# EUROPEAN REPORT ABOUT METAL SECTOR AND VET




GD Bildung und Kultur

Programm für lebenslanges Lernen

Bundesministerium für Unterricht, Kunst und Kultur

Dieses Projekt wurde mit Unterstützung der Europäischen Kommission sowie durch das Bundesministerium für Unterricht, Kunst und Kultur (BMUKK) finanziert. Die Verantwortung für den Inhalt dieser Veröffentlichung [Mitteilung] trägt allein der Verfasser; die Kommission haftet nicht für die weitere Verwendung der darin enthaltenen Angaben.

# AUSTRIA

## 1) General overview

Austria´s metal industry is highly quality oriented and also invests a lot research so that products on the cutting edge of technology, whether bars, seamless steel tubing or rolled aluminium products for the automotive industry, can be sold on all the world´s markets. Since the sector´s companies invest heavily in research, technology and innovations, competitive products manufactured according the latest technical standards are guaranteed. The LD and Corex processes are groundbreakers on the world market.
The expertise of companies such as voestalpine, Siemens VAI, Steel Judenburg, etc. is recognized around the world and in high demand. One example of an excellent product manufactured in exceptionally high quality in Austria are steel steel sheets for the automotive industry.
Products made of precision steel tubing come from the voestalpine Rotec Group´s plant in Krieglach, Styria, for the car industry, mechanical engineering, hydraulics/pneumatics and other clients around the world. Bars produced in Austria, used in many different countries, are in great demand because of their exceptionally high quality.

The most important companies (measured on the number of employees) of this sector in Austria are: voestalpine, Magna Steyr, MAN, Julius Blum, BMW, Engel Austria, Böhler, Siemens and General Motors Powertrain

## 2) Economic facts in general

Together, the companies in this sector make up approximately one-fifth of the total production value or one-sixth of the total added value from the country´s industry!
And while the average export rate of domestic industry is about 59 %, the metalworkers are ahead with quotas above 70 %, thereby making a significant contribution to the international success of Austria´s economy.
The metal sector tooks part on the whole goods – industry with 42 % and represents the most important part of industry in Austria. The total production amount in the year 2008 was EUR 56 Mrd.
Since 2008 all forward the metal industry is fighting with the results of the worldwide economy crunch.

## 3) Current economic situation

The bad patch of the world economy highly concerns the metal sector. In the year 2009 there was less then one-fifth of the production volume and this situation is now leveled off on this very deep point.
This branch of industry suffers a loss of EUR 24,2 Mrd. in the field of production and during the period of one year (2008-2009) approximately 5.000 employees.
The year 2009 represents the worst one since 70 years in the metal sector, nonetheless this tricky situation there were “only” 15 organizations which had to go into liquidation.

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## 4) Significance on the job Market in general

The metal industry is of very prime importance to the Austrian job market. With altogether 172.000 employees, 5,4 % of all gainfully employed people are working in this area.
Outgoing of the 172.000 employees the proportion between male and female employees is: 85 % male and 15 % female
In differentiation between employees and work(wo)men in the metal industry, without the sector of mechanical-engineering with all in one 70.000 employees there are:
101.000 work(wo)men
61 employees
Outgoing of the 120 most important organizations in the metal industry there are 16 companies with over 1.000 employees. (each).
The biggest taskmaster in the Austrian metal industry is voestalpine steel with approximately 7.500 employees.
The financial expense per employee was in the year 2008 about EUR 58.170,00

## 5) Current situation of the job market

All together we have in Austria 3.280.000 employees (June 2009), and 292.000 unemployed people. (8,1 %).
Compared to the results of June 2008 there are - 60.000 employees
+ 70.000 unemployed people
In specific the metal sector suffers a lost of 5.000 employees during this year, influenced by the worldwide dramatical economic development.
The most common answer on these difficult conditions was the implementation of different systems of short time work.
In November 2009, approximately 17.200 employees were involved in these short time work systems. Comparing this facts to the results of March 2010 the situation is much better and surely leveled off so that 12.000 employees could be fully reinvolved. (5.100 employees are still in short time working systems)

## 6) Economic outlook

The deepest point of the worldwide economic crise seems to be overcome, all signs are pointing to a leveled off phase on a very low level.
This low level means a production capacity of ca. 70 % and a duration of production of 3 months on the average.
The expected development will be in a very small dimension for the next time, all other more detailed prognosises will be definitely not expressive enough.
With certitude, investments of the metal sector will be still regressive and this case will influence the whole economy and this wheel of facts looks like a vicious circle.

## 7) Description of investments

Outgoing from the worldwide economic crise the investments of the metal sector in Austria are regressive:
2008: EUR 2,64 Mrd
2009: EUR 2,16 Mrd.

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# GREECE

## General Overview

Greece's metal industry includes a large number of activities and sectors, that can be grouped in the following four basic categories:

- Energy (mines equipment, manufactures thermoelectric and hydroelectric stations, pylons for transporting electric energy)
- Transport and Telecommunications (Road and railway bridges, port cranes , pylons for supporting telecommunications)
- Primary and Secondary production sectors (mines excavators, cranes, filters, silos, greenhouses, various reservoirs and storage tanks)
- Building and Construction (Metallic industrial buildings, supermarkets and malls, indoor stadiums, metal frames for industrial and commercial use)

The total size and the tendencies of Greek metal industry are calculated, for each sector separately.
Economic Facts
From the analysis of data Below (Table 1) it is obvious that for time period 2005 - 2009 there is an increase of 54% of total quantity of manufactures and at 39% of their corresponding total value. In absolute sizes, the consumption raised from 61.000 tons in 2005 (value 95.389.582 €) to 93.000 tons (value 132.713.133 €) in 2009.
It is observed also that the higher quantitative attendance, at 31% had the sector of transport and telecommunications, with the sectors of building and primary and secondary production that follow with 27% and 24% and the sector of energy with 18%.
In value however the sector of energy occupies the first place, with 34% of total value. It is also important to mention, that state sectors of energy, transport and telecommunications cover the 50% in quantity and value.
Table 1 Metal Constructions in tons

| | **2005** | **2006** | **2007** | **2008** | **2009** |
|---|---|---|---|---|---|
| **Buildings** | 14.467 | 12.084 | 14.394 | 22.092 | 21.898 |
| **Bridges & Parts** | 1.212 | 2.000 | 964 | 2.477 | 2.222 |
| **Towers** | 7.008 | 8.081 | 7.336 | 9.376 | 10.757 |
| **Hydraulic Equipment** | 1.949 | 754 | 1.021 | 937 | 886 |
| **Other** | 35.980 | 49.065 | 59.913 | 47.305 | 57.667 |
| **Total** | **60.616** | **72.184** | **83.628** | **82.187** | **93.430** |

In the past few year is obvious the tendency of modernization of Greek enterprises of metal manufactures. This consists of the renewal of their equipment, the absorption of new technology, the increase of productivity and the growth of new products of higher added value. Important role in this effort plays also the specialization of enterprises, which contributes positively in their competitiveness via the restriction of the cost of production and an increased productivity.

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**Table 2 Metal Constructions in Euros**

| | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| **Buildings** | 12.586.941 | 11.236.977 | 12.939.105 | 21.068.232 | 20.886.280 |
| **Bridges & Parts** | 1.429.200 | 2.691.123 | 2.162.876 | 2.045.488 | 3.483.492 |
| **Towers** | 7.715.334 | 9.206.163 | 7.644.901 | 11.166.544 | 23.586.207 |
| **Hydroelectric Equipment** | 2.688.188 | 1.261.922 | 3.093.177 | 2.377.109 | 1.684.519 |
| **Other** | 70.969.919 | 69.440.939 | 72.340.426 | 74.823.184 | 83.072.634 |
| **Total** | **95.389.582** | **93.837.124** | **98.180.484** | **111.480.558** | **132.713.133** |

In the following table (Table 3) the number of activated enterprises and the number of employees per enterprise is shown.

Table 3 Size of the Metal Constructions Market (amounts in millions €)

| | Employees per Company | | | |
|---|---|---|---|---|
| | **10-29** | **30-49** | **50+** | **Total** |
| **Number of Companies** | 41 | 8 | 9 | 58 |
| **Total (Number of Employees)** | 479 | 287 | 932 | 1.698 |
| **Average No of employees per Company** | 12 | 36 | 104 | 29 |
| **Added Value** | 11.445.341 | 5.869.406 | 34.629.494 | 51.944.241 |
| **Sales Value** | 37.901.687 | 16.434.336 | 90.092.443 | 144.340.426 |
| **Added Value on Sales** | 30% | 36% | 38% | 36% |
| **Average Value of Sales per Company** | 924.431 | 2.054.292 | 10.010.271 | 2.488.628 |
| **Average Value of Sales per Employee** | 79.237 | 58.694 | 96.845 | 85.106 |

Future Prospects

According to the last elements it is appreciated that for 2010 the total domestic consumption of metal manufactures approach the 115.000 tons roughly.

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# SPAIN

## General overview and economic facts

The Metal Sector in Spain is made up of more than 150,000 industrial, trade and services companies. The vast majority are small or medium-sized businesses (the 98% of companies employ fewer than 50 employees) and are responsible for the 9 % of Spanish GDP, 25% of the capital gross formation, almost 50% of total exports and over 30% of investment in R + D + I of our country.

The Metal sub- sectors play a strategic role in the Spanish economy. Metal Industries are important both as plaintiffs in the primary and services sector and as suppliers of goods and services to the entire manufacturing industry.

All other sectors of production and services depend heavily on equipment, technology and innovation of the Metal Industry for their growth and development, and any strategy for growth and employment must count with the Metal sector.

Spain is the fifth potency in the Metal Industry of the European Union 27, in which metal products account for more than a quarter of industrial production and one third of manufactured products exports.

## Current economic situation

Spanish industrial activity has suffered considerably, so that the Index of Industrial Production in 2009 stood at 82.6%, representing the Spanish industry to be at 1995 levels.

Within this overall industrial activity, the Metal Sector in Spain1 closed in the year 2009 with very low activity, reaching an annual average rate of almost thirty points lower than in 2005; resulting the worst data of the past thirty years, only comparable to the levels reached during the crisis of 1993-1994.

Concerning rates of variation, the Metal productive activity fell -24.6% of annual average. However, it appears that in 2010 the rates of variation are going to look better, although the levels lost during this recession will be very difficult to recover.

Foreign trade, which could be the starter of an improvement of the productive activity, offered in November 2009 the first positive rate of variation for over a year.

In addition, most Spanish exports are concentrated in the Euro Zone, which excludes that they can take advantage of the greater economic boost of other areas, such as Asia.

So far, exports of metal products are not delivering the expected results and imports reflect the weakness of activity. In both cases, the annual average of 2009 scored a drop of 21.5% and 31.6% respectively.

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[1]Metal composite index made by CONFEMETAL (Spanish Confederation of Metal Business Organizations)

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### Job market

Spanish companies in the Metal Sector, employ more than one million five hundred thousand workers, representing the 8% of the total employment in Spain.

The Metal Sector lost in 2009, 180,000 jobs; it registered an unemployment rate in the sector of 11.1% of the workforce. In terms of annual variation, the number of employed in the Metal Industries fell 14.9 % compared to the last year.

## Economic outlook

Far from believing that the worst is behind us, there are numerous uncertainties in the Metal Industry, Commerce and Services, both in the international context as well as internally.

Our low levels of competitiveness, the weak domestic demand and the employment adjustment (that is expected to continue diminishing the expectations of families and these, in turn, business investments) are obstacles hardly to overcome to a real recovery.

For its part, the impulse generated in 2009 with plans to encourage the consumption and investment made by different administrations, won´t be repeated in 2010, due to the heavy debt contracted, so that its contribution to economic growth will be reduced.

Finally, the VAT rise in the second half of this year, will not in any way encourage the improvement of consumer demand and hurt, no doubt, the business investment.

This current situation and the forecasts that threaten us, are caused by factors outside the industry in general, and Metal Sector, in particular. They do not respond to cyclical movements in the own industry, but it will be impossible to change the overall trend without the support of the industry, that to act as a driver of recovery, it must count with external drives to it.

Metal Industry, due to its high technology both in productive assets and skilled labour, has a great inertia, so that companies or factories that are being forced to close by the current crisis, won´t be reactivated when the phase of difficulties is exceed, and finally they will disappear. This fact will decrease the industrial capacity, jobs and the possibilities of the Spanish economy to overcome the crisis, and increase the risk of non-industrialization of the entire economy.

Still, the essence of industrial activity is innovation and risk, and above they, like so many times in the economic history of Spain, entrepreneurs, managers, technicians and workers have to build the future of the Spanish Industry, which certainly exists and can be great if they establish strong foundation for it to be.

The Metal Sector will be the key to providing the necessary technological solutions to meet the challenges of development, the fight against the climate change, the security of energy supply and the production and trade of environmentally friendly goods.


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## *VET System*

Broadly speaking, the Spanish Vocational Education and Training system has the following structure:

**A) Initial Vocational Training Subsystem:** it is the responsibility of Education Authorities (General or Autonomic Administrations). This is addressed primarily to young people who decide to direct their steps towards the labour world, but is also open to adults wishing to obtain the relevant qualifications within the Lifelong Learning concept.

The current Initial Vocational Training is formed by various Professionals Families consisting of several Training Cycles. These Training Cycles have two levels:

- Intermediate Level (accessible after getting the ESO title -Obligatory Secondary Education- or by doing a specific test of access to intermediate grade for which you need to be 17 years)

- and High Level (accessible after obtaining the Bachelor degree or by doing a specific test of access to higher grade for which you need to be 19 years or be 18 years and have made an intermediate level for the same professional family).

The intermediate and high level training courses are referred to the National Catalogue of Professional Qualifications.

In addition, for students who fail the objectives of the ESO there are Programs of Initial Vocational Qualification, in which is taught basic vocational training to enable them to enter the workforce or join the Training Cycles of Intermediate Level.

B) **Training for employment Subsystem:** it is aimed to both the unemployed and employed people. It depends on the Labour Administration. Its aim is to strengthen the professional integration and reintegration of the population, through the retraining or updating of their professional skills, which may be proved by the relevant professionalism certificates. Each professionalism certificate accredits one professional qualification of the National Catalogue of Professional Qualifications. The training modules of the professionalism certificate are those of the Modular Catalogue of Vocational Training.

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# ITALY

## 1. General overview[2]

The metal sector in Italy involves about the 9% of the total workers (2 047 878 people), and realizes about the 50% of the total exportation and the 43% of the total importation. The surplus value is about 90 billions euro, 40,6% of all the manufacturing sector and 7,2% of all the Italian economy.
About 260 000 company (5% of the total Italian enterprises) are involved in the metal sector; the 90% has a number of workers between 1 and 20 and employs the 38% of the total metal workers, only the 10% has more than 20 workers but employs the 62% of the total metal workers.

## 2. Current economic situation

At the end of 2006 there were several warnings of the incoming world crisis; some areas, at the end of 2006, suffered a 22% production loss by comparison with the period 2000 – 2005. During the 2008 the world crisis knock down completely the metal sector, with a production and exportation decrease in the whole sector.
In 2009 the volume production lost the 31% by comparison with 2008, while the exportations lost the 27% of their market.; meanwhile, the number of workers in trouble grow up, and the 3% of workers lost their work during this year. The crisis affects the man (-2,0%) rather than the women (-1,1%), the workers (-18,2%) rather than the employees (-17,2%). There has also been a differentiation between Northern(-1,3% of workers), Central (-0,5%) and Southern (-3,0%) Italy3.
During the 2009 has increased the ratio between closed and opened companies(+1,5%) and has also increased the number of non EU workers4 (+8,4%).
One important effect of the crisis, in Italy, has been the change in the contractual form; whereas open-ended contract has decreased, fixed-term contract has increased (+ 11,3%).
The metal sector has been the most affected with the crisis5; over 60% of workers and companies has find trouble during the last year.
To help companies and people the Italian government allocated more than 80 billions euro, especially in aid of families and privates, trying to raise the consumption and so the economy in general.

[2] All the datas in this paragraph are referred to 2007 statistics.
[3] In the EUROSTAT definition, *Northern Italy* includes the regions of: Aosta Valley, Liguria, Lombardy, Piedmont, Emilia-Romagna, Friuli-Venezia Giulia, Trentino-Alto Adige/Südtirol and Veneto; *Central Italy* encompasses Lazio, Marches, Tuscany and Umbria; *Southern Italy* (*Mezzogiorno*) includes Abruzzo, Apulia, Basilicata, Calabria, Campania, Molise, Sicily and Sardinia.
[4] Non EU workers amount to 8,2% of the total workers in the metal sector.
[5] Commercial and building sector has also been involved in the crisis, less than metal one.

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## 3. 2010 expectation

During the first quarter of 2010 the situation in the metal sector has been quite unstable; in January and February all the sector has increased the work hours as a consequence of an increase in the orders. In March the effects of the crisis come back; the production, the exportation and the work hours collapse again.
The crisis has not finished yet, even if we can see several positive indication from the unstability of the orders and so of the production.

# FINLAND

### 1. General overview

The technology industry is the most significant business in Finland. Finland main technology industries are the electronics and electrotechnical industry, the metal and mechanical engineering industry, metal processing, and information technology

### 2. Economic facts in general

The technology industry recorded a turnover of some EUR 77 billion in Finland in 2008, showing growth of almost fife per cent from the previous year. Export accounted for 75 per cent of sales, and 70 per cent of exports were to destinations in Europe. The technology industry accounts for 60 per cent of total Finnish exports.
Last year 2009, the turnover of technology industry enterprises in Finland decreased by roughly 30 per cent: to EUR 55 billion.
Metal and mechanical engineering industry recorded a turnover 30 billion euros in 2008. Last year 2009, the turnover of mechanical engineering companies (machinery, metal products, vehicles) in Finland decreased by 20 per cent, totaling approximately EUR 24 billion.

### 3. Current situation of the job market

Directly employed in the technology industry are 255 000. Total employment effect around 700 000, equalling a quarter of the Finnish workforce in 2008.
At the end of 2008, the metal and engineering industry in Finland employed 143,000 people, showing a year-on-year increase of 1,000 people.
Staff adjustments in technology industry companies in Finland continued towards the end of last year 2009. Last year, the number of staff fell by almost 10 per cent, or 24,000 employees, to total 255,000 at the end of December. In December, slightly over a fifth of all staff, or 57,000 employees, were affected by temporary or part-time lay-offs.
Despite these unfortunate developments, the technology industry will recruit a large number of skilled employees in the near future. This is because some 6,000 – 7,000 people retire from technology industry companies annually. In the next 15 years, more than 100,000 people will retire.


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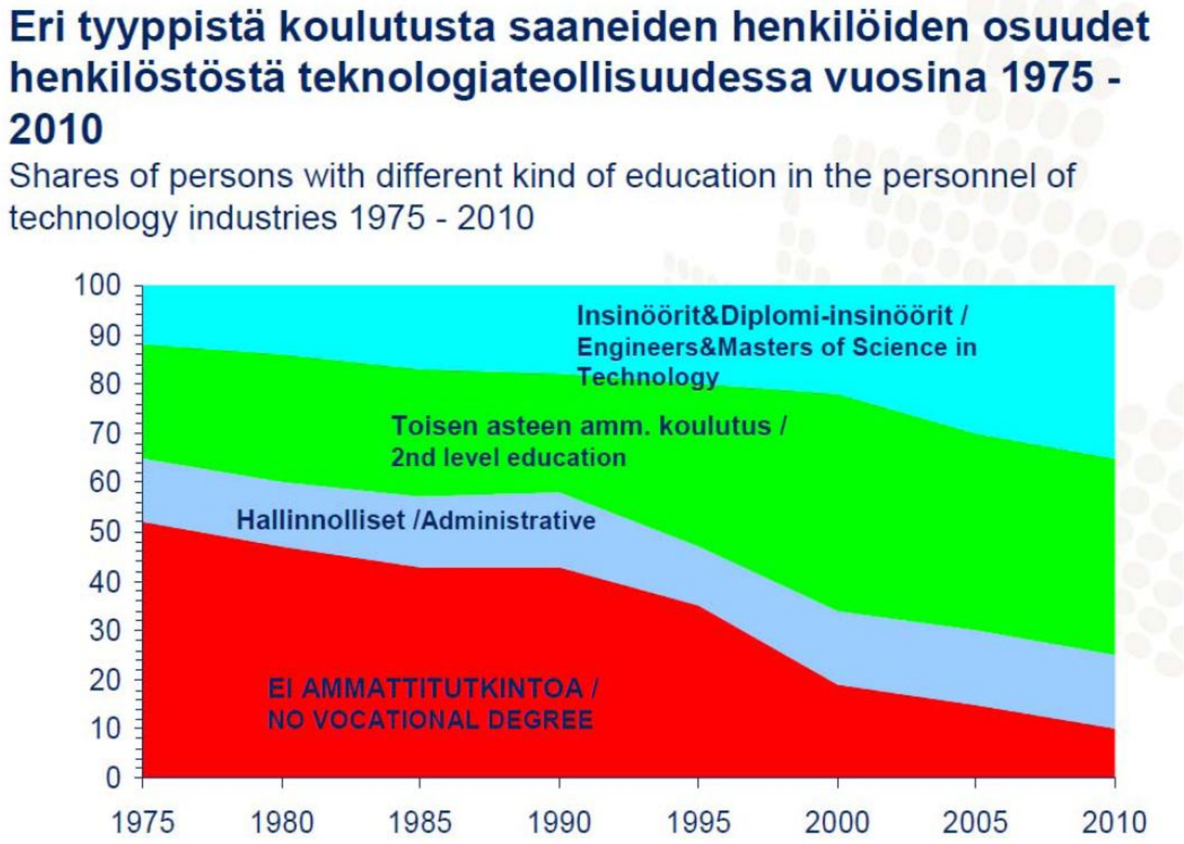
In the metal and mechanical engineering industry employed 145 000 people in 2008. Staff adjustments in the mechanical engineering in Finland continued during late last year 2009. In 2009, staff reductions amounted to slightly more than 10 per cent, or 16,000 employees, with the number of staff totaling 131,000 at the end of December. In December, 47,000 employees were affected by temporary or part-time lay-offs.




## 4. Description of investments & Economic outlook

Technology industry accounts for about 75 per cent of all Finnish business research and development investments. In 2008 they amounted to EUR 3.5 billion while fixed investments totaled EUR 2 billion.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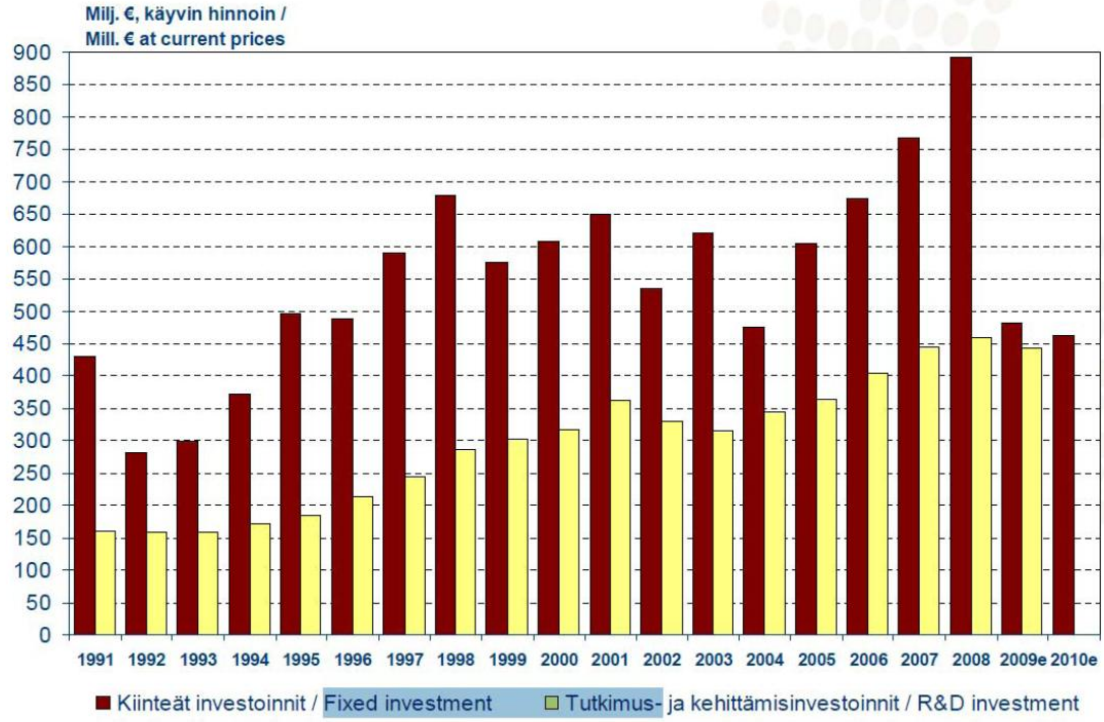
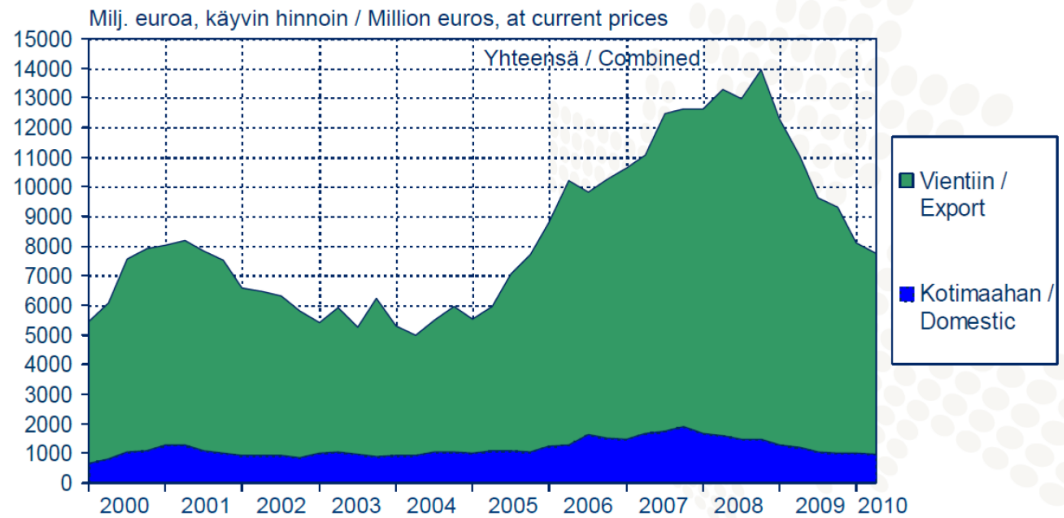
## Kone- ja metallituoteteollisuuden investoinnit Suomessa
Mechanical Engineering Investment in Finland




## Kone- ja metallituoteteollisuuden tilauskanta
Value of Order Books in the Mechanical Engineering




| | 31.3.2010 / 31.3.2009 | 31.3.2010 / 31.12.2009 |
|---|---|---|
| Muutos (vientiin) / Change (export): | - 31 % | - 4 % |
| Muutos (kotimaahan) / Change (domestic): | - 21 % | - 3 % |
| **Muutos (yhteensä) / Change (combined):** | **- 30 %** | **- 4 %** |

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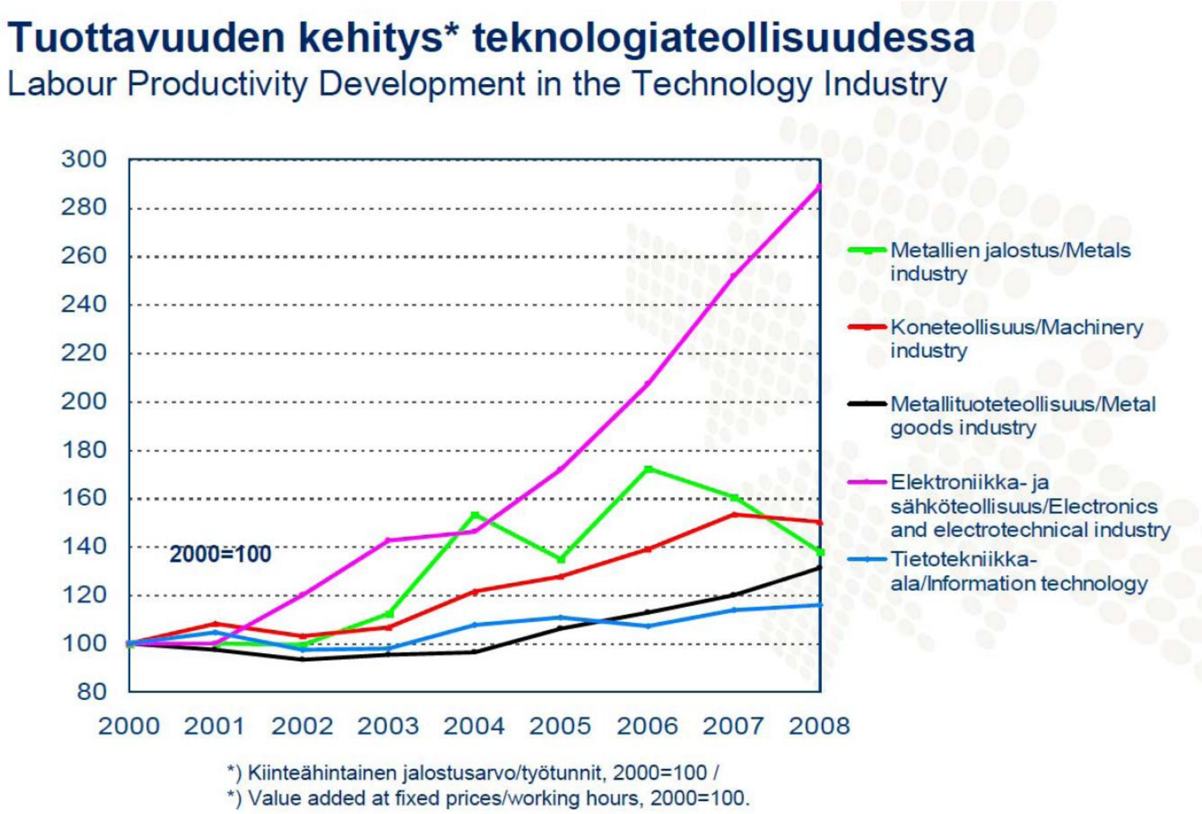


# BULGARIA

## *General overview*

Bulgaria is a country with traditions in the metal sector. The years of transition gave its impact on this sector also. In the period after 1989 Manufacturing and other sectors of the economy is in a long recession. In 2009, there are about 3500 companies operating in metal processing, casting, manufacture of motor vehicles, trailers and production and repair of ships, and agricultural machinery. These companies play an important role in sustainable development of the country and in some regions and municipalities they are key employers and taxpayers.

## *Current economic situation*

Until the late 80's metal industry has a leading position in the structure of industrial production, provides over 30% of the GBP. Over the past 10 years the volume of its production fell about 2 times due to lack of markets, raw materials and capital.

Today in metal industries, machine building, and metalworking are concentrated around 25% of the industry.

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During the last years the branch has relatively constant share in the added value of the processing industry in the country, which is 4,6 %. The share at the employment is slightly growing - up 5,5 % to 5.9 % of the employed at the processing industries.

The main goal of the metal processing enterprises is to enhance their competitiveness, to increase the share of high quality final products and to start new productions.

This requires investments in modern equipment, adopting of new technologies, introducing of EU standards for environment safety and better work conditions, and improvement of the qualification of the employees.

## Development of innovative potential

The state of research and development in Bulgaria as a whole and particularly in metal industry in recent years has been unsatisfactory.

Although it is claimed that largely academic potential in the country is saved, there is practically no connection between supply and demand innovations. We need to take urgent measures to improve the interaction between local development departments, research institutes and universities and engineering companies. Of particular benefit are the contacts and joint projects between Bulgarian suppliers and users of innovations and those of other European regions. The main objective of this strategic direction is to increase capacity for both development of innovations and their implementation in practice.

## Job market

Despite the general understanding that the economic crisis affects mainly export-oriented firms due to the collapse of external markets, metal industry is one of the most affected sectors.

For a year the number of employees in industry decreased from 143 000 to 114 000, and on some places it is under the technological minimum. Metal industries are characterized by complex production-technological ties that, once breached, recover hard, which is why companies come most heavily from the crisis.

## Improving the quality of human resources

Companies in the metal sector in Bulgaria are not satisfied with the qualifications of the proposed labor market specialists. Being convinced of the need to conduct a new policy for management and human resource development and expressed readiness to invest in it. Educational programs are tailored to the needs of business and new technologies in the sector. Providers of educational services at all levels are not sufficiently motivated to work in this direction. Hence the need radical reform of the education system aimed at encouraging cooperation between enterprises and training institutions. It should also be strengthened and dialogue between representatives of education, employment services and employers' bodies. The objective is the preparation of personnel to meet the needs of enterprises in the metal sector.

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## *Vocational education and training system in Bulgaria*

The system of vocational education and training includes career guidance, vocational training and vocational education.
Vocational training includes:

- Initial vocational training - acquisition of initial qualification in a vocation;
- Continuing vocational training – improvement of competencies acquired in a vocation.

Career guidance, vocational training and vocational education are provided for vocations and specialties in the List of Vocations for Vocational Education and Training. The List of Vocations shall be endorsed by the Minister of Education and Science in coordination with the Minister of Labour and Social Policy, as well as with the relevant branch ministers and representatives of the organisations of employers and of workers and employees nationwide.
The levels of vocational qualification are 4.

## *Main objectives for the metal sector in Bulgaria*

The main objectives that the Bulgarian metal sector must meet in the shortest possible time should be in respect of:

• Improve management effectiveness.

• Technology and product innovation. Implementation of advanced technologies, that do not pollute the environment and meet the requirements for environmental protection, the Act on Environmental Protection and the National Strategy to assist industry to comply with environmental legislation.

• Improving the quality of training of the workforce.

With these objectives and achieve their underlying results Bulgarian metal will increase its competitiveness, which in turn will lead to preservation of already conquered markets and entering new markets.

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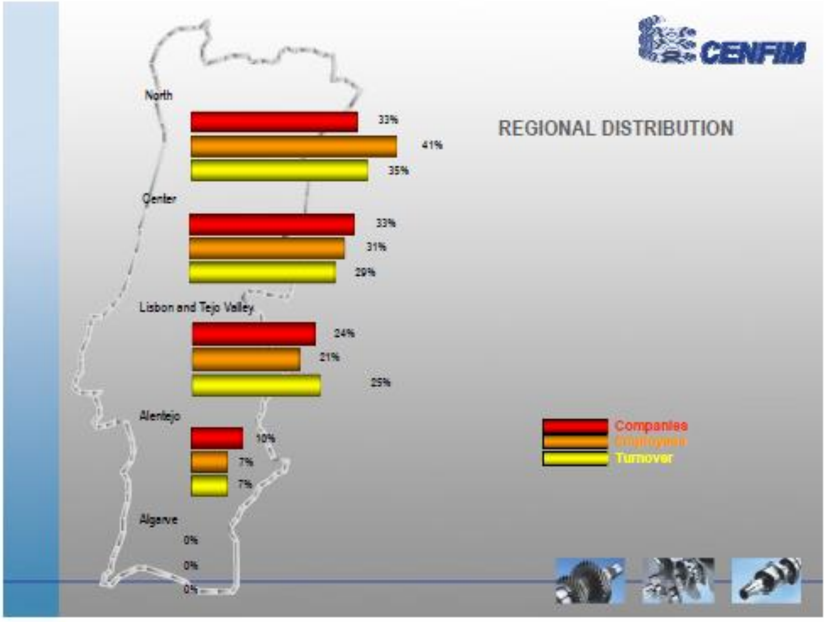
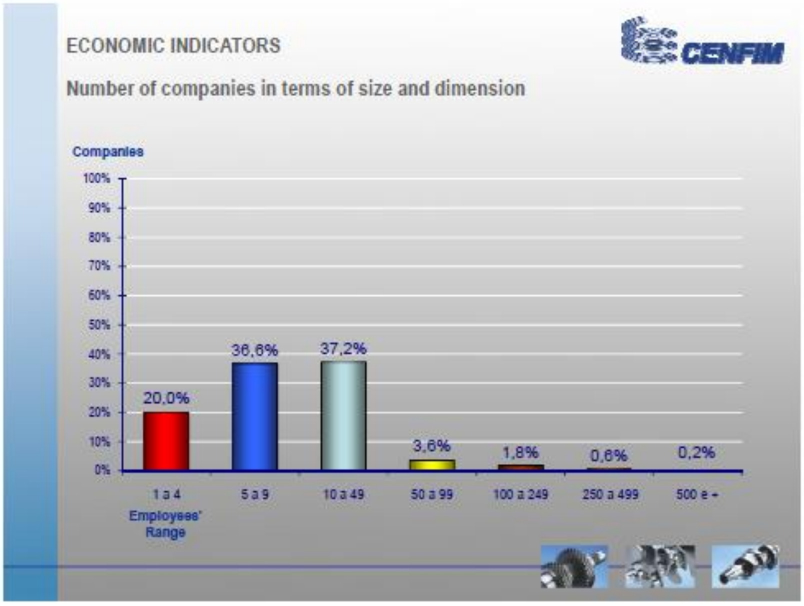
**PORTUGAL**

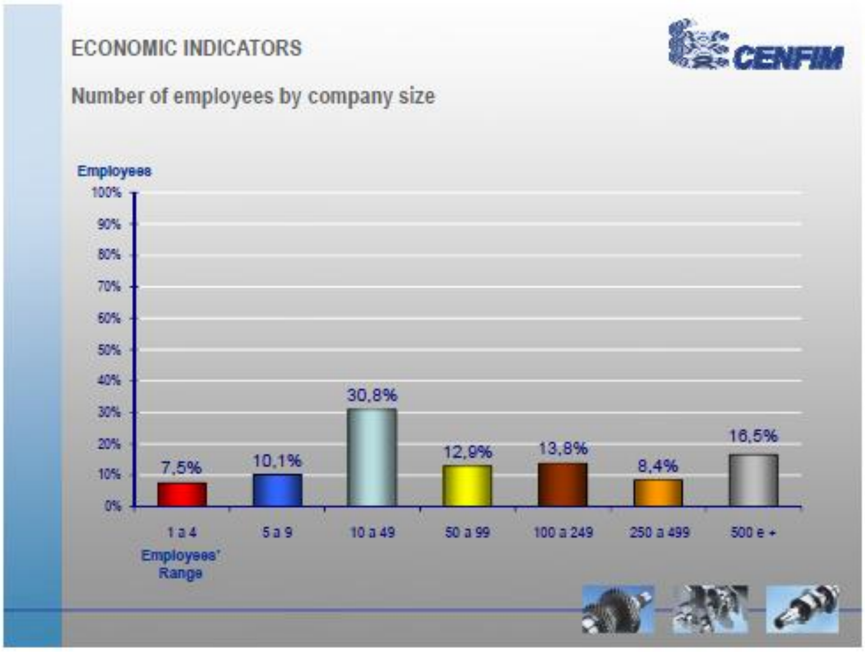



This first image (plate) shows the distribution of Metal work Industries in Portugal;
This indicates a very remarkable distribution of this Sector of Activity on the North part of the Country;


In this plate we can find the "weight "of this Sector in the Economy of the Country;
It is the Sector with bigger growth in the past 25 years .




In what respects the size and dimension of Companies in this Sector, a remarkable indication is that it is essentially constituted by small and middle sized Companies working for Exportation Markets mainly for Automobile Industries ( different car Components and marks,) Plastic Mould Injection Industries, Medical – Surgery Industries, Aeronautical Industries, Military Industry and others;




Consequently to plate nº 3 in this plate nº 4 the highest percentage of Employees is found in small and middle sized companies that Employ over 52 % of the total workforce in the Sector.

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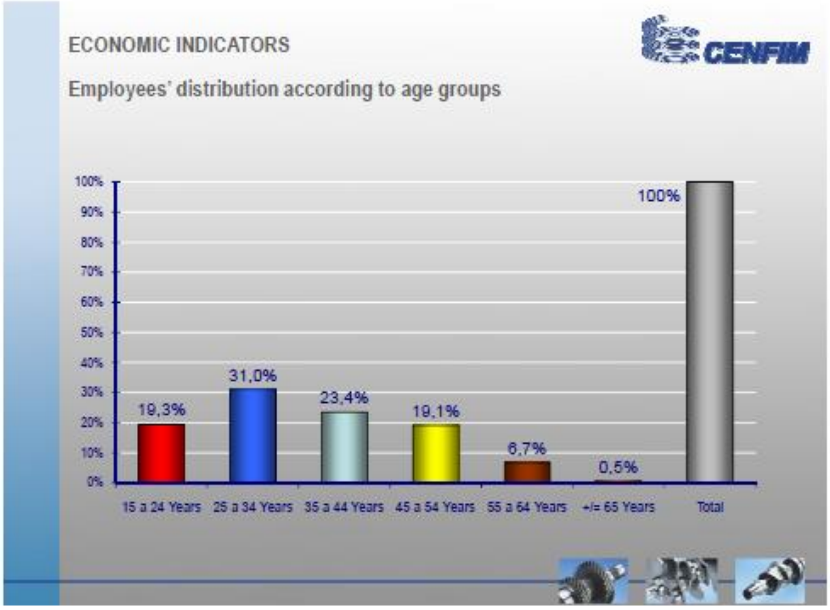
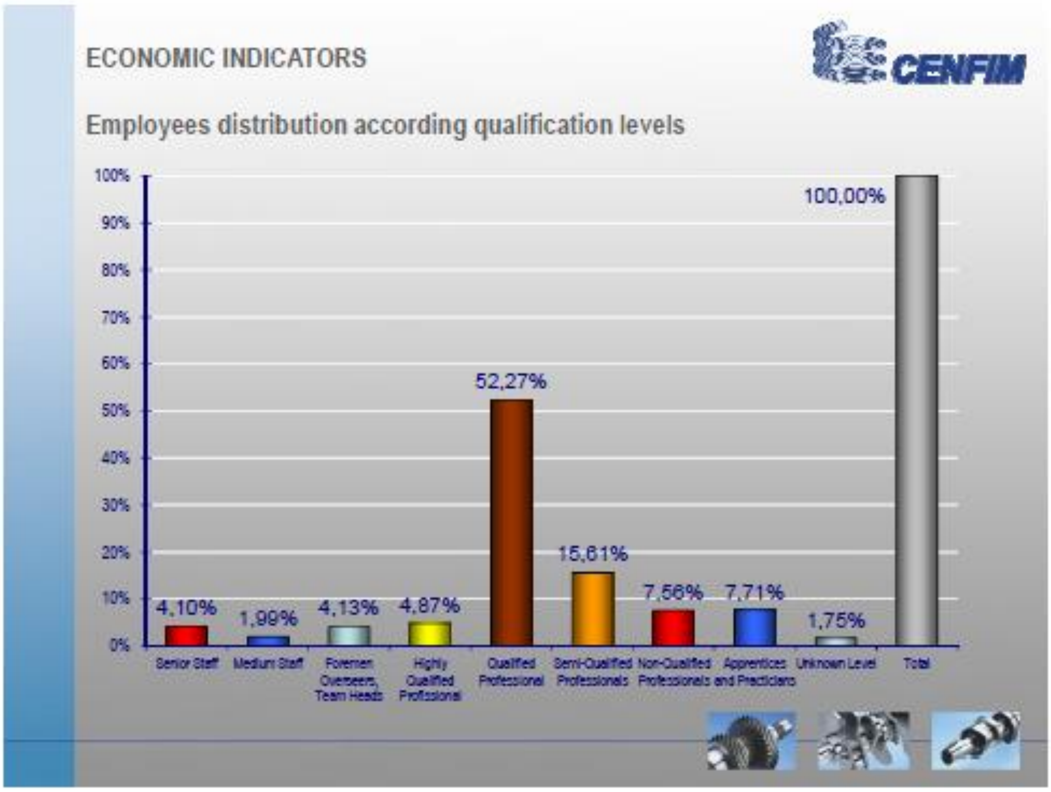



Also this can be considered a quite "young" Sector, according to the age groups distribution (as shown in plate nº 5 ), we can find in the Companies working in the Metal Sector. More than 70% of the work force has less than 55 years of age, being over 25.

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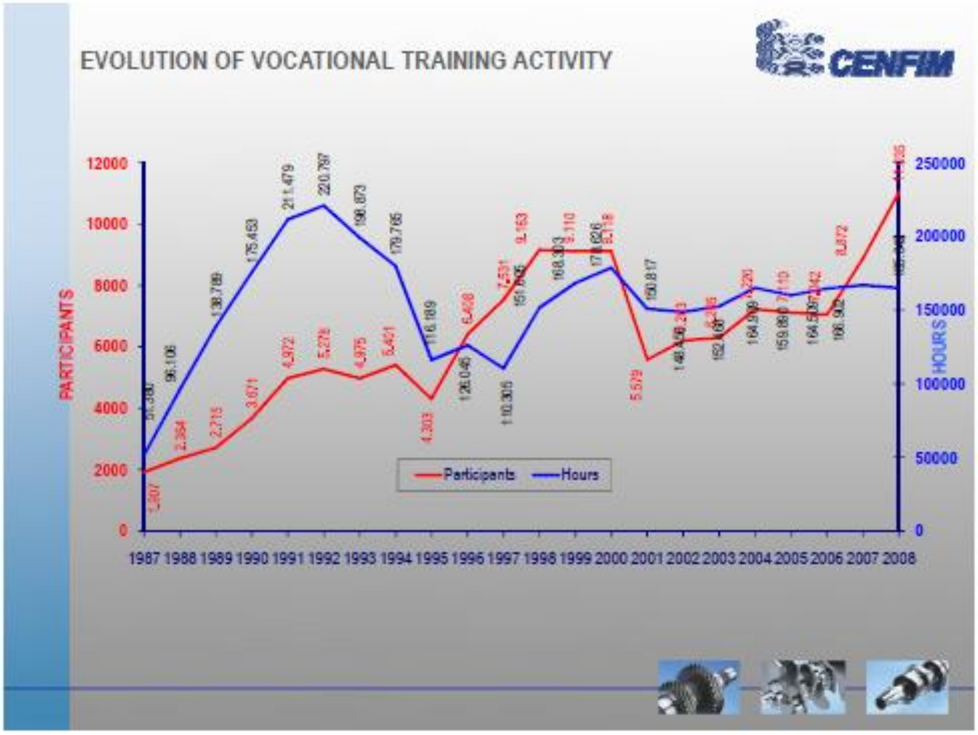
The existing Metalwork Companies in this Country, can no longer live with non-Qualified Employees as this plate can show; Due to the more and more sophisticated Technologies used in the sector to improve Productivity ( Production, Quality, Efficiency), the intense use of CAD,CAD-CAM, CNC Systems as well as CAE for Project, Production, Planning, Control and Logistics, has contributed for higher qualifications on the Employees in the Sector, as a mandatory conditio0n for success in very competitive Markets.
The chart in plate nº 7 shows the increase we have been having for 22 years ( at CENFIM TROFA) in Professional Vocational Education Training, a clear indicator of the increased necessities in Qualified Professionals by the Companies of Metal work Sector.

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