

# CASE STUDY

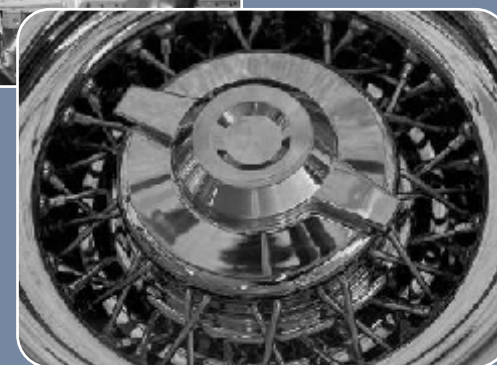
## Fabrika Automobilskih Delova «FAD»

### FACTORY FOR AUTOMOTIVE SPARE PARTS



*"Raising awareness on the importance of continuous improvement processes, the security seal of our customers becomes even more powerful."*

*General manager, Dragiša Ristić*





The UNIDO Business Partnership Programme for the Automotive Component Industry in Serbia was carried out in collaboration with the Auto-Cluster Slovenia (ACS), with the objective to assist suppliers/vendors to OEMs and Tier-1 suppliers to raise their productivity and quality standards, so as to become more competitive on the market place.

After having carried out an initial assessment survey of 27 local component supplier companies in 2007/2008, 12 firms were selected to take part in the counseling activities with the aim of improving their overall competitiveness and, therefore, help them to integrate successfully into national and international supply chains.

A specific methodology was developed in partnership with AC Slovenia to assist those selected companies in reaching this objective.

The present case study describes the upgrading approach that has been applied in the company “FAD” and highlights the results achieved through this programme.



## Overview

**Location:** Gornji Milanovac, Serbia

**Manufacturing activity:** The parts and equipment production for automotive industry (bonds, joints, oscillating belts)

**Number of employees:** 274

**Average annual turnover:** 7.5 mil €

**% of goods exported:** 70%

**Programme period:** IX 2008 – IX 2009

## Background

The company “FAD” was founded in 1961 as a stock company specialized in designing, manufacturing, testing and selling of parts for steering and suspension for all types of motor vehicles. The majority owner of the company is ITH (Belgrade) which holds 65%.

FAD's mission is to achieve highest satisfaction amongst all customers by fulfilling their individual needs and delivering products of high quality, thereby ensuring consumer protection while at the same time enhancing safety in traffic.

In the Former Yugoslav era, FAD was the only supplier for all Yugoslav automotive producers in their first installation. Nowadays, a significant share of its products is destined to foreign markets, including EU (Germany, Hungary, Spain, Italy, and U.K.), Iran, Turkey, New Zealand and Russia.

FAD produces bonds, joints, and oscillating belts for:

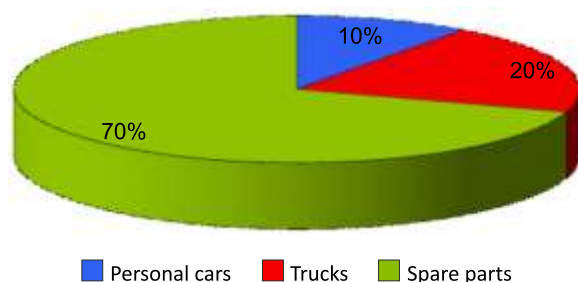
- personal cars
- light and heavy trucks and vans
- buses
- tractors and combine harvesters
- construction machinery, mechanization, and forklifts

In 2008, FAD produced about 10% for installation in personal cars (ZASTAVA) and 20% for installation in trucks (Iran Khodro, Raba Hungary and Faun Germany). Besides installation, the company manufactures spare parts (70% of total production volume).

Recently, also GM / Opel, Scania, Bosch and Fiat (Serbia) have indicated their interest entering into a business relationship with FAD and could soon become potential customers.

The company has obtained a certificate for quality management according to ISO 9001, as well as for ISO 17025 (standard for laboratory for mechanical, metallographic, chemical and functional testing of products). In addition to these certifications, FAD has the homologation of important European manufacturers of vehicles such as: MERCEDES, IVECO, DAF, RABA, or MOSKVIČ.

Participation of FAD products per vehicle type



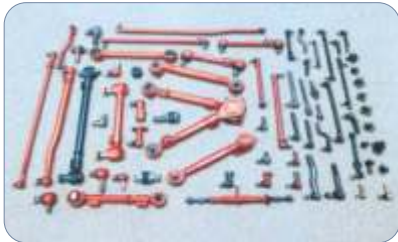
Personal cars Trucks Spare parts

## The Challenge

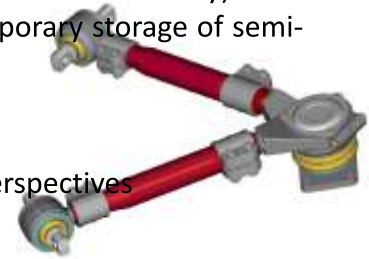


Although the general economic situation of FAD was good, the management team was interested in participating in the UNIDO programme, as the company was still facing a series of challenges that could jeopardize overall performance in the mid- and long run.

In 2007, when UNIDO experts carried out an assessment of the company, the vision of FAD's management was to advance the whole business by setting the basis for continuous improvement in the company. In that same year, FAD employed 340 workers. While at that time, a quality management system already existed, the company still had to deal with problems in the fields of product quality, productivity and ageing machinery and equipment. Those included:



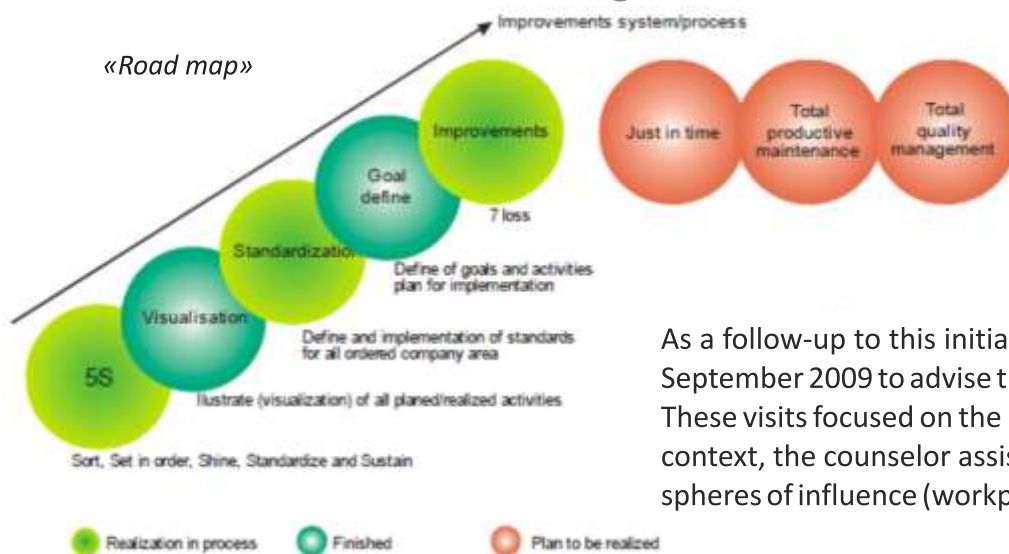
- Frequent customers complaints (mostly due to esthetic defects of products and difficulties in meeting the terms of delivery)
- Inadequate use of space in the production area (inefficient placement of machinery, inadequate temporary storage of semi-finished products and tools, insufficiently marked transport pathways)
- Inefficient storehouse arrangement and inventory management
- High energy costs (water and electricity)
- Low employee motivation and value added due to insufficient involvement and personal development perspectives



## The Goal

Achieving an overall improvement of the company's performance in order to strengthen its capability to deal with the challenges faced in Serbia as well as on foreign automotive markets.

## The UNIDO Programme / Process and Tools Applied



Counseling activities in FAD started on 20. October 2008 under the guidance of Ms. MajaPesic Rakanovic, a national expert on company upgrading who was hired and specifically trained through the UNIDO programme. During the first company visit, the counselor carried out a production and business process audit, based on which a work plan with indicative activities was developed and adopted. This plan of was formally approved by the managing director of FAD, Mr. Dragisa Ristic, who demonstrated great enthusiasm and commitment to the programme.

As a follow-up to this initial stage, the counselor visited the company every 20 days between October 2008 and September 2009 to advise the team of FAD on necessary actions to be taken under the framework of the work plan. These visits focused on the results of previously carried out analyses and the steps shown in the action plan. In this context, the counselor assisted FAD employees in finding the right methods and places for improvement in their spheres of influence (workplaces).

In addition to the advisory meetings during the counselor's visits, training sessions and workshops were organized for workers and management on following topics:

- Formation of “mini-groups” (small teams of employees in charge of a specific upgrading theme) in the company, functionality and selection of their leaders
- Concept of continuous improvement
- Key Performance Indicators (KPIs) to track progress of improvements
- 5S workplace management
- Visualization (tables, photographs, process flowcharts, process indicators, etc.)
- Reward schemes for employee suggestions/proposals to reach improvements in the company's operations
- Overall Equipment Effectiveness (OEE)
- Achieving operational cost savings



Kick-off meeting



## The UNIDO Programme / Process and Tools Applied

Already in October 2008, FAD was assisted in establishing key performance indicators to track progress of the envisaged improvements. These were reviewed periodically during the counselor's visits, and, based on the results, measures for improvement were discussed with the teams (*figure 1*).

Within the framework of the action plan, one of the first tasks for all formed teams in the company ("mini-groups") was to initiate the 5S activities, starting with the steps "1Sort", "2Set in order" and "3Shine". This involved, first of all, identifying all items that were not directly relevant for the work to be performed in the target work station. Then the teams started to arrange the space, removing the identified items, color-coding machines/equipment/tools, and finally marking transporting pathways. The next step to be taken under the 5S concept, it called "4Standardize", which was still in progress in the company at the time this case study was written. (road map: 5S).

To enhance the understanding of all employees and ensure their engagement, each team in FAD prepared special sign-boards, which displayed the agreed work plans, identified standards, handling instructions and responsibilities, production results, as well as the progress achieved in the improvement cycle by each group (road map: *visualization* ).

In order to maintain the results achieved by the teams and keep improvement activities alive, a set of standards for order and cleanliness were set (road map: *standardization* ).

As a next step, the objectives for further improvement and additional key indicators were defined and tracked regularly to capture progress (road map: *Goal define* ).

All employees received information and explanations on the various issues during the team meetings, and were encouraged to provide suggestions for improvement. Guidelines on how to achieve those improvements were developed jointly, and so-called "improvement boards", indicating the suggestions made as well as the conditions before and afterwards, prepared (road map: *improvements* ).

In June 2009 Mr. Milan Ivanisevic, a new executive manager, joined the project, contributing with great enthusiasm and devotion to the realization of the planned activities and the continuous improvement processes in FAD.



figure 1 - Training

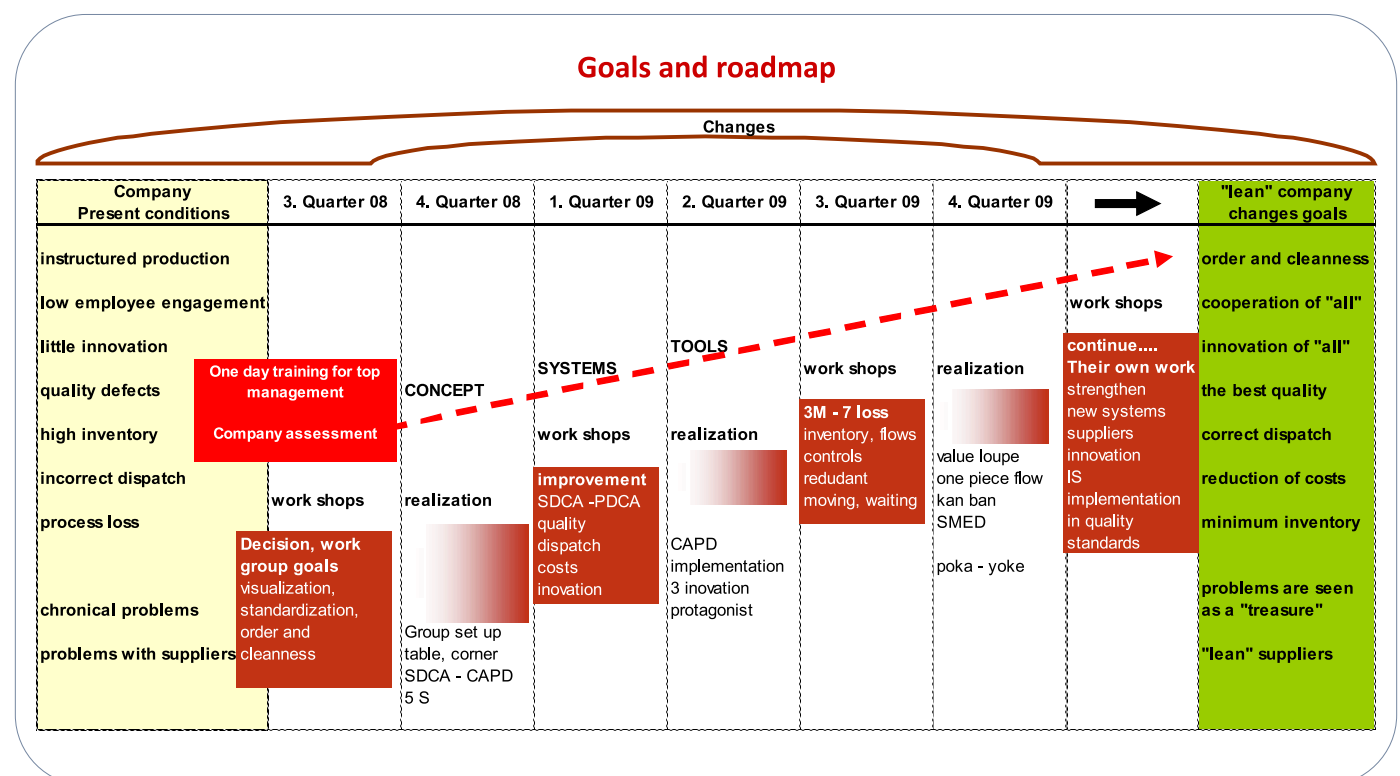






figure 2



figure 3



figure 4

## Results and Achievements

Despite of the impact of the global economic crisis in 2008/09, significant improvements have been reached by the teams in FAD already at the beginning of the project – particularly in the field of re-arranging the production and storage areas, as well as the space available around the factory to enhance productivity and efficiency of operations. This was achieved by reducing the surplus of raw materials, writing off products, machines, tools and equipment, which was not functioning properly.

The total income/cost savings reached through these activities amounted to approximately €32,250, which were used to repair the floors in the production areas and to renovate parts of the old administrative building.

Apart from the financial benefits, the above described actions resulted in additional free space of 350 m<sup>2</sup> in the production plant. New space was made available for tools and was properly marked to ensure that each tool was assigned its place (located as close as possible to the machine/stage of the production process it is being used for), and order was maintained on the shop floor (figure 2).

The storage area was also rearranged and set in order by classifying all final products in groups and marking them accordingly. At the same time, a new storage was established where the exact places/locations for final products were highlighted to avoid future disorder (figure 3).

In the machine processing plant, the floors have been repaired and adequately painted, a separate machine for floors-cleaning was provided, and a system (standard) for maintaining cleanliness established.

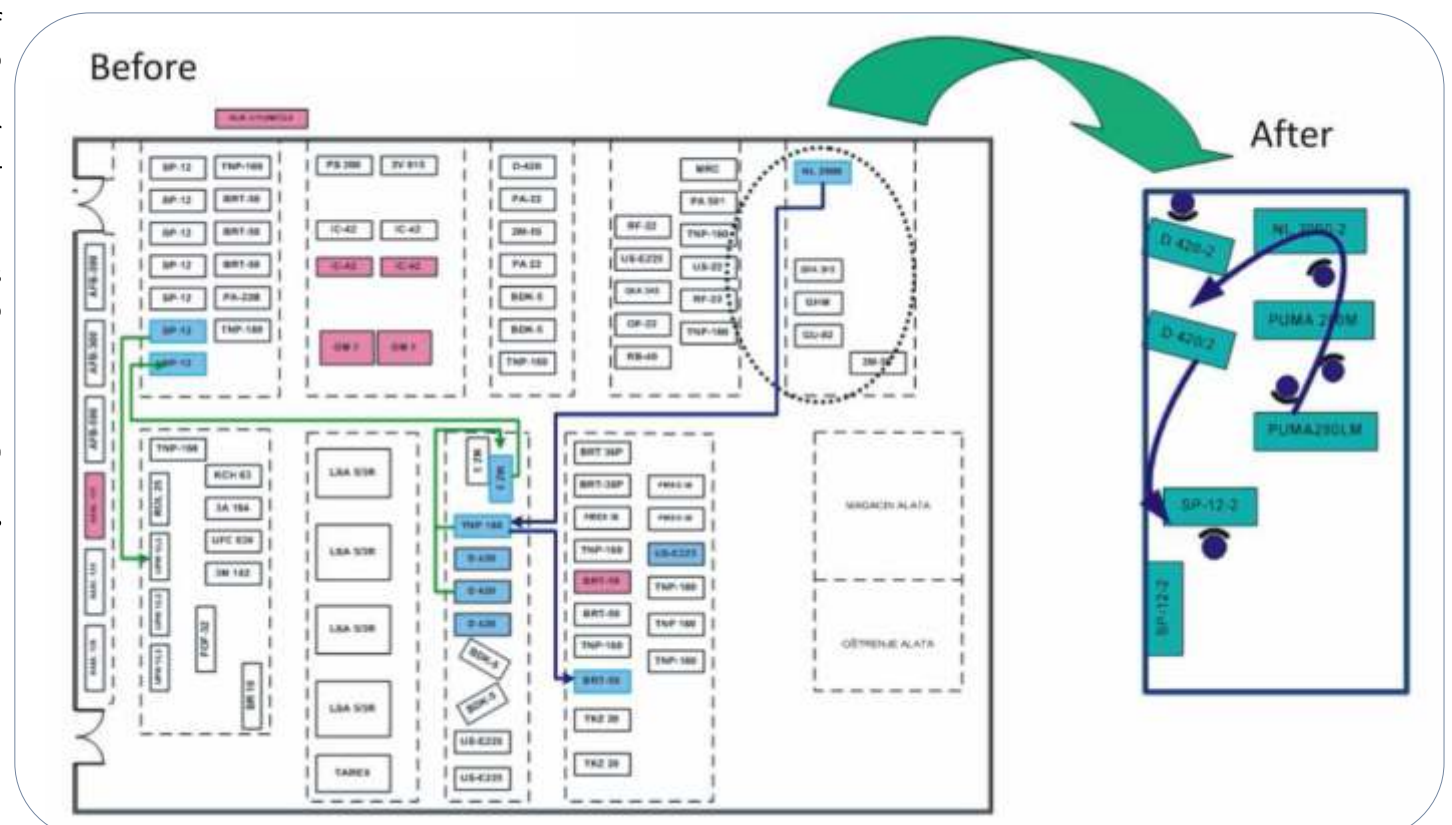
Employee satisfaction has increased as the working environment has become cleaner and more ergonomic for the work to be performed. At the same time, the number of accidents was reduced from 14 to 2 during the counseling period. The weekly meetings held within the project teams in FAD and the regular information gatherings with employees also enhanced the cooperation between the various departments in FAD (related to receiving notice and obtaining responses faster) and positively contributed to the motivation of workers. This all resulted in higher productivity levels of workers: the individual production (pieces per employee) was increased by 15%.

It is also relevant to mention, that around the time when the UNIDO programme started, the owner of FAD had to lay-off a certain number of employees, as the workforce at that time was too large for the needs and production volume of the company. After the implementation of the activities proposed by the UNIDO counselor and due to a higher demand from customers, it was decided to increase the staff base again (only in September 2009, FAD hired 10 new workers).

Due to better production planning and organization of production processes, the company also managed to reduce its energy consumption (electricity) from 2,882,048 kWh in the period of January – September 2008 to 2,110,445 kWh in the period of January – September 2009, representing a decrease of 26,77%.

Furthermore, the arrangement/grouping of machines used for the production process was changed, in order to minimize the movement of employees between operations and thereby enhancing their productivity. The movement of material could also be reduced through the actions taken in the course of the UNIDO programme. Through the realization of these activities, production expenses have declined (figure 4 and figure 5).

figure 5



In the final phase of the project, **procedures** were established for:

- Evidencing expenses (*accounting and operating standards*),
- Solving specific problems related to the production process through the “5 Why” method (*a tool used to explore the cause/effect relationships and root causes underlying a particular defect or problem*), and
- Dealing with customers complaints/rejections by applying a concept called “8D” (*a tool used for responding to customer returns or issues, which incorporates all the important aspects of problem management*).

Figure 5 as well as table 1 display some of the key results achieved. Figure 6 shows visual examples of the realized improvements (before and after the intervention).

After having gone through the UNIDO programme, FAD received an offer to initiate a collaboration with a local company on joint production of specific products. By pooling resources and teaming up, firms forming part of a cluster can reach a state of **collective efficiency** and become more competitive on the market. In this case, the partnership offered FAD access to new equipment and technology required for production of special spare parts , which it did not have available before.

Area	IX 2008	IX 2009	Improvement
Number of employees	340	247	
Percent of employees involved in 5S:			
5S (1S/2S)	3%	84%	81%
Safety	1%	84%	83%
Free space – obtained by 5S (in m2)	/	350 m2	+ 350 m2
Documented Kaizen (%)	/	80	+ 80
Customer return - PPM	187	51	- 136
Number of accident	14	2	- 12
Number of training days per employee	2	4	+ 2
Consumption of water	1638 m3	1186 m3	- 452 m3
Consumption of energy	1420	1059	- 361
PPM – in process	700	315	- 385
Number of new customer (annually)	15	62	+ 47

Table 1

figure 7 - Before - After

Area

FAD Courtyard

Oil pour

Storage of oil and lubricants

Machine

Before



After





## The Way Forward

The next steps in the implementation and maintenance of the established systems and procedures in FAD are to transfer the good experiences achieved by the project teams to the entire company, and to establish a **company-wide system (standards)** for continuous improvement.

The top-level management of FAD also recognized the value of the activities carried out through the UNIDO programme as a great help for the company in the process of achieving certification according to the ISO/TS 16949 standard.

After having gone through the steps “5S”, “standardization” and “Improvements” with the UNIDO counselor (*road map*), FAD plans to start the realization of activities for introducing just in time, total productive maintenance, and total quality management systems (*road map*).

Specific objectives to reach over the next 12 months include following:

- To reduce in-house PPM from 350 to 100
- To reduce customer rejection to zero PPM
- To add at least two new customers for Tier-1
- To improve the motivation and organizational skills of employees through an increase in training to a minimum 6 days per employee per annum

*Milan Ivanišević – Executive Manager:*

*“The UNIDO programme has come at the right time for our company. Management and all employees have learnt a systematic approach towards problem-solving, analyzing methods and adopting best practices for continuous improvement processes, which are crucial to compete in domestic and global markets.”*



*Zoran Vuksanović - Project Manager:*

*“The repercussions of the global economic crisis have been reflected on the business operations of our company. Nevertheless, the UNIDO national expert has greatly interceded with our teams to transfer the knowledge and best practice examples to us, and to identify the needs and areas of improvement in FAD.”*



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#### **Contact:**

**Phone:** +381 32 725 394

**Fax:** +381 32 725 393

**e-mail:** prodaja@fad.rs  
sales@fad.rs

**Contact person:** Milan Ivanisevic  
Kralja Aleksandra 210  
32300 Gornji Milanovac, Serbia