# UNIDO - ACMA Partnership Programme, India Case Study #5: Gajra Differential Gears Pvt. Ltd.







Gajra Differential Gears Pvt. Ltd.



### **BACKGROUND OF GAJRA DIFFERENTIAL GEARS PVT. LTD.**

#### **OVERVIEW**

"GDGL is a completely changed organization, vibrant in every aspect of operations. Smartly uniformed employees are happy to reach their workplace on time and do continuous improvements. The UNIDO-ACMA programme has guided us towards a new horizon."

Raj Kirtani, Managing Director

Company: Gajra Differential Gears Pvt. Ltd. Location: Dewas (MadhyaPradesh), Central Region Programme period: May 2005 – October 2007 (30 months) Number of employees: 328 (0% female employees) Core products and processes: Differential gears, differential pinions, bevel gears, bevel pinions and spider kit assembly. Average annual turnover: INR 245.8 million (USD 5.46 million) Value of exports: INR 122.9 million (USD 2.73 million) Tier:2

#### **KEY CHALLENGES FACED**

- » Frequent customer complaints and internal quality problems;
- » Frequent customer complaints and rejection returns;
- » Problems deriving from poorly defined organizational structure and a resulting lack of clarity of roles and responsibilities of managers, engineers and supervisors;
- » Poor utilization of human and technical/equipmentresources resulting in low productivity;
- » Absence of skill improvement and development schemes of workers.

#### **ASPIRATIONS AND AIMS**

- **»** To improve the overall quality level of the company's products;
- »To improve overall equipment efficiency (OEE) of all machines by reducing breakdown losses;
- **»** To reduce manufacturing costs by targeting lower in-process rejection;
- » To create a congenial and methodical working culture

Gajra Differential Gears Pvt. Ltd.

### **BACKGROUND OF GAJRA DIFFERENTIAL GEARS PVT. LTD.**

Localized guard placed to avoid chip and coolant spillage



Before



In 1990, after an amicable family settlement of the erstwhile Gajra Gears Group, Mr. Ramesh Gajra was given the reigns of the transmission gear business. In order to provide the range of products required by customers, a separate company - GDGL - was formed in 1991 to cater to the differential gears segment. What started within a small shed then, is a large entity today, sprawling over 16 acres of land near Kshipra - Dewas. GDGL is now a player to reckon with in the domestic replacement market and a dominant force on the export front. Boasting a product library of over 300 types of differential gears, GDGL is marching ahead with more than 50 new items added to its range of products every year.

In January 2004, an entire team of senior managers (including the CEO) had taken charge at GDGL. The challenges were manifold i.e. competition, quality Issues, productivity, cost and product range (number of products with low quantity requirements, resulting in high inventory and high number of change-over). The management of GDGL was at a loss and did not know where to start and how to cope up with the pressure of improving productivity, lowering costs and reducing product quality defects. In one of the Board of Directors Meetings the matter was discussed, and one of the directors cited the example of the parent company Gajra Gears, Dewas which got transformed through the ACMA- CII 'Clustering for Competitiveness' programme. GDGL contacted ACMA to know more about upgrading possibilities and were referred to the UNIDO-ACMA Partnership Programme which was about to start in the Dewas/Indore region in 2005.

The introduction of this programme was seen as the perfect catalyst to guide GDGL with ease and expertise towards a new horizon.

#### **VISION STATEMENT**

Every member of the Gajra Gears family shall strive for excellence in each and every aspect of their work with vigour, continuous innovation, total commitment and team spirit. Towards this, Gajra Gears shall ensure continuous learning, achievement orientation and ethical business practices, to be recognized as a world class manufacturer.

#### **MISSION STATEMENT**

To maintain and strengthen GDGL's position as a leading Indian manufacturer of automobile differential gears and to meet the requirements of customers in domestic and export markets in terms of quality, costs and delivery. This shall be achieved through timely supplies of quality products backed by responsive service, empowered employees and by treating material suppliers and vendors as partners in progress - all leading to satisfied stakeholders.

Gajra Differential Gears Pvt. Ltd.

### **GJARA GEARS JOURNEY TROUGH THE PROGRAMME**

Safety Day celebrations





The programme started in GDGL in May 2005 and ended in October 2007. The counsellor, Mr. Vikas Sethi, visited the company three times every two months and reviewed the actions and improvements achieved. He also identified areas of concern and challenges, provided inputs on all steps of the roadmap and assigned new tasks to the team at GDGL. During the entire journey, the counsellor continuously stressed the importance of 1S-2S, safety and total employee involvement to organize the workplace.

A set of 32 key indicators (e.g. scrap clearance frequency, absenteeism, accident frequency and severity, customer return or in-house rejection) were introduced in a phased manner and regularly monitored within the company through internal reviews as well as in the course of Monthly Review Meetings (MRM) with other companies in the cluster, and with inputs from the counsellor.

#### **OVERCOMING THE ORGANIZATIONAL CHALLENGE:**

When Gajra Gears entered the programme, some of the major concerns were the poor utilization of man, machine and resources, unorganized and unskilled workforce (associates with no technical background or industrial experience) and issues related to poor quality. To overcome these hurdles, a raodmap for improvement was developed with the help of the counsellor.

The CEO addressed employees on a monthly basis to share the company's performance versus future targets and also to raise motivation by rewarding them for their valuable contributions through suggestions/kaizens and quality circles (a group of employees, around 5-7, solving a concrete problem applying 7 QC tools). Such activities made the employees realize their self-worth and they forged ahead by contributing more and more within the framework of a redefined organizational structure. Initially, the gaps in number of layers in the organization were huge. By empowering grass root level employees, the champions were created for different key indicators/parameters, thus evenly distributing responsibility, which resulted in reducing the gap between the layers. Daily department meetings were held to review company/department related problems, and to find solutions through effective communication and timely actions.

These activities led to more effective team-work on projects like "my machine campaign", productivity enhancement, quality improvement and waste elimination.

The CEO also took personal interest in developing an eco-friendly environment all around the factory area. This greening initiative culminated into covering of nearly one-third of the factory land with plantation of trees, shrubs, lawns and even seasonal crops.

Gajra Differential Gears Pvt. Ltd.





Conveyorized packing system





#### DEALING WITH QUALITY CONCERNS CHALLENGE (QCC):

At the start of the programme, customer concerns and internal quality ppm were very high resulting in confusion and process rework.

Apart from the before-mentioned structural changes and efforts to enhance employee motivation, a problem solving attitude was being developed through regular trainings and daily morning meetings in which customer related and internal quality concerns were emphasized.

Shadow boards assisted operators in reducing their tool-searching time and develop a better understanding of improved work processes by providing them with clearly defined standard operating procedures (SOPs) written in the local language. All quality problems were dealt with by applying the "why-why analysis" approach. This is a method of questioning that leads to the identification of the root cause(s) of a problem, and how to prevent the issue from happening again. By doing the analysis and questioning why the problem occurred, the root cause of the problem could be found, and necessary counter-measures were implemented. The other tool, which helped solving quality problems, was Poka-Yoke, which refers to mistake proofing on the work station in the form of prevention or detection so that defect parts are removed immediately and do not pass to the next station in the process.

#### **OTHER QUALITY INITIATIVES LAUNCHED**

The following actions were initiated to improve the quality of products:

- » Detailed problem solving training given to all concerned on topics like, 7 QC tools, PDCA (Plan, do, check and act) and why-why analysis.
- » Enhanced communication at shop floor through the organization of daily morning meetings and through the switch to a team-based approach for better understanding of processes and faster problem solving.

#### **IMPROVING EMPLOYEE SATISFACTION AND MOTIVATION**

- 1. Welfare activities like contributing to the school fees for outstanding performance of children were initiated. This was introduced in the tenth month of the programme, to improve employee involvement in the improvement of the company. Around 5% of families benefited from this initiative
- 2. Advance payments for marriages or treatments of illness etc. were made available.
- 3. Family get-together events on annual function day and staff club picnics were organized.
- 4. A safety day celebration and mock drill activities were held (in mock drill exercises, demonstrations were given to show workers how to control fire in an open area and associates were trained on how to react when hearing the fire alarm and using the right category of fire extinguisher, etc.).
- 5. To demonstrate and improve team spirit and leadership quality amongst employees, sports games such as volleyball and badminton were organized during spare time.

After

Gajra Differential Gears Pvt. Ltd.

### **OUTCOMES**

#### **KEY RESULTS**

- » Internal rejection reduced from 35,158 to 4,169 PPM.
- » Customer returns reduced from 10,187 to 5,284 PPM » Scrap yard area was reduced from 130 Sq.ft to 13 Sq.ft (on
- wheels) » Training days increased from 0 to 7 days per employee per year
- » Employee involvement improved from 0% to 100%
- » Kaizens/employee/month rose from 0 to 3.65



From this programme, Gajra Gears has improved its organizational culture to better face future challenges. Employees were better aware of the benefits of teamwork and are willing to participate much more openly in improvement activities.

The company was able reduce costs by 1.7 million INR by implementing 777 kaizens (improvement ideas brought forward by employees). Additional space of 5,815 Sq.ft was generated in the scrap yard and the yard was utilized to erect high tension lines. By installing transparent sheets for natural lights, electricity utilization was reduced by 1,120 units/month. In addition, floor space utilization was reduced by 500 Sq.ft. by clubbing two machines. This also resulted in better utilization of manpower as one employee was able to operate both machines at the same time.

In the course of this programme, the company added 173 new products and 14 new customers and also explored new markets in USA, South Africa and Iran.

To improve productivity, a special focus was put on 5S and My Machine Activities to reduce breakdown losses. Teams made remarkable improvements in increasing OEE from 63% to 85% and productivity/man/hour ratio from 2.51 to 3.73. Due to adequate signage and storage of tools closer to the machine, set up time was reduced from 104 minutes to 30 minutes on bore grinding machines and from 90 minutes to 18 minutes on facing and centering machines.

IMPROVEMENTS				
ROSSIE VIA	Before	After	Change (%)	
Productivity (production per man	2.51	3.73	+48	
hour)	1			
Absenteeism in %	10	7.93	+20	
Scrap Yard area (Sq. m.)	130	13	+90	
Customer returns	10,187	5,284	+48	
OEE	63	85	+35	
VAPCO	2.38	3.06	+28	
Accident Severity Ratio	1,012	14	+98	
In-process Rejection	35,158	4,169	+88	
New customers added	<u> </u>		3	
New products added			90	
Tangible savings in operating costs (US\$ / year)			44,000	

Note: Positive trend mark will be '+ 'and negative trend mark will be '-'.

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### **FUTURE OUTLOOK**

Mr. S.S. Gaikwad (GM - O) receiving National Energy Conservation Award - 2009( 1<sup>st</sup> Prize ) from the Hon'ble Union Minister of Power Mr. Shushil Kumar Shinde in New Delhi on December 14, 2009



#### THE SUSTAINABILITY CHALLENGE

During the sustenance phase of the 30-months programme, the company took up the challenge to maintain and sustain the improvements implemented. To ensure sustenance, module specific champions (e.g. for 5S, OEE, Quality, Productivity, Training) were appointed with the aim to contribute on a regular basis.

Major sustenance initiatives were planned on monthly basis through regular audits by the team of module specific champions to track various key indicators. This was followed by the action plan from zone leaders and finally reviewed by the CEO. Employees got rewards and recognition for their good work. Work measurement was initiated through a "time and ergonomics/motion study" and other industrial engineering practices. Redefining roles and responsibilities of internal champions and empowering them through trainings on effective communication, employee welfare measures, SOPs and by raising the standard of continuous improvements further helped in nurturing a proactive organizational culture.

#### **FUTURE TARGETS**

- » To reduce in-house rejection from 3650 PPM to 1000 PPM by 2011.
- » To educate and train vendors to reduce rejections and ensure timely delivery. As the suppliers do intermittent operation of a pre-machining on GDGL supplied parts (casting), rejection in pre-machining and delivery failure causes serious loss to the company.
- » To improve the skill matrix of all associates working on shop floor through continuous training
- » To add five new products per month
- » To add new customers overseas countries to boost company's export market (at least three new customers per year).



### Gajra Differential Gears Pvt. Ltd.

#### **CONTACT DETAILS:**

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