

## Work Package 2 Report Austria

### Executive Summary

The four case studies developed by Austria are focusing on curriculums for students aging from 14 to 19 and are focusing on secondary technical VET education. The VET school system in Austria is financed by the government and free for the students. The curriculums for the courses are therefore centrally decreed by the Ministry – in close cooperation with the Austrian industry.

All four cases are related to a technical VET education with a duration of 5 years leading to a final examination (“Matura”) which allows the students to proceed to a study at a University of their choice. Nevertheless over 60 % of the degree holders go straight into the industry as well educated, young and innovative engineers.

The cases range from Industrial Design, Logistics, Building automation to Material science and Mining. They cover a broad scope of important areas of industry in the next century.

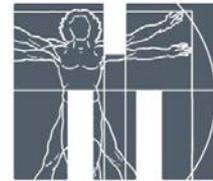
Austria is a small country and therefore the total number of students finalising their studies is limited – but with an unemployment rate of below 2% they are very successful in the labour market.

We did not have a special focus on ICT as it is a key subject for all of the Technical VET curriculums. Therefore all subjects do include a profound ICT training.

#### 1) **New curriculum for energy and building technology** (Source: Austrian Ministry of Education)

It was initiated by the Austrian plumbing and building technology association because of a large amount of new skills which are required for future engineers. Subjects like control techniques, electronics and IT are strongly required from the engineers in the future.

In cooperation with the Ministry of Education a curriculum for a 5 year long vocational education has been negotiated.



The study course started in the school year 2008-2009 in three HTLs all over Austria and is very successful. The locations of schools are:

HTL Pinkafeld (Burgenland), approx. 125 students and 25 graduates per year  
HTL Vöcklabruck (Upper Austria) approx. 250 students and 45 graduates per year

HTL Jenbach (Tyrol) approx. 125 students and 25 graduates per year

HTL Mistelbach (Lower Austria) approx. 250 students and 45 graduates per year

Approximately 50 % of the graduates start to work immediately in the industry. The other half proceeds to the Universities.

The unemployment rate among the graduates is below 2%.

## 2) **New curriculum for Mechanical engineering - Industrial Design** **(Source: Austrian Ministry of Education)**

The curriculum was initiated by the Industry Associations of Carinthia especially the Lightning industry, Weapon industry and mechanical industry. For technical products it became more and more important to not only have a perfect function, but also a modern and artistic Design to achieve a good price in the marketplaces.

The basic requirements were to give the students an education in industrial engineering, Manufacturing technologies, mechanical engineering and Industrial Design.

Since 2003 this curriculum is offered in different HTLs all over Austria and we get approx. 150 graduates per year (50 % start immediately in the Industry

There was a very successful cooperation to design Petrol stations for AGIB (now ENI).

The unemployment rate among the graduates is below 2%.

## 3) **New curriculum for Industrial Engineering - Logistics** **(Source: Austrian Ministry of Education)**

The Association of the steel Industry in Styria proposed a 5 Year HTL course for Industrial Logistics. Focusing on Material flow and Recycling.

In 2003 it was established as a curriculum of Industrial engineering – Logistics.



The following schools in Austria offer this curriculum:

HTL TGM (Vienna) approx. 25 graduates per year  
HTL Leoben (Styria) approx. 45 graduates per year (MAGNA .. Car Industry)  
HTL Dornbirn (Vorarlberg) approx. 25 graduates per year  
HTL St Pölten (Lower Austria) approx. 25 graduates per year  
HTL Freistadt (Upper Austria) approx. 25 graduates per year

Approximately 50 % of the graduates start to work immediately in the industry.  
The other half proceeds to the Universities.

The unemployment rate among the graduates is below 2%.

#### 4) **New curriculum for Material science.** **(Source: Austrian Ministry of Education)**

Leoben is the centre of the Austrian mining and metallurgy industry and education. The Austrian Montanuniversität Leoben is a leading education centre for mining, metallurgy and material sciences worldwide and their graduates are working all over the world in all kind of engineering projects. However the mining industry is in need of good educated none academic engineers and therefore a new curriculum for HTLs was implemented at the HTL Leoben in the school year 2013/14.

The curriculum was developed during a 2 years process in close cooperation between the Industry and the Ministry of Education.

It is currently only available at HTL Leoben with 32 students starting the first year.

This project is currently in the second year and the first graduates are expected in 2018.



Criteria	Case Study 1 Energy and Building Technology	Case Study 2 Industrial design	Case Study 3 Logistics	Case Study 4 Material Science and Mining	Conclusion
<b>Relevance</b> (influence of industry)	In general curriculums for technical secondary education in Austria are always drawn up with a certain influence of the industry. A lot of existing courses are general education like Electronics, mechanical engineering, chemical engineering etc. Our case studies focus on modern subjects which have evolved during the last years to become very important subjects for the future of the relevant industry or new subjects. They show that it is possible with the representatives of the industry and a central body as our Ministry of education can react on market needs.				
	The consortium for the plumbing and building technology initiated the process of designing a new curriculum for a special industry. This curriculum was rolled out all over Austria and is very successful. And will be extended in the future.	A local approach where a strong industry association identified a market need. In this case better design for manufacturing tools. A smaller market than case study 1 but an increasingly important one.	Any technical operation is not possible without a strong and adaptable logistic operation. This curriculum was initiated by the steel industry of Austria. Now it is very much accepted	This is a complete new development as new technologies need new materials and the society is also in need for new mining technologies for raw materials and oil/gas.	---
<b>Impact</b> (Helpful for students)	All the new subjects and curriculums are very carefully considered under the aspect of employability of the graduates. One of the most important features of the Austrian VET system is the low unemployment rate of below 2%.				
	This is a strongly growing industry commonly referred to as House technics which includes mechanical engineering, electronics and control technology. For the students this means a wide education with good job perspectives.	A subject also very interested for young female students as making machinery look nicer and more sellable is a more creative task than an engineering task.	A more business related subject which attracts a lot of students which are not only focused on technology but also on business related matters.	There is so much need for young engineers in this industry – there should not be any problem with finding a job for the students.	---
<b>Size</b>	Approximately 200 -250	Approximately 150	Approximately 150	Currently no graduates,	Small but important



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(Number of students)	graduates per year from 4 HTLs. 50 % start working in the industry immediately after graduating.	graduates per year. 50 % start working in the industry immediately after graduating.	graduates per year in 5 different HTLs. 50 % start working in the industry immediately after graduating	the curriculum is in the 2 <sup>nd</sup> year.	numbers for the industry.
<b>ICT Involvement</b>	Integral part of the curriculum	Integral part of the curriculum	Integral part of the curriculum	Integral part of the curriculum	ICT is very important for the students, hence it makes up a big part of the curriculum not only as a special subject but also a part of other subjects (Design, CAD etc.)
<b>Portability</b>	The secondary technical education in HTLs is unique in Austria, hence there is a limit to portability of the total system. The process of implementing employer needs into a curriculum – which depends on the school system in the specific countries – is portable. It requires some kind of central body (or bodies) as our Ministry which is dealing with the curriculums and are also in contact with representing bodies of the industry.				