



Indian Machine Tool Manufacturers' Association

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Annexure : A

IMTMA-ACE MICROMATIC PRODUCTIVITY CHAMPIONSHIP AWARDS 2024

FORMAT FOR SUBMISSION OF CASE STUDY FOR MICRO & SMALL ENTERPRISES ONLY (Unit level turnover < Rs. 100 Crores)

Title of the Case Study:

1. Name of company: INDER ENTERPRISES

Address of the Plant / Site location: D-126, B.S. ROAD INDUSTRIAL AREA, GHAZIABAD, U.P. - 201009

Tel No.: 98718-50150

Turnover (in Rs. Cr)- 6.05 CR

No. of employees: 65

Industry sector (mandatory): CNC MACHINING JOB WORK FOR LARGE COMPONENTS

2. Name of the project leader: CHIRANJEEV SINGH RAO

Designation: BUSINESS DEVELOPMENT

Mobile No.: 98718-50159

Email ID: chiranjeev@inderent.com

Alternate contact person: ANURADHA MIRDHA

Designation: HUMAN RESOURCE MANAGER

Mobile No.: 95118-44965

Email ID: info@inderent.com

3. Project implementation

Start date: 1 JAN 2023

End date: Ongoing

Is it in continuous operation now? (Yes/No) : Yes

Note: Udyam Registration Certificate to be attached as annexure in the last page of this document

We certify that the project described here is factually correct and is in continuous operation.

We confirm that we have read the rules and guidelines governing this competition and agree to abide by the same.

We agree to nominate a member of our senior management to make the presentation, in case this entry is short listed for final evaluation of the award.

We have no objections in IMTMA publicizing our case study in their programs / website and other event promotional collaterals.

Name: CHIRANJEEV SINGH RAO

(Head of Company/Business Unit / Division)

Designation: BUSINESS DEVELOPMENT

Date: 30/04/2024

Electronic Signature: _____



IMTMA-ACE MICROMATIC PRODUCTIVITY CHAMPIONSHIP AWARDS 2024

Annexure : B

Tick(✓) the appropriate box(es) that best describe your Case study

1. Project trigger:

- Customer driven Management driven

2. Productivity improvement through:

- | | |
|--|---|
| <input type="checkbox"/> Lean / Layout Design | <input type="checkbox"/> Equipment management/ Machinery change |
| <input type="checkbox"/> Quality improvement | <input checked="" type="checkbox"/> Digital Manufacturing & I 4.0 |
| <input type="checkbox"/> Process design / Process change | <input type="checkbox"/> Green & Clean |
| <input type="checkbox"/> Any Others (Please specify) | |

3. Quality / Analytical tools: If you have used any of the tools listed below for developing productivity improvement solutions please tick.

- | | |
|---|---|
| <input type="checkbox"/> 7 QC Tools / 8D methodology | <input type="checkbox"/> Lean Tools(3M, 5S, Polka Yoke, SMED , Etc) |
| <input checked="" type="checkbox"/> Total Productivity Management (TPM) | <input type="checkbox"/> Six Sigma |
| <input checked="" type="checkbox"/> Why-Why Analysis/ Root Cause Analysis | <input type="checkbox"/> Statistical Process Control (SPC) |
| <input type="checkbox"/> Total Quality Management (TQM) | |
| <input type="checkbox"/> Others (Please specify) _____ | |

4. Productivity improvement includes:

- Enhanced output
 Reduced inputs
 Others (Please specify) _____

Brief description of the project.

Please state the objectives, scope of the project, its context, and the challenges under which the project was taken up. This being a Productivity Championship contest, the principal aim must be to showcase productivity of machine/line/ Project, People, or material, or all of these combined.

INDER ENTERPRISES is a CNC Machining job shop that caters to high mix and low volume precision component of sizes ranging from 1m up to 9m. Being a family run business, we have over 40 years of manufacturing complex and precision components for regional and domestic customers belonging to industries like Aerospace, Defense, Industrial Automation and Robotics, Printing machinery, Machine tools and SPM etc. You can find our company profile [here](#).

Being a job shop, our order book is highly dynamic and unpredictable and our customers being SMEs themselves lack the systems, forecasting capabilities and financial headroom to have a smooth flow of orders. This leads to highly variable order flow on our shop floor causing delays, errors and rejections leading to less than expected top line performance. To Alleviate this, our management took the decision of systemizing all our process and build a custom Enterprises Resource Planning (ERP) Software in-house that can cater to our specific needs.

This project started with us seeking outside help to build the software but quickly we realized that vendors do not have the know-how and context of our needs and more importantly, we ourselves lacked the systems that can be converted into an ERP. Thus, after doing research, we decide to build the systems and its counterpart digital infrastructure simultaneously and iteratively.

The project took us over a year and it is still ongoing with minor learnings and tweaking. Over the course of a year, we have built a complete in-house ERP solution that provides complete visibility of each step in the process from Inquiry, Order Receiving, Traceability, Planning, CAM preparation, Production, Post-Production, Quality, and Dispatch. Each step of the process has well defined "Doers" with weekly feedback provided through a gamified scoring system. We also built into the system automations like whatsapp and emails (for customer communications and reporting), Telegram (for internal task delegation and completion).

Due to the systemization of processes and data collection at each step, we have now started to make well-informed data driven decision with the goal to ever optimize our Average Revenue per hour. Additionally, we have seen our Topline (Revenue) grow by 50% with fixed cost remaining almost flat leading to almost doubling of our Bottomline.

Challenges Faced during the development

- Limited Resource and Manpower available for the project
- Commercially available products were expensive to implement and even more expensive to iterate
- Alignment of team member to new systems
- Instilling habit of reporting tasks done as soon as they are done
- Need of a cultural shift in the way the company does work

Need for the project. (10 points)

What made your company to take up this project? Describe in brief.

Project triggers could be business need, customer requirement, business growth, competition, competitive advantage, need to minimize investment, manpower reduction, business benefits etc. Please list the targets that were expected to be fulfilled by the project.

In 2018, we took the decision of enhancing our technology by adding a CNC Vertical Milling Centre (VMC) to keep up with the demands of our customers who wanted higher accuracy and faster deliveries. After gaining

experience, we added over 6 more CNC spindles to our portfolio by early 2023. This caused an increase in our revenue and productivity as we could automate our machining and turn-around our components faster. As the complexity of our operations increased with growing team and order book, we started facing the following problems –

- Communication and Coordination between team members
- Tracking of all order – we can have over 70-80 different drawings/order no. in our Work-In-Progress (WIP) at any given time
- Planning and Prioritization of ongoing and upcoming orders
- Very little visibility of WIP
- No measurement of Critical Parameter like Rejection or Rework, OEE etc. that can be optimized
- Frequent breakdowns due to lack of Preventive Maintenance System
- Customers also had no visibility of their Orders leading to them pressurizing management continuously
- Lack of flow in shopfloor leading to high-cost of production
- Employee were not very comfortable with using technology and online tools

Above issues were becoming a bottleneck in our growth and were causing loss of profit due to errors that could be easily avoided. We realized that our machines were under-utilized as there was inadequate planning and defined responsibilities. Moreover, we were losing business/orders as our cost of production was higher than the competition. Thus, we came to the conclusion that we need well defined processes and a system to track all tasks and orders.

Target for the ERP Solution

- Well Defined systems/processes where each step of the flow has a designated “Doer”, Standard Operating Procedure “SOP”, and Turn-around Times (What, Who, How and When)
- Software should be easy to build with easily available plug-ins/APKs
- Iteration Friendly Architecture (Cheap and easy to make changes)
- All employees are provided easy to use online dashboards that can be accessible through mobile phones
 - o Employee can use these dashboards to know their current tasks and deadline
 - o Employee can mark their tasks completed through these dashboards
- Gamification of Feedback through weekly scoring
- Start measurement of Critical Process Parameters like OEE, Tooling cost, Machine Uptime, Breakdowns etc.

Solution generation, (What were the steps taken into consideration for planning the solution) (20 points)

How did you generate the solution?

Explain how alternative solutions were designed, developed, and evaluated with analysis of data. Solutions could be engineering, technology oriented, or application of industrial engineering / statistical methods or a combination of these.

Before we started the development, coordination of all orders, task assigning and follow up were done by the Proprietor through verbal communication. Back then, we had 45 employees with 6 VMC spindles. The day-to-day activities were hard to manage and there was lack of tracking and visibility of our order status.

To get over these issues the management decided to find an off-the-shelf ERP solution for our needs. With our limited budget and resources, we found it extremely inhibitive and expensive to implement commercially available software’s like Pro-shop, SAP, and few other domestic ERP systems.

Then, we decided to hire a vendor with experience in developing ERP for the manufacturing industry. With Noida as a hub for a lot of software companies in close proximity to us, we found a lot of vendors but none of

them had experience in developing systems for a Job Shop environment – they had only done ERP for automotive production environment which has a predictable flow. We eventually narrowed it down to one supplier that was in our budget and started the development process.

By the first deployment, we found major issues and gaps between our requirements and what the vendors were delivering. The modules provided by the vendor were very rigid and didn't take care of the "edge cases" that occurred frequently. The systems were created in silos, and were not representative of how the work is actually done. We came to the conclusion since we ourselves do not know what the "end-solution" would look like; an outside vendor would not be able to fully understand our needs and create solutions specific to our needs, capabilities, and culture. Thus, we scrapped the project and decided to hire an internal team to develop this ERP.

After doing extensive research and talking to friends working in software industry, we decided to base our ERP on top of "Google Sheets" that provided us with the flexibility and easy availability of plug-ins, and a plethora of resources available that can help in our development.

FEATURES	GOOGLE SHEETS (IN-HOUSE)	SQL BASED ERP DEVELOPMENT (OUTSOURCE)
Cost	Free	Expensive
Difficulty to Iterate	Very Easy	Very Hard and Expensive; Every change would have incremental costs
Availability of Plug-ins	Numerous Free or Freemium plug-ins available	Expensive plug-ins
Whatsapp/Telegram Automation	Yes	Available but expensive
Manpower availability	Less-experienced Developers required	Highly experienced developers required
Ease of Deployment	Easier – as it developed in-house	Difficult – we need to change our way of working to fit the system requirements

Based on the above advantages we started development of our in-house ERP.

CREATE THE FRAMEWORK/ARCHITECTURE

We chose a simple to understand architecture that was easy to understand by any layperson. The process begins with defining a simple 4-5 step flowchart of each process. A simple example of Inward process is illustrated below -

After creating the Simple Process Flowchart, we need to define –

1. "WHAT" needs to be done
2. "WHO" will do it
3. "HOW" will they do it
4. "WHEN" should it be done by

Thus, each step of the process in the Google Sheet will also have

- Planned date
- Actual date
- Status of Work (done/not done)
- Delay

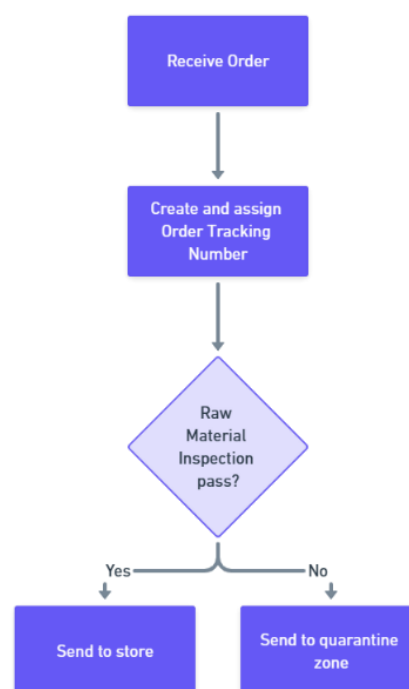


Figure 1: Simple flowchart

- Any other relevant information regarding the step

This is represented in Google Sheets as shown below –

WHO		HOW		WHEN		Decide Priority and delivery dates				Order Planning				Send Order Confirmation									
TOTAL OPEN		22		From IE No. FMS		Inderjeet SirChiranjeev				Sachin				Ritu									
IE No. FMS		Whenever Created		Ask MD				Order Planning Form (PRE-FILLED LINKS)				Order confirmation template (Email/Whatsapp) with Delivery dates if available											
IE No. FMS		Whenever Created		8:00-00 HOURS				1 Day				24:00-00											
TIMESTAMP	CLIENT	IE No.	Drawing No.	QTY	Drq	Del. Date (sat)	Dis.	PLANNED	ACTUAL	PRIORITY	DELAY	PLANNED	ACTUAL	STATUS	DELAY	Link	Whatsapp	PLANNED	ACTUAL	STATUS	DELAY	Delivery Date Shared?	Doer
05/01/2023	Metamech E	2113	GJ-1238-160-296	4	https://d/	25/03/202	Depart	05/01/2023 19:43			11420:46:1	06/01/2023 19:4	06/01/2023 14:14	Yes		Planning	Send	07/01/2023 14:14:52	09/01/2023 11:17	No	45:02:50	<input type="checkbox"/>	Ritu
05/01/2023	Roll Form E	2114	441.090.005.029	1	https://d/	28/01/202	Depart	05/01/2023 19:55	16/01/2023 11:53	Medium	255:58:13	06/01/2023 19:5	10/01/2023 09:37	Yes	85:42:38	Planning	Send	11/01/2023 22:37:00	10/01/2023 09:38	No		<input type="checkbox"/>	Ritu
05/01/2023	Roll Form E	2115	441.090.005.003	1	https://d/	11/02/202	Depart	05/01/2023 19:54	16/01/2023 11:53	Medium	255:59:12	06/01/2023 19:5	10/01/2023 09:37	Yes	85:43:40	Planning	Send	11/01/2023 22:37:00	10/01/2023 09:38	No		<input type="checkbox"/>	Ritu
07/01/2023	U V Graphic	2116	DRIVE MS FRAME	4	https://d/	11/02/202	Depart	07/01/2023 17:12	16/01/2023 11:53	Medium	210:41:26	09/01/2023 17:1	10/01/2023 09:37	Yes	16:25:41	Planning	Send	11/01/2023 22:37:00	10/01/2023 09:38	No		<input type="checkbox"/>	Ritu
07/01/2023	U V Graphic	2117	OP SIDE FRAME	4	https://d/	11/02/202	Depart	07/01/2023 17:18	16/01/2023 11:53	Medium	210:34:51	09/01/2023 17:1	10/01/2023 09:37	Yes	16:19:43	Planning	Send	11/01/2023 22:37:00	10/01/2023 09:38	No		<input type="checkbox"/>	Ritu
07/01/2023	U V Graphic	2118	REWIND FRAME MS	2	https://d/	11/02/202	Depart	07/01/2023 17:20	16/01/2023 11:53	Medium	210:32:59	09/01/2023 17:2	10/01/2023 09:37	Yes	16:17:48	Planning	Send	11/01/2023 22:37:00	10/01/2023 09:38	No		<input type="checkbox"/>	Ritu
07/01/2023	Hexagon En	2119	SUB REFLECTOR	3	https://d/	14/01/202	Depart	07/01/2023 19:54	16/01/2023 11:53	Medium	207:58:51	09/01/2023 19:54	10/01/2023 09:37	Yes	13:43:50	Planning	Send	11/01/2023 22:37:00	10/01/2023 09:38	No		<input type="checkbox"/>	Ritu

Figure 2: example google sheet

In the above image –

- Each Row represents an order
- Each Column is tracking the work done step-by-step
- All information regarding each process step can be tracked and documented on this sheet

To Run this System, we only needed 2 additional resources – one Process Coordinator who will keep track on each step and follow up if the work is done and highlight delayed task, and one Google Sheet Developer with experience in building automations on Google sheets and basic knowledge of JavaScript. Both of these resources costed us less than a total of Rs. 50,000 per month but gave us complete visibility of each order in our shop floor.

Implementation.

Describe how the selected solution was implemented. (20 Points)

- Explain how the project was implemented by taking all the practical challenges encountered with respect to Man, Machine, Method, Process, Technology, Etc. Including assessment of risks if any.
- Please share the photographs of Before and After conditions linked to Process change, Technology change, Equipment change, Layout change, or any other changes.

The process of developing these systems is a continuous process and it is still ongoing in our company. We are still creating new systems or improving old ones to make the systems easier to use or to add features and new measurements to the system. Our ultimate goal is to teach our middle management to become system creators so that systems are based in ground reality of the shop floor.

We can divide the implementation process into 3 Phases – Initial Prototypes, Gamified Feedback and Upgradation, and then Plan, Do, Check, Act (PDCA).

PHASE 1 – INITIAL PROTOTYPE SYSTEMS

During the initial phases of the development process, we need to setup our infrastructure, both Software and Hardware (employees).

For Software, our philosophy is to setup rudimentary process so that we can quickly get them in the hand of the Doers and learn ‘what works and what doesn’t’. This was important as we didn’t have any experience in building the systems and neither did our employee in running the system as most of them were not tech savvy.

For Hardware, we quickly realized that we need to involve the doers into the process of solution creation so that we get their “Buy in” from the first day. This was done by organizing multiple half-day workshops with each

department to discuss and arrive at the “rudimentary process” through discussion. This helped the Doers feel involved in the solution so they were more involved in the successful implementation of it.

In the start, we created systems for the essential process of the company –

S.NO.	PROCESS NAME	RESULT/APPLICATION
1	IE No. Generation	<ul style="list-style-type: none"> - Receive Raw Material from Customer for Job Work - Assign tracking number (IE No.) to each order - Perform RM inspection
2	CAD+CAM	<ul style="list-style-type: none"> - Generate 3D CAD model from customer drawings - Do CAM programming and generate G-codes
3	Final Quality Check Process	<ul style="list-style-type: none"> - Do Final QC Inspection of parts after production - track rejection and rework
4	Dispatch and recovery	<ul style="list-style-type: none"> - Dispatch the Orders to customers - Track and follow up pending payments

You will notice the we have left out production process out of this list; this was a deliberate decision taken after talking to the production department and understanding that our production system is not easily described into a simple process as it is highly dynamic depending on the needs of multiple customers. We observed the planning of production changes on day-to-day basis depending on customer expeditors.

We also created simple automations using *Telegram* – a mobile based free application that can be used to create simple notification system for Doer. Doer can get notifications about their tasks with expected completion dates as soon as the previous task is completed. The doer can also mark their work done through this Chat Bot, helping streamline coordination and communication.

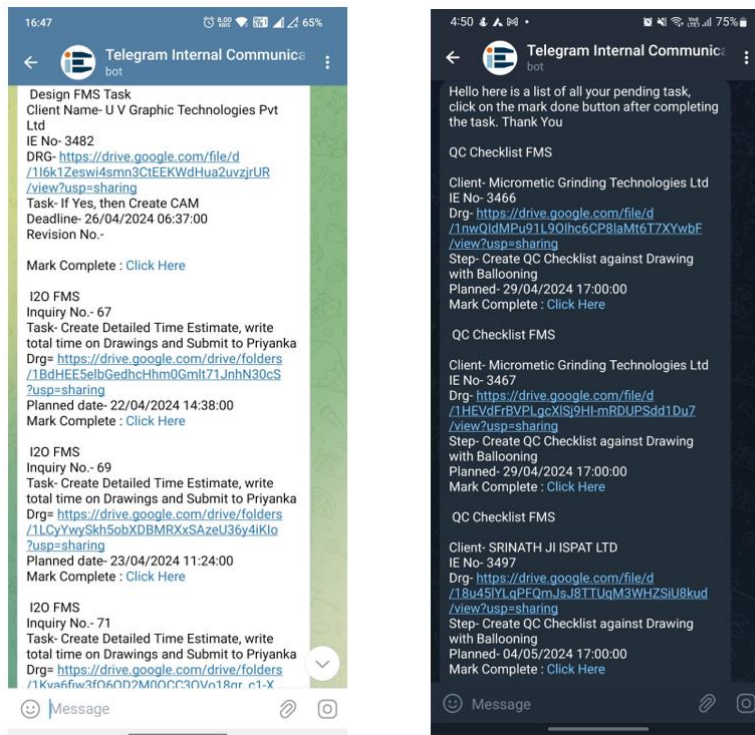


Figure 3: employee telegram task notifications

PHASE 2 – GAMIFIED FEEDBACK AND UPGRADATIONS

Now, since most of the processes were defined with each step of the process having a designated Doer and turn-around-time, we can easily track each employees’ task status and if they were any delays in their completion vs. the planned.

As shown previously, we have clearly defined Planned completion times, and Actual completion times are submitted by the doers when their tasks are done, we can use this to calculate their 'Work done %' and 'Work done on-time %' score – two metrics we decided to track.

We then started a weekly meeting with each doer, where we provided their scores to them and coached them to improve their scores. The meeting was held first thing at 10 AM on every Monday to instill the weekly feedback loop for each employee.

We quickly realized that employees were satisfied with 70-80% scores as psychologically through our education system it is considered a score even-though 20-30% of their work was either not done or delayed. Thus, we experimented with providing Negative scoring – that means if a doer does 70% of the work their scores will be calculated as -30% showcasing 30% work is not done. An example for score is show below -

Team/Person	KRA	KPI	Last Week Actual %	Current Week Planned	Current Week Actual	Current Week Actual %	Next Week Planned
Sachin- All FMS	All work should be done	% work not done	-2.33	58	57	-1.72	0
	All work should be done on time	% work not done on time	-16.67	57	49	-14.04	0

Figure 4: Gamified negative score for employees

Through this gamified scoring system, we created a feedback loop for both the Doer and the development team, as the doers will quickly request changes and upgrades to the systems, and helping us in making our system more robust.

CUSTOMER AUTOMATED COMMUNICATIONS

We also setup a Whatsapp based messaging automation plug-in to provide customer with automated messages to track their orders and get timely updates. Thus, reducing the need of customer’s expeditors to constantly visit us and pressure us into doing their work first. This helped us smoothing out our production flow also and the day-to-day production plan changes started to reduce as customers got comfortable with our communications.

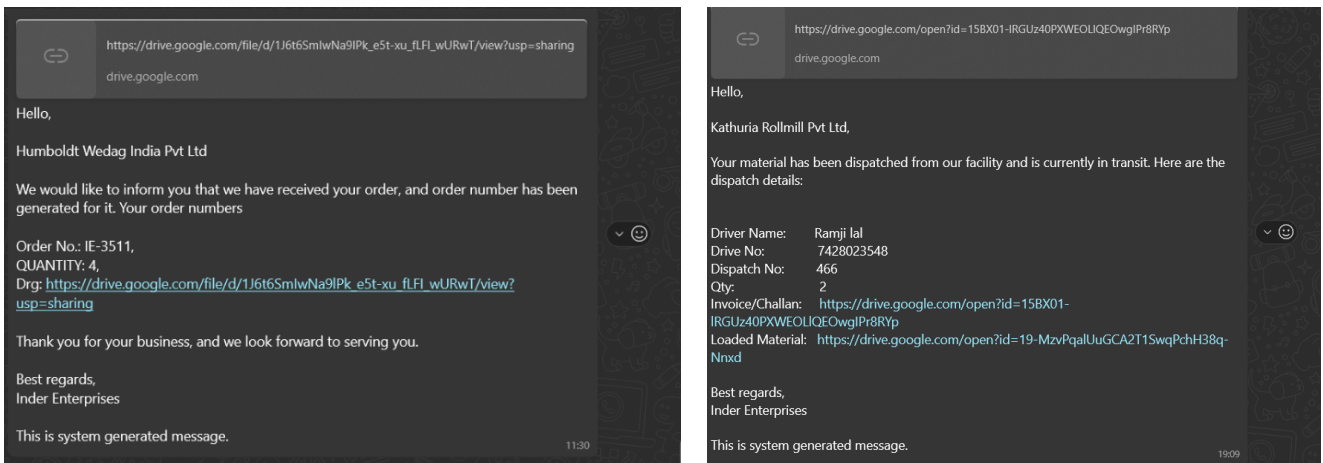


Figure 5: Customer Whatsapp communication

PHASE 3 – PDCA – Plan, Do, Check, Act Cycle

As our systems grew more robust and we started collecting data that was not available before, we could now make data-driven decisions and we could monitor how these decisions helped us improving our Key Performance indicators (KPIs). We were now in the classic – Plan, Do, Check and Act cycle (PDCA).

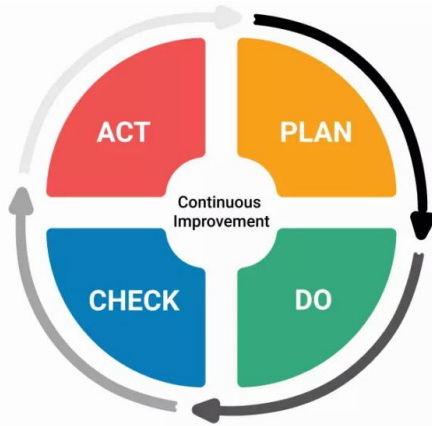


Figure 6: Plan, Do, Check and Act (PDCA) cycle

For example, take one important indicator at company level is our *Average Hourly Revenue (AHR)*, as this directly affects our topline and bottom-line. We were now tracking our AHR for each job by the simple formula –

$$\text{Average Hourly Rate (AHR)} = \frac{\text{Price of Job}}{\text{Machining Hours}}$$

Through tracking of this data, we could optimize our total revenue keeping our Total available machining hour per month constant. After dispatch, each job’s AHR was calculated and compared to our target overall benchmark. If the AHR is lower than expected, we ‘plan’ how we can improve it and ‘Do’ the improvements when the orders arrive next time. After that, we would ‘Check’ the results and ‘Act’ on the findings. After a few PDCA cycles, if the job is still under-performing our benchmarks – we can decide to discontinue that component/order.

Over the period, through these data-driven PDCA cycles, we have managed to grow our Q1 revenue 27.6% and Gross Profits by 34.6% Year-on-Year.

Process	Before (Pictures)	After (Pictures)
Order Entry and Tracking Number assigning	Using Handwritten Registers	
CAD / CAM Process	Using whiteboards and oral delegation	

Production Process	Oral coordination	
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Above are few examples of the system sheets we have created, we have currently 18 such system currently live at our shop floor tracking each and every process step.

Results / Impact. (20 points)

Productivity Improvements

Please show the overall impact of your project on the company – both financial and non-financial.

(Segmented details, as applicable may be shared in a tabular column with 'Before & After' and its Unit of measurement) Graphical illustrations with 3-year data is preferable:

Mandatory parameters:	Before (Q1 2023)	After (Q1 2024)	Unit of Measurement
1. Productivity details: Indicate metrics that showcase the productivity gains obtained. (Output in relation to the inputs used)- These could include reduction of material in various stages such as raw materials/ semi-finished goods/ WIP etc. that showcase efficiencies obtained	Revenue per machine hour for Q1 2023 ₹861	Revenue per machine hour for Q1 2024 ₹1095 (27.1% increase)	Total revenue (in Rupees) / Total Machining hours
2. Reduction of rejects and rework	Not Measured	7.28%	Percentage of jobs in rework
3. Quality	Quality issues used to go unreported	All Quality issues are reported and CAPA created	
4. Direct Cost or Cost per piece/unit – Per hour running cost	₹679	₹556 (18.1% decrease)	Total Running Cost per month (in Rupees) / Total Machine Hours
5. Manpower cost (Can include direct/ indirect labour/ contract/ temp resources and man-hours & overtime if any)	₹14,63,768	₹14,86,357	Rupees
6. Delivery & Safety – On-time Delivery %	Not Measured	92.4%	
7. Safety	N.A.	N.A.	
8. Order Visibility	No Visibility	All orders are tracked through Dashboards	

9. Customer Satisfaction	Not Good	Very good – All customer appreciates our systems
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Business Sustainability (5 Points):

Describe how this project will impact the company positively like business continuity, enhanced market share etc. by which the gains will be consolidated

As shown above and will be shown in coming sections, we have significantly improved our key business metric resulting in an overall increase in efficiency and productivity gain. This is due to the philosophy by Peter Drucker, “What gets measured, gets managed”.

We have created a scalable and easy-to-understand architecture of system creation and implementation where now our team itself creating and deploying their own systems. This is resulting in an ongoing improvement of processes, helping us deliver components – Faster, Cheaper and of Better Quality than our competition.

Furthermore, due to our systematic processes, we have been approached by Aerospace companies for contract manufacturing of their components for which we are now preparing for AS9100 certification also.

Resource impact. (10 points)

What is the impact of your project on resources? Please specify the reduction in the following resources used (as applicable)

1. Water / Power/ Utilities such as Compressed Air
2. Consumables such as Lubricant / Coolant, etc.
3. Material
4. Reduction / elimination of pollution
5. Finances/ Working capital

(Segmented details, as applicable may be shared in a tabular column with ‘Before & After’ and its Unit of measurement) Graphical illustrations with 3-year data is preferable:

Parameters:	Before (Q1 2023)	After (Q1 2024)	Unit of Measurement
1. Revenue per unit power consumed	₹150	₹251	Total revenue (in Rupees) / Total units of electricity
2. Revenue per Kg of Raw Material	₹838	₹1167	Total Revenue (in Rupees) / Total Weight of RM
3. Revenue per employee	₹1,04,408	₹1,12,760 (7.9% increase)	Total Revenue (in rupees) / Total No. of Employees

Business metrics. (10 points)

Please share details of the impact on the Business:

Market share / sales volume / share of business from Customer, Customer satisfaction scores / ratings and Customer appreciation or testimonial if any.

(Segmented details, as applicable may be shared in a tabular column with 'Before & After' and its Unit of measurement) Graphical illustrations with 3-year data is preferable

Parameters:	Before (FY 22-23)	After (FY 23-24)	Unit of Measurement
1. Yearly Revenue	₹5,30,16,949	₹6,05,99,785	Rupees

Parameters	Before (Q1 2023)	After (Q1 2024)	Unit of Measurement
2. Average Hourly Rate (AHR)	₹861	₹1095 (27.1% increase)	Total revenue (in Rupees) / Total Machining hours
3. Gross Profit %	52.23%	61.64%	
4. Running Cost per Hour	₹679	₹556 (18.1% decrease)	Total Running Cost (in Rupees) per hour

Scope for horizontal deployment. (5 points)

Can the ideas, principles, concepts or techniques developed by you be implemented in other areas in your company and in similar / other industry? Give brief details with the associated impact.

As stated previously, the architecture of the systems allows easy deployment and iteration. We believe the solution is industry agnostic and can be implemented not just in CNC Machining industry but rather any industry where there are multiple flows through which the work passes from one Doer to the next.

The system is also very scalable as we have tried to use as many free or freemium app/tools that can be used by SMEs to large corporations. Even for large companies who want to digitize their operation through ERP, we recommend starting iterative development process through Google sheet which can be used by Software development companies to create a conventional ERP system, helping in reducing the cost and years long process of development and implementation seen at these companies.