

Marie Marais is the principal member of Impetus. She started her career in the weapon industry in 1984. She was responsible for the development of design processes to influence the hardware design in terms of reliability and maintainability. The fundamental principles of these processes are the same principles used by NASA in spaceship development leading to the HACCP process in food safety.

Marie established MC Marais Industrial Engineering (currently trading as Impetus) in 1988 to start her consulting career. Marie's expertise during the first year of the consultancy was focused on the development of requirement analyses and the specifications of baselines for design. She also did extensive work on logistic support analysis and system design.

Marie's experience of the integrated systems approach in the weapon industry enables her to make a contribution in other industries which generate great value to projects. The first project in the agricultural sector was in 1997 and she is currently well known in the industry for creative solutions in the post-harvest handling processes of a variety of fresh produce in different pack houses in South Africa and neighbouring countries. Marie also provides guidance to enterprises on business strategies for example in Mauritius, where value adding processes to fresh produce is a new concept.

Marie enjoys the work in the agricultural sector due to the challenges of the industry. The fresh produce industry, especially the vegetable sector, has different production lines with relatively low volumes and need flexibility for various packaging specifications according to client specifications. The continuous change in the quality of the raw materials limits the implementation of total mechanisation and therefore a holistic and creative design approach is required. Due to the low profit margins of fresh produce the expertise provided is a total lean thinking system approach from production, processing and marketing until final delivery to the client.

Marie completed her degree, B. Engineering (Industrial) at the University of Stellenbosch in 1983 and her B. Engineering (Hons.) at University of Pretoria in 1987.

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