



AFRICAN KAIZEN PRIZE 2020



MSMI SARLU (Cameroon)



Year of establishment 2003

Capital (USD) 53 213 USD

Annual turnover (USD)

- 2017 : 815 504 USD
- 2018 : 1 038 247 USD
- **2019 : 1 097 131 USD**

Type of activity and products/services

- Mechanical manufacturing
- Mechanical welding
- Industrial maintenance
- Engineering

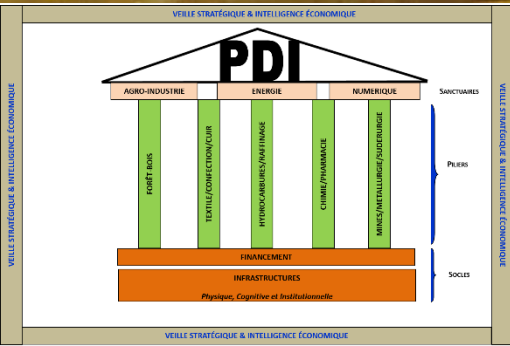
No. of employees ▪ 46 full-time

Name of Kaizen activity representative

- Mr. Bengmo Sobze Harauld

Promoter

- Mrs. Audrey Chicot



Summary

1-The situation before Kaizen
3- Measures taken

2- Aims and objectives
4-Results and resolutions

Presentation chaired by: Mrs. Audrey Chicot (CEO)

1. The situation before Kaizen

- MSMI looked like a steel scrapyards.
- The warehouses were not in order.
- Work was done without a fixed schedule.
- The generator was not optimized (diesel oil was not supplied in advance).
- Machine working time was not determined according to work orders.

2. Aims and objectives

The introduction of Kaizen allowed us to:

- Tidy up the whole factory.
- Set up (develop) Kaizen programs.
- Carry out very stringent and precise work.
- Carry out regular follow-up and monitoring.
- Perform quality control.



All of these meticulous steps have led us to the ultimate goals of:

- Reduction of machine operation time.
- Better quality control, and therefore better customer service (fewer returns, 80% less)
- Increased turnover.
- Fewer work accidents.

3-Measures taken

- Automation of generator start-up in the event of an outage; always have 80L of diesel in reserve.
- Good production maintenance planning as evidenced by an increase of more than 30% in turnover
- Search for alternative materials found in Russia: RIMAMID
- Energy optimization and use of alternative energies in partnership with a specialized company.
- Improvement of the internal healthcare system.
- As of 20/08/2020, 80% of the measures taken were reliable

4-Results

- A clear improvement in the quality of our services and turnover.
- Setting up of a unit for transforming plastic waste into biofuel and biogas.
 - Setting up of a medical practice in the company.
 - Improvement of the company's social climate
 - Resumption of specialized training for young people
 - Implementation of our Business Plan through construction of a new computerized workshop with management of an energy mix by solar panels.

Conclusion

All this allowed us:

- ✓ To properly manage the global Covid-19 pandemic.
- ✓ To maintain employee salaries.
- ✓ To be up to the task and efficient in ensuring maintenance needs of our national and our regional industrial fabric post-Covid-19.

Kaizen Activities in 2018 and 2019

A. Routine activities:

- Every Monday morning (7:30 am - 8:30 am), 5S and Kaizen meetings are held for 30 minutes at all workstations.
- On Fridays (4:30 p.m. to 6 p.m.), a review and evaluation take place of the Kaizen action plans formulated on Mondays.

B. Activities to resolve the main problems of the Company

The Quality Committee works on resolving recurring problems. After consultation, it was decided from 2018 to resolve the problem of "Eliminating delivery delays for customer orders".

Kaizen Activities in 2018 and 2019

3 themes were chosen for 2018 and 2019

- ❖ **Kaizen Theme 1:** Automate generator start-up after a power cut by ENEO (ENEO is the national electricity company).
- ❖ **Kaizen Theme 2:** Establish a good policy for the purchase and replacement of machine spare parts.
- ❖ **Kaizen Theme 3:** Reduce the machining time of customer parts by approximately 30% by maintaining a high level of quality.

Description of the previous situation:

- The electricity supplied by ENEO is unstable with frequent blackouts. MSMI has a generator, but the startup time is very long, which leads to prolonged stoppage of the machines with each outage.
- On average, production stops for 14 hours/month due to delayed startup of the generator.

Objective:

- Reduce machine downtime by 90% due to late startup of the generator.

Measures taken:

- a. Installation of an automatic startup device for the generator and standardization of electrical switch boxes;
- b. Development and implementation of a preventive and curative maintenance plan for the generator;
- c. Manufacture of and supply of diesel oil to a tank;
- d. Recording and follow-up of electrical energy outage times and generator startup time.

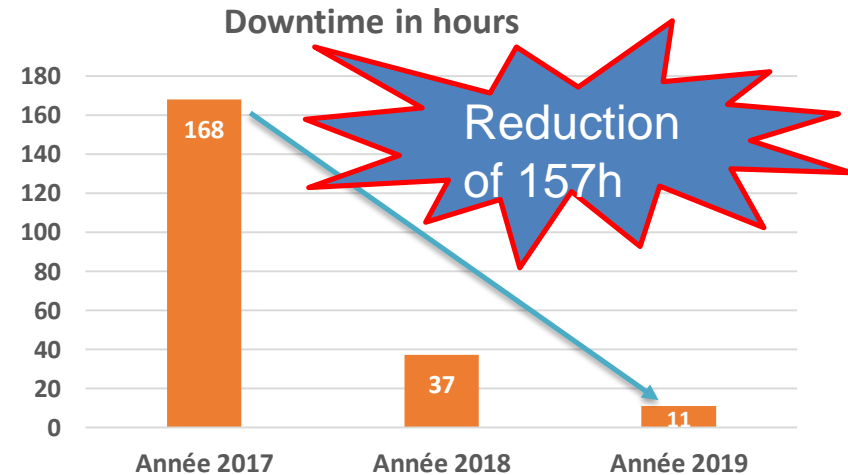
Kaizen Theme 1: Automate startup of the generator after a power cut by ENEO

+ Results obtained:

The table below gives us an overview of the results in 2018 and 2019:

Year	2017	2018	2019
Downtime in hours	168	37	11
Reduction of downtime (hours)	NA	-131 (-78%)	-26 (-70%)

- Reduction of machine downtime of the order of **78%** between 2017 et 2018, and of the order of **70%** between 2018 et 2019;
- Increase in productivity of approx. **131** hours in 2018 and 26 hours in 2019;
- Reduction in delivery delays of approx. **26.5%**.



Kaizen Theme 2: Establish a good policy for the purchase and replacement of machine spare parts.

+ Description of the previous situation:

- Priority was given to cheaper spare parts regardless of quality.
- Machine breakdowns were very frequent.
- There was an increase in machine downtime due to replacement of spare parts.

+ Objectives:

- Reduce the frequency of machine downtime by at least 51%;
- Reduce part replacement time by at least 41%.

+ Company measures:

- a. Purchase of high quality spare parts;
- b. Creation and monitoring of a reserve stock of the most frequently used parts;
- c. Implementation of a preventive maintenance plan;
- d. Development of parts replacement procedures;
- e. Training of operators in the implementation of procedures.



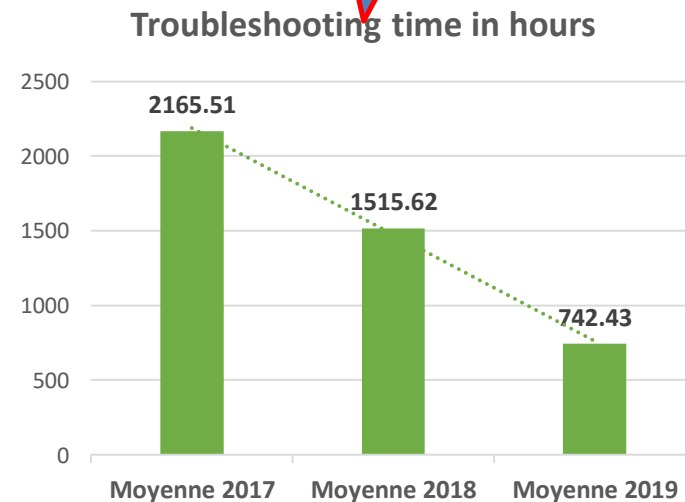
Kaizen Theme 2: Establish a good policy for the purchase and replacement of machine spare parts.

Results obtained:

Yearly average	Frequency of breakdowns	Average no. of hours				
		Diagnostics	Dismantling	Parts supply	Assembly	Total
Average for 2017	76,9	31,16	382,05	1241,32	510,97	2165,51
Average for 2018	60,8	24,62	298	795	398	1515,62
Average for 2019	45,4	18,41	222,52	204,3	297,2	742,43

Reduction of 1423h

- Reduction in the frequency of breakdowns with machine stoppages from 76.9 in 2017 to 45.4 at the end of 2019, i.e. **59% reduction**;
- Reduction in average machine downtime for parts replacement from 2165h in 2017 to 742h in 2019, i.e. **65.7% reduction**;
- Increase in machine availability of $(2165h - 742h) = 1423$ **hours**;
- Reduction of delivery times for parts of **the order of 8.6%**.



❖ Kaizen Theme 3: Reduce the machining time of customer parts by approximately 30% by maintaining a high level of quality.

✚ Description of the previous situation:

- The main raw material used by MSMI is steel which has various grades (USIMAX, 42CD4, ALUMINUM, CAST IRON, BRONZE ..) Steels are heavy and difficult to machine depending on their hardness and use, and it was desired to reduce these impacts on production and hence delivery delays.

✚ Objectives:

- To find raw materials with good technical characteristics and less weight, and reduce the machining time of large parts by about 30%.
- The Managing Director carried out research during his various trips, and in 2019 he found, in Russia, a lightweight material, RIMAMID, that is suitable for almost all grades of steel, particularly bronze. RIMAMID is therefore the material of the future.

✚ Company activities:

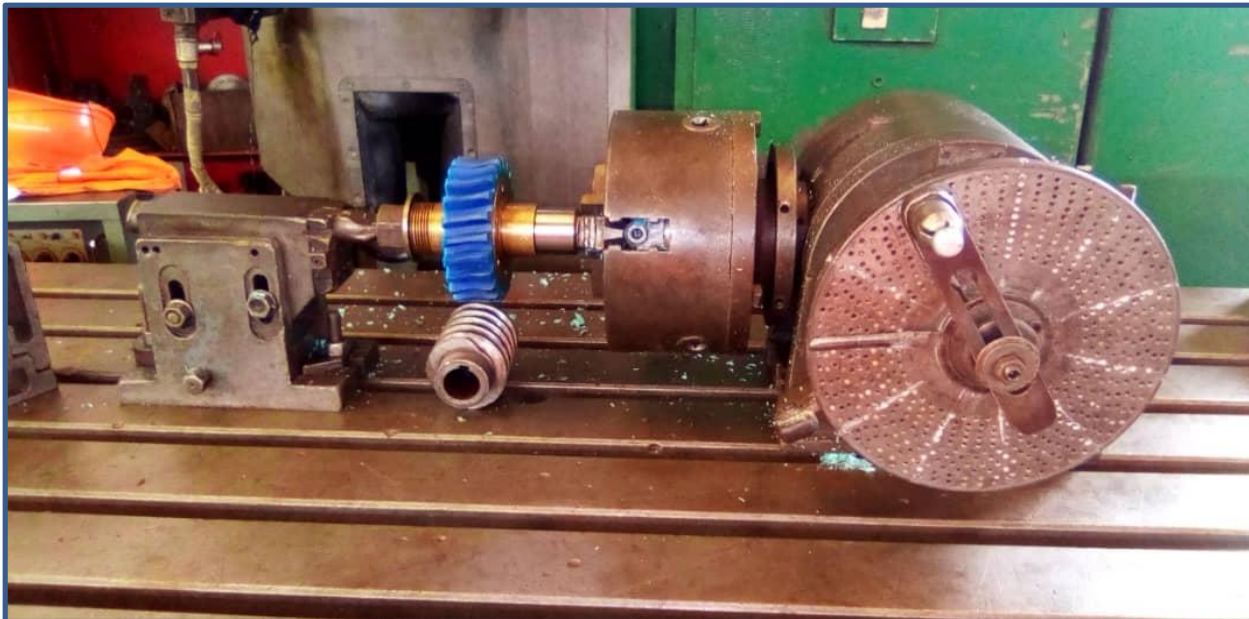
- Purchase and testing of the new raw material (RIMAMID)



Kaizen Theme 3: Reduce the machining time of customer parts by approximately 30% by maintaining a high level of quality.

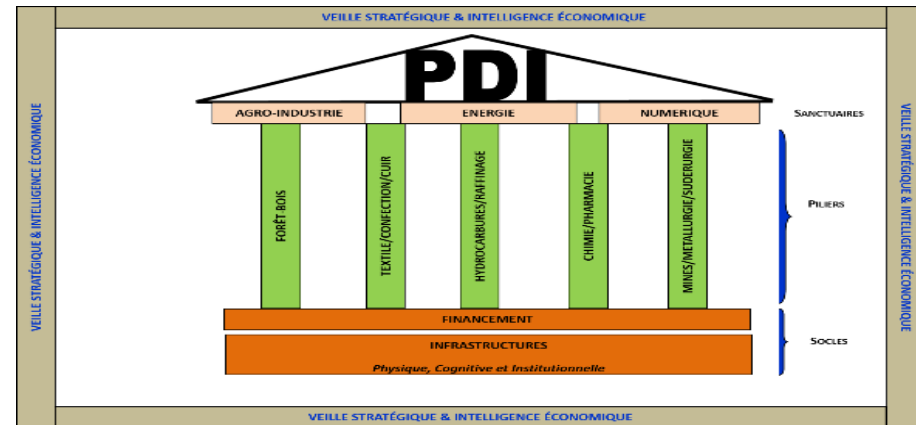
+ Results obtained:

- Tests carried out in Russia and at MSMI (the only company in Africa to use it) are quite satisfactory in terms of: (1) **Reduction of working time**, (2) **Purchase cost**, (3) **Weight**.
- This made it possible to introduce RIMAMID as an important project as part of the technological innovation of the Ministry of Industry.
- It offers a reduction in average machining time of approximately 30.8%.



Summary of the results of KAIZEN activities in 2018 and 2019

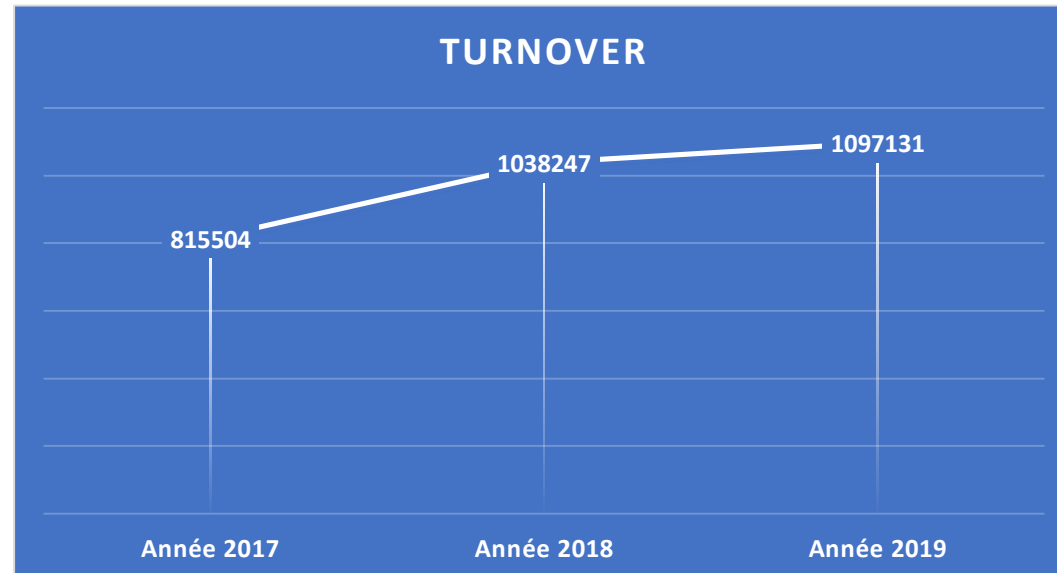
The various measures undertaken since the introduction of KAIZEN at MSMI have enabled the company to be classified as strategic for the development of Cameroon's Industrialization Master Plan.



1. Reduction of machine downtime related to electrical load shedding of around **78% between 2017 and 2018**, and around **70% between 2018 and 2019** (i.e. 157 hours reduction in 2 years);
2. Reduction in the frequency of breakdowns with machine stoppages from **76.9 in 2017 to 45.4 at the end of 2019**, i.e. **59% reduction**;
3. Reduction in average machine downtime for replacing defective parts from **2165h in 2017 to 742h in 2019**, i.e. a reduction of **65.7%**;
4. Reduction of average machine troubleshooting time by **65.7% with an increase in machine availability of around 1423 hours**.

Summary of the results of KAIZEN activities in 2018 and 2019

4. .
5. Reduction of average machining time for customer parts by approximately **30.8%**;
6. Reduction in delivery delays of around **42.9%**;
7. Increase in the number of customer orders on account of around **26.5% between 2018 and 2019**;
8. Revenue increase of **27% in 2018** compared to 2017 (\$815,504), and **6% in 2019** (\$1,097,131) compared to 2018 (\$1,038,247).



KAIZEN 2020: ENERGY OPTIMIZATION AND ALTERNATION - IMPROVEMENT OF THE HEALTH SYSTEM

ENERGY OPTIMIZATION AND ALTERNATIVE ENERGY:

Since the beginning of 2020, MSMI set up a unit for manufacturing biofuel from plastic waste with the following objectives:

- Improve the energy autonomy of MSMI;
- Contribute to the fight against environmental pollution by plastic waste.

MSMI also plans to build a solar generator in the near future.



KAIZEN 2020: ENERGY OPTIMIZATION AND ALTERNATION - IMPROVEMENT OF THE HEALTH SYSTEM

+ IMPROVEMENT OF THE HEALTHCARE SYSTEM:

A medical practice has been installed in the factory, supervised by the occupational physician who has been with MSMI since its foundation. This medical unit has a qualified emergency nurse and a nurse's aide at all times to provide first aid on site.

