

HJK CONSULTING ENGINEERS

Project Management – Technology – Operating – Consulting Excellence



INDUSTRIAL SECTOR DEVELOPMENT

DUAL VOCATIONAL EDUCATION & TRAINING

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EDUCATION CREATES FUTURE



INDUSTRIAL SECTOR DEVELOPMENT

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1. Executive Summary

- Austria has a long standing experience in the training and education of highly skilled personnel and over the years developed its „ Dual Vocational Education and Training System (DVETS)“.

This system basically comprises

- Company based training and
 - Supplementary part time education at governmental schools.
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- The contents of such training are unified throughout the country.

Closing the gap between school leavers and University graduates will contribute very positive to the increase of an economy prosperity development.

e.g., Prof. Dr. Dr. h.c. Julian Nida-Rümelin, Professor for Philosophy und political Theories at the Ludwig Maximilian University of Munich and former State Secretary for Culture is of the strict advocate of this theory.

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- Large companies such as iron and steel plants, chemical enterprises and metal industries have built their own Training Centers comprising:
 - Equipment
 - Teaching software
 - Instructors
 - to care for their specific demand of skilled personnel.
- This training know-how is adjusted accumulated over decades and made fit for international and cross cultural demands.

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Advantages for Employers:

- Secures the skilled labour needed
- Reduces cost of settling-in
- Increases motivation and loyalty to company
- Job-specific qualification
- Productive performance of trainees

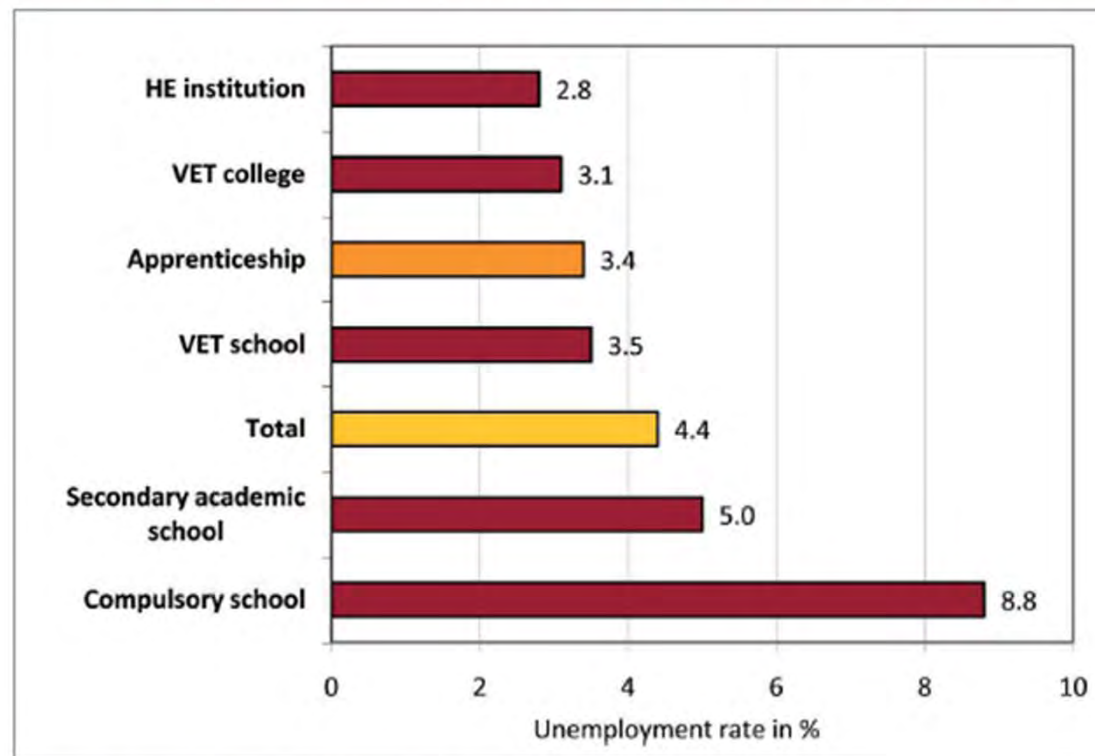
Advantages for Trainees:

- Receiving tasks according to growing abilities
- Gain employee's knowing companies workflow
- Benefit from knowledge about hard & soft skills from more experienced co-workers
- Student development under real conditions
- Student earns money from the beginning

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Unemployment by formal educational attainment (in percent)



Source: Statistics Austria, 2007 labour force survey, microcensus results

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2. Project Components and Duration

2.1 Project Components

- THEORY AND TECHNICAL DRAWING CLASSROOM
- GENERAL ELECTRIC LAB
- ELECTRONIC LAB
- INSTRUMENTATION
- FITTING: Mechanical – Piping – Hydraulic
- WORKPIECE STORAGE
- BENCH WORK
- SHEET METAL MACHINING
- CONVENTIONAL TURNING AND MILLING

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- WELDING WORK PREPARATION ROOM
- GAS WELDING
- ARC WELDING
- TOOL GRINDING WORKSHOP
- MASONRY/ BRICKLAYING

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- Technical Assistance Deployment of Experts to Austria for an intensive train-the-trainer program and Instructors to train the personnel in the individual skills.
- The Technical Assistance Program will be the key for the sustainability of the project. Only a sufficient number of well-trained local teaching staff is able to ensure a long-lasting adequate operation beyond the implementation time of the project. This depends on the skill and education level to be found in the country.

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- Construction and Infrastructure
 - Building construction and/or renovation
 - Building facility refurbishment
 - Electric power supply and distribution
- Buildings will be adapted or newly built for the needs of training within this project.
- An adequate power supply will ensure proper operation.

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- Supplementary Programs and Activities
 - Site Inspection and Evaluation
 - Planning and Engineering
 - Inland Handling
 - Installation, Set-up, Trial-run and FAC
 - Project Management
 - Curricula Adaptation/Development
 - Reproduction of Didactic Material

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2.2 Project Duration

The project implementation will last for two (2) years.

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3. Training Programs

- The project is also envisioned to implement a variety of training programs relative to the development of higher quality of human resources for modern manufacturing technologies. The direct job related training programs cover production machinery, repair and maintenance, and maintenance in general. The Supplementary Programs shall develop occupational qualifications, curricula and material development, assessment and certification.
- The training will be conducted in groups of 12 to 20 persons.
- For the following training programs, the necessary hardware, teach ware, courseware, technical assistance, counterparts and fellowship programs are an integral part.

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- GENERAL ELECTRIC LAB
- ELECTRONIC LAB
- INSTRUMENTATION
- FITTING :
 - Mechanical
 - Pipe
 - Hydraulic
- WORKPIECE STORAGE
- BENCH WORK
- SHEET METAL MACHINING
- CONVENTIONAL TURNING AND MILLING
- WELDING WORK PREPARATION ROOM
 - Gas Welding
 - Arc Welding
- TOOL GRINDING WORKSHOP
- MASONRY / REFRACTORY BRICK LAYING

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3.1 Supplementary Programs and Activities

The following programs and activities will likewise be conducted under the project:

- Curricula and learning materials development and/or adaptation
- Monitoring and evaluation programs
- Extension programs to build strong links to the industry
- Programs for adaptation of the dual system, competency-based approaches
- Programs for standardization of internationally-recognized qualification, assessment and certification

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3.1 Items to be covered by Owner

Following examples, but not limited to, are NOT covered by the project

- Fuels, lubricants, etc.
- Media supply and disposal (water, waste water)
- Overall costs of the institute (wages, cost of renting, cost of facility management, administrative costs etc.)
- Wear and spare parts after the TA period
- Access roads to and within the campus
- All work pieces
- Gases, consumables for welding

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4. Examples for Design and Equipment

A. General Electrical Lab

i. Configuration

- 8 Educational kits for basic electricity
- 16 Table top vertical frames
- 3 Experiment benches for electrical measurement and machines

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A. General Electrical Lab (cont'd)

ii. Topics to be trained

- Electrical installation
- Drive techniques
- Construction electrician
- Facility technician
- Subjects
- Physics
- Safety regulations
- Basic about electricity
- Installing, startup and control of electrical components
- Error diagnostics

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B. GENERAL ELECTRONIC LAB

i. Configuration

- 8 Educational kits for electronics
- 8 Tool and measuring units
- Electronic components

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B. General Electronic Lab (cont'd)

ii. Topics to be trained

- Physics
- Safety regulations
- Basic about electricity and electronics
- Error diagnostics
- Reading of circuit diagrams
- Knowledge about electronic components
- Knowledge about integrated circuits
- Knowledge about digital logics
- Knowledge about microprocessors
- Additional Supplies

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C. Bench work

i. Configuration

- 16 work benches
- 1 teacher place

Occupational Areas Involved in Interdisciplinary Activities

- Mechanical
- Electrical
- Industrial
- Automotive
- Facility technician

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C. Bench work (cont'd)

ii. Topics to be trained

- Basics for metal working
- Working with technical drawing
- Work preparation
- Cutting technology drilling, file, chisel, measure.
- Safety instructions
Additional Supplies
- Set of classroom facilities
- Cutting tools

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D. Conventional Turning and Milling

i. Configuration

- 4 Units lathe
- 4 Units milling machine

Occupational Areas Involved in Interdisciplinary Activities

- Mechanical
- Electrical
- Industrial
- Automotive

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D. Conventional Turning and Milling (cont'd)

ii. Topics to be trained

- Turning machine operation
- Milling machine operation
- Technical drawing
- Work preparation
- Cutting technology
- Safety instructions

Additional Supplies

- Set of classroom facilities
- cutting tools

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5. Supporting and Cooperation

- Austrian Development Agency
- Austrian Development Bank
- Austrian Export Credit Agency
- European Bank for Reconstruction and Development
- Train the Trainer in cooperation with WIFI International (training abroad)



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6. Conclusion and Recommendation

- Definition of Owner's / Country's needs
- Development of execution concept
- Development of financing possibilities
- Agreement and Execution



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