

Training of operational staff for wastewater treatment plants and sewer networks in Austria

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Content

- Development of operator training in Austria
- WWTP operator training
 - Adult education
 - Recognised occupation requiring formal training (Staatlicher Lehrberuf)
- Sewer network operator training
- WWTP and sewer system neighbourhoods

Big effort – little impact



Development of operator training in Austria

Initiative from **Univ.-Prof. DDr.-Ing. W. v.d. Emde**

- High expenditure for the construction of wastewater treatment plants
- Success of wastewater treatment highly dependent of staff

→ First WWTP operator training 1968 in Vienna

ÖWAV training (WWTP operator) (1)

- 1968: WWTP operator – basic course
- 1973: WWTP operator – advanced course
- 1980: Mechanical engineering course
- 1982: Practical training on an educational WWTP
- 1984: ÖWAV guideline RB 15 “Skilled sewage works operators”
- 1984: Exam for skilled sewage works operators
- 1987: Laboratory course
- 1991: WWTP neighbourhoods
- 1996: 3-week WWTP operator basic course
- 1999: Microscopy course (basic/advanced)

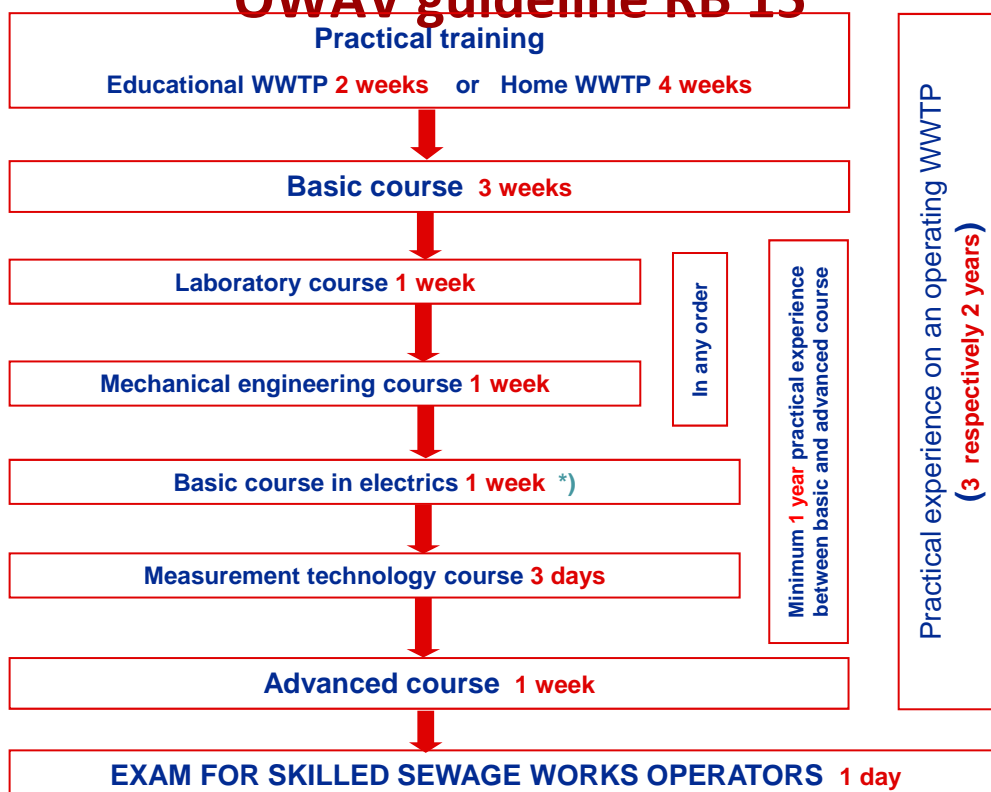
ÖWAV training (WWTP operator) (2)

- 2000: Small WWTP operator training (< 50 PE)
- 2004: Small WWTP operator training (50 – 500 PE)
- 2007: Constructed wetland course (< 50 PE)
- 2006: Instrumentation, control and automation on WWTPs
- 2006: Basic course in electrics for non electricians
- 2008: Business administration and organisation
- 2008: Legal requirements
- 2009: Refresher and advanced courses
- 2013: Measurement technology course

ÖWAV training (WWTP operator) (3)

- No master craftsman training in Austria (Meisterausbildung)
- Manager of larger WWTPs usually university graduates
- State regulated apprenticeship “Disposal and recycling specialist”
 - Few real apprentice (approx. 30 people since 1992)
 - Some finale exams as external students by ÖWAV WWTP operator specialists (approx. 10 people since 1992)

Training of WWTP operator specialists according to ÖWAV guideline RB 15

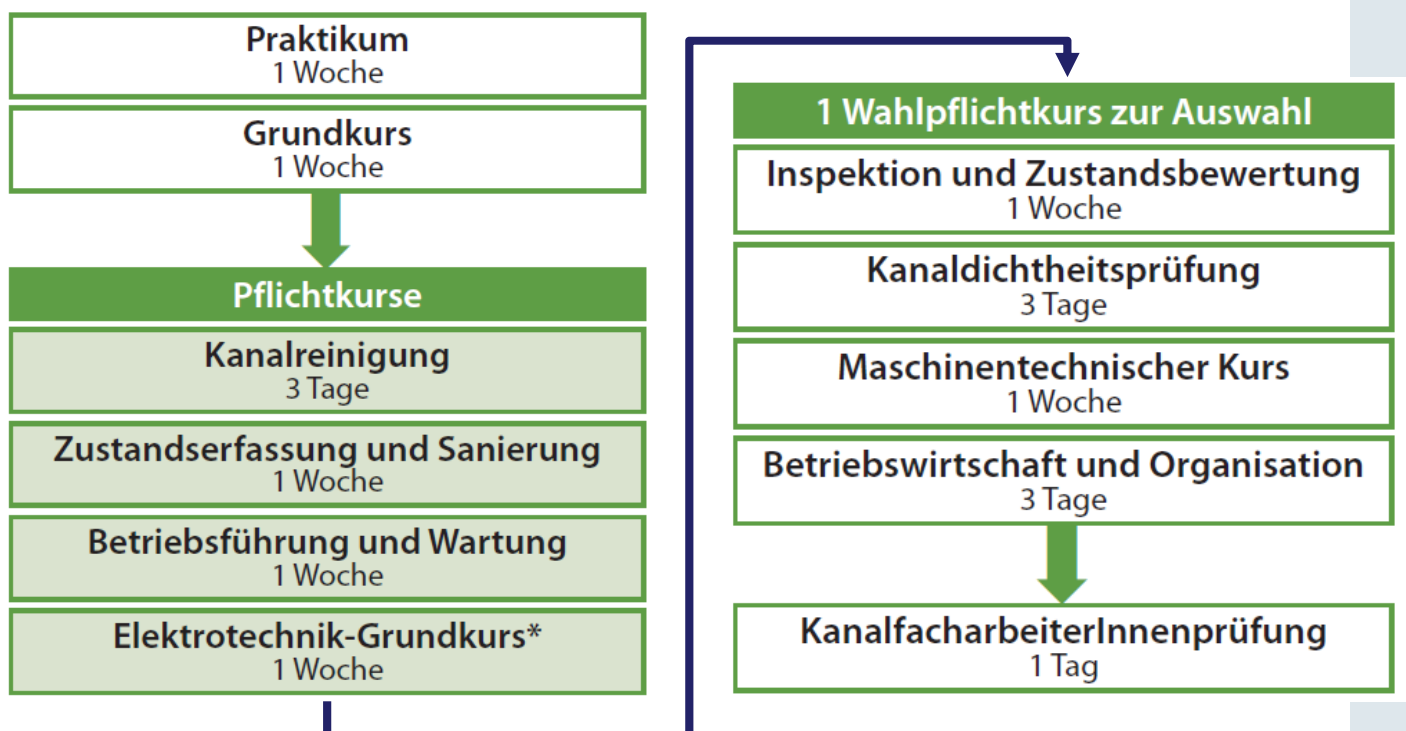


*) for participants without electrical training

ÖWAV training (sewer works operator) (1)

- 1997: Basic course for sewer works operators
- 1999: Sewer inspection course
- 2001: Sewer cleaning course
- 2002: Training in leakage tests of sewer pipes
- 2006: Advanced course for sewer works operators
- 2008: Exam for skilled sewer works operators
- 2012: ÖWAV guideline RB 44 “Skilled sewer works operator”

Training of sewer operator specialists according to ÖWAV guideline RB 44



Attendees

- Approximately 1,000 participant across all ÖWAV training courses per year
- Sine 1968 more than 24,000 people attended the courses
 - WWTP operator specialist approx. 2,100 people
 - Sewer operator specialist approx. 150 people
- More than 3,000 people work on Austrian wastewater treatment plants



Costs of the training (1)

- Costs for the courses
 - Skilled WWTP operator approx. 6,000 €
 - Skilled sewer works operator approx. 5,000 €
- Completed training courses per year
 - Skilled WWTP operator approx. 100 people
 - Skilled sewer works operator approx. 50 people
- Costs of the training
 - Courses approx. 850,000 €/year
 - Ancillary costs (replacement staff, travel and living allowance) approx. 2.3 Mio. €

Costs of the training (2)

- Based on the annual Austrian report on municipal wastewater from 2014
 - 1,200 WWTPs (51 – 1,999 PE)
 - 640 WWTPs (> 2,000 PE)
 - $21.6 \cdot 10^6$ PE treated
 - Wastewater volume $1.6 \cdot 10^9$ m³/year
- Specific costs for the education
$$(3.15 \cdot 10^6 \text{ €/year}) / (1,6 \cdot 10^9 \text{ m}^3/\text{year})$$
$$= 0.002 \text{ €/m}^3 \text{ (0.2 €-Cent per m}^3\text{)}$$

→ Money well and efficient spent

Legal provisions in Austria

- ‘Wasserrechtsgesetz’ (Water Rights Act)
 - Operation and maintenance with due diligence, no water pollution
 - Instandhaltungsverpflichtung
- ‘Abwasseremissionsverordnung’ (Ordinances on Wastewater Emissions)
 - Operation and maintenance through trained staff
- ‘Wasserrechtsbescheid’ (Wastewater Permit)
 - Number and qualification of operating staff

Increasing requirements for the training (1)

- 20 years ago knowledge and skills where the main focus areas
 - Metals processing and welding
 - Pipes and fittings
 - Machinery (e.g. screens, pumps)
 - Electrical engineering (e.g. cables, drives)
 - Chemistry
 - Physics
 - Biology
 - etc.



Increasing requirements for the training (2)

- Since 10 years shift towards
 - Process engineering and process control
 - Legal compliance
 - Waste disposal (sludge handling)
 - Maintenance and rehabilitation (WWTP, sewer)
 - Economics
 - Energy production on WWTPs and in the sewer
 - Management, human resource skills
 - Occupational health and safety (OHS)
 - Public relations



Further education in neighbourhoods

- Aim **Help to help themselves**
- Initiated 1991 by Univ.-Prof. DDr.-Ing. W. v.d. Emde

“No education is as helpful as the exchange between peers who face the same issues at different places“

- Structure Advisory board – Supervisor – Spokesman
- A neighbourhood is formed by 10 – 15 plants of a region
- 2 neighbourhood days per year
- 1 supervisor and spokesman day per year
- Participation > 90% of all WWTPs

Achieving outcomes through education and training

