

# Selected References

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## Water and Waste Water

client	Scope of activity	year
Altenmarkt (municipality)	Consulting to solve a odour problem in the public sewer system	2013
Andritz AG	Expert opinion on the waste water treatment plant of the papermill Paloma, Slovenia	2017
AVL List GmbH	General waste water concept und authority engineering:	1996
Graz	Optimization of water management: closing cycles and cooling/heating	1999
	Redesign of rain water system and engineering for new wells	2002/19
	Authority engineering for waste water and cooling water system	2019
AWV Laßnitz-Wildbach-Gamsbach	Future prospects and conceptual studies - WWTP Frauental	2019
AWV Mittleres Laßnitztal	Future prospects and conceptual studies - WWTP Zehndorf	2019
AWV Neunkirchen	Design of a leachate treatment plant as part of the general authority application documents (environmental assessment study)	2014
Biodiesel Kärnten	Basic engineering, supervision of start-up and operational consulting for a MBR-waste water system for a biodiesel plant	2009
Breitenfeld Edelstahl	Project for landfill leachate (industrial site)	2000
	Project for industrial waste water and water cooling concept	2001
District of Brcko, Bosnien	SWOT and PEST analysis of implementation of a communal waste water treatment system	2010
DARBO, Stans/Tirol	Consulting for cost optimization – waste water system	2002
Diary Freistadt	Basic, authority and detail engineering for industrial waste water system making us of membrane solutions, sewer drainage	2001
EPCOS OEG	Authority engineering for industrial waste water system, sewer drainage	1999
Deutschlandsberg		2011
FFF & ÖKK, Land Steiermark	R&D project: optimization of Nitrate and Phosphorus removal for communal waste water treatment plants making use of membrane technology	1998
FFG & SFG	R&D project: development of a novel membrane distillation process to recover valuable ingredients from waste water and biogas plants	2015
Georg Fischer GmbH Altenmarkt	Engineering concept to eliminate an odour problem and preparation of authority engineering documents to obtain an renewed permit	2013 - 2014
IFA Tulln – co-ordinator	Partner in EU Craft-Project „MESH - Integrated Wastewater Treatment Process using Mesh Filter Modules for Direct Activated Sludge Separation“	2006 - 09

<b>client</b>	<b>Scope of activity</b>	<b>year</b>
Liezen (municipality)	Optimization and modernization of the aeration of the communal WWTP	2014
LOBBE MTU GmbH	Authority engineering for industrial waste water system making us of membrane solutions, direct drainage to river	1997
MCT Ankara, Türkei	Basic engineering of a MBR-based containerized solution for waste water treatment for communities from 2.000 – 20.000 PE	2010
ROTO Frank Kalsdorf	MBR-Pilot plant operation	2017
	Basic and Detail engineering of a MBR-plant	2017
	Commissioning and Authority engineering of MBR plant	2019
Rotreat Abwasserreinigung, Graz	R&D project: Adaptation and optimization of a pond type communal waste water treatment plant, making use of membrane technology	1999
	Detail engineering of a MBR-containerplant and pilot-testing at ESAROM, Korneuburg	2007
	Collaboration FFG R+D project EnRecoTreat Application of membrane distillation for waste water treatment	2014
	Collaboration FFG R+D project GalvanoMD Application of membrane distillation in metal plating industry	2014
Liezen (municipality) Weiz (municipality) St. Peter o.J. (municipality)	Consulting for the communal waste water plants in respect to industrial waste water emissions (indirect discharger)	Since 1998 cont.
St. Peter o.J. (municipality)	Adaptation and optimization of a pond type communal waste water treatment plant with 1.500 PE using MBR technology	2001-2004
Saubermacher AG, Premstätten	Basic and Detail engineering, start-up and commissioning of a MBR-plant for the treatment of fluid waste materials	2016
Saubermacher AG, Trofaiach	Basic and Detail engineering, start-up and commissioning of a WWTP for the treatment of fluid waste materials	2018
SFG Steir. ForschungsförderungsGes.	Application of membrane distillation for ammonia recovery in biogas plant – AMRE-MD	2014- '16
Steinrieser Getränke, Styria	MBR-Pilot plant operation	2016– '19
	Basic, Detail, authority engineering/commissioning of a MBR-plant	
VTU Engineering GmbH, Graz	Basic and authority engineering for biodiesel waste water unit – BDV	2006
	General concept, basic engineering and commissioning for highly loaded biodiesel waste water treatment plants	2007
Weiz (municipality)	Tendering process for a 30.000 PE communal waste water plant	2001
	Construction supervision	2003
ZUSER Peggau	MBR-Pilot plant operation (treatment of surface water)	2017-
	Basic, Detail, authority engineering/ commissioning of a MBR-plant	2019

## **Biogas – Anaerobic Digestion**

<b>client</b>	<b>Scope of activity</b>	<b>year</b>
AWV Knittelfeld	Co-Fermentation at a communal waste water treatment plant	2006
	<ul style="list-style-type: none"> <li>• Basic, authority and detail engineering</li> <li>• Tendering</li> <li>• Building supervision</li> <li>• Start-up</li> </ul>	2010

<b>client</b>	<b>Scope of activity</b>	<b>year</b>
Bioenerg d.o.o. Crnomelj, Slo	Detail engineering for hygienization unit and consulting for biogas installation utilizing organic waste (1.400 kW)	2010
Biofutura d.o.o., Slovenia	Evaluation of biogas project Ilirska bistrica	2008
Biogasanlage Echtenbach GmbH	Building supervision for Biogasplant (500 kW)	2004
Biogas Möbling GmbH	Building supervision for Biogasplant Funder (250 kW)	2004
Biogas Pöchlarn GmbH	Building supervision for Biogasplant (500 kW)	2004
Biogaspark GmbH	Biogas from renewable primary products - framework contract (250 + 500 kW): <ul style="list-style-type: none"> <li>• Basic engineering</li> <li>• Building supervision</li> </ul>	2003 2005
Biogaspark GmbH	Building supervision for 4 Biogasplants (2 * 250 kW, 2 * 500 kW)	2004
Biogaspark GmbH, Amstetten	Biogas from biowaste, kitchen slops and slaughterhouse waste: <ul style="list-style-type: none"> <li>• Feasibility study and consulting</li> </ul>	2004
Construction company N.N.	Biogas from renewable primary products (3 projects 500 kW): <ul style="list-style-type: none"> <li>• Basic and authority engineering</li> </ul>	2004
Construction company N.N.	2 Biogas plants from renewable primary products; each with an electric power of 500 kW: <ul style="list-style-type: none"> <li>• Basic, authority and detail engineering</li> <li>• Tendering</li> <li>• Building supervision and training of operators</li> <li>• Start-up</li> </ul>	2005-06
Construction company N.N.	2 Biogas plants from renewable primary products Retz and Ziersdorf, each with an electric power of 1.500 kW: <ul style="list-style-type: none"> <li>• Basic, authority and detail engineering</li> <li>• Tendering</li> <li>• Building supervision and training of operators</li> <li>• Start-up and guarantee check</li> </ul>	2006-07
COWI A/S, Danmark	Biogas from industrial and municipal organic waste (7.5 Mio m <sup>3</sup> biomethane): <ul style="list-style-type: none"> <li>• Feasibility study</li> </ul>	2012
EKOKEM Finland (as subcontractor of IG-IUT, Seebenstein)	Biogas from municipal sewage waste (1.200 kW): <ul style="list-style-type: none"> <li>• Basic engineering</li> <li>• Tendering</li> </ul>	2011
Engineering company N.N.	Basic, Authority and Detailengineering for biogas plant processing organic waste material, expansion from 10.000 to 20.000 t/a	2010 – 2011
Engineering company N.N.	Basic and authority engineering for a biogas plant 500 kW	2010
ESTAG, Graz, Austria	Feasibility study for Biogas plant Knittelfeld 500 kW from organic waste and agricultural residues	2009
ESTAG, Graz, Austria	Feasibility study for Biogas plant Auersbach 250 kW from organic waste	2011
Fetz, Biogasanlage	Document on dangers of Explosive atmosphere (ATEX)	2010
Hämmerle, Biogasanlage	Document on dangers of Explosive atmosphere (ATEX)	2010
Hofer, Biogasanlage	Document on dangers of Explosive atmosphere (ATEX)	2010
Hofer, Biogasanlage	Document on dangers of Explosive atmosphere (ATEX)	2010

client	Scope of activity	year
KELAG Wärme GmbH	Consulting during maintenance of fermenters and expert opinion on energy efficiency	2017
Municipality St. Peter o.J.	Document on dangers of Explosive atmosphere (ATEX)	2019
Münzer GmbH	Biogas from biowaste (500 kW): <ul style="list-style-type: none"> <li>Feasibility study</li> </ul>	2001
NAWAROS GmbH	Building supervision for biogas plant St. Veit/Glan 1.000 kW	2002-04
Pilze Nagy Kft., Hungary	Basic engineering for biogas plant 300 kW	2006
Rauch, Biogasanlage	Document on dangers of Explosive atmosphere (ATEX)	2010
Republic of Austria, BIG	Biogas plant Voitsberg 64 kW from organic waste: <ul style="list-style-type: none"> <li>Basic, authority and detail engineering</li> <li>Tendering</li> <li>Building supervision and training of operators</li> </ul> Start-up	2011 - 2013
Planegger GmbH (through TB Hammer)	Building supervision for Biogasplant (500 kW)	2004
	Concept for the modernization and extension of the biogas plant	2013
Wucher, Biogasanlage	Document on dangers of Explosive atmosphere (ATEX)	2010

## Landfill Leachate

client	Scope of activity	year
ASA Abfall Service Austria (today named FCC)	Landfill leachate plant Halbenrain/Steiermark/Austria Pilot scale experiments Basic, authority and detail engineering Building supervision Start up	1992 - 1995
	Landfill leachate plant Erzberg/Steiermark/Austria Basic and authority engineering	1993
	Landfill leachate plant Köflach/Steiermark/Austria Basic and authority engineering	1994
Brantner Abfallwirtschaft	Landfill leachate, landfill Turnu Severin, Rumänien Detail engineering	2009
Breitenfeld Edelstahl	Basic and authority engineering, tendering: Landfill leachate plant for slag landfill	2000 - 2001
Crystal Clear Membranservice GmbH	Landfill leachate plant Barcelona/Spain Lab scale experiments Basic and detail engineering Process optimisation	2005 - 2006
Hettegger	Landfill leachate plant Hettegger/Salzburg/Austria Pilot scale experiments Basic and detail engineering Building supervision Start up	1994 - 1995
IRAB Innsbrucker Recycling und Abfallbetriebe, Innsbruck	Study to clean landfill leachate and ground water, landfill Ahrental/Tirol/Austria	1995

<b>client</b>	<b>Scope of activity</b>	<b>year</b>
LOBBE Abfallentsorgung GmbH	Landfill leachate plant Werndorf/Styria/Austria Pilot scale experiments authority and detail engineering Process optimisation	1998
Novo Mesto/CEROD/Rotreat Slovenia	Lead engineer and supervision of engineering for leachate treatment plant	2012
Rotreat Abwasserreinigung GmbH	Landfill leachate plant Bergheim/Salzburg/Austria Basic and authority engineering	2001
	Landfill leachate plant Werndorf/Styria/Austria Pilot scale experiments Basic, authority and detail engineering Building supervision Start up Process optimisation	2002
	Landfill leachate plant Erzurum/Turkey Pilot scale experiments Basic and detail engineering	2006
	Landfill leachate plant Antalya/Turkey Basic and detail engineering	2007
	Landfill leachate plant Erzberg/Austria Detail engineering for a sulphide stripper unit	2013
Sarajevo (municipality)	Feasibility study: revamping of an unfit leachate treatment plant Pilot scale experiments using MBR-technology	2016 2018
VA Erzberg through Schippingner + Partner	Design of a leachate treatment plant as part of the general authority application documents (environmental assessment study)	2014
WTE Wassertechnik	Consulting for a landfill leachate plant in SE Europa	2011

## Energy

<b>client</b>	<b>Scope of activity</b>	<b>year</b>
AVL List GmbH, Graz	Feasibility study and energetic optimization of internal processes	1998
AWV Knittelfeld	Optimization of energy consumption at the waste water plant	2013
LOBBE Werndorf	Feasibility study and energetic optimization of internal processes	1997
Stadt Liezen, Bauhof	Optimization of phosphate precipitation and wattless current compensation, production of renewable energy at the waste water plant	2009
Stadt Weiz und Land Stmk.	Optimization of energy consumption and production of renewable energy at the waste water plant	2010
Wopfinger Baustoffindustrie	Expert opinion on efficiency of a waste heat recovery system	2010

## Industrial engineering and waste management

client	Scope of activity	year
ABRG Arnoldstein	Basic and authority engineering (AWG) for a hazardous waste storage building	1999
AE+E (as subcontractor of IG-IUT, Seebenstein)	Secondary fuel for a paper mill in Germany: detail engineering and documentation	2008 - 2010
AWV Knittelfeld	Solar drying of sewage sludge (Basic, authority and detail engineering, Tendering, Building supervision, Start-up) Optimization of sand recycling and disposal	2006 - 2008 2013
AWV Liezen and Government of Styria	R&D project: mechanical-biological waste treatment Liezen Characteristics of fuel made from household waste fraction > 80 mm	1997 2000
AWV Liezen	mechanical-biological waste treatment and biowaste <ul style="list-style-type: none"> <li>• Basic, authority and detail engineering</li> <li>• Building supervision</li> <li>• Control of start up including performance tests</li> </ul>	2002-07
Entsorgt!	Tank and truck cleaning system: Basic, authority and detail engineering	2000-05
Feldbacher Fruitpartners	Pre-liminary, basic, detail engineering and tendering process for a new production site and head quarter	2013 - 2014
Government of Styria	R&D project: mechanical-biological waste treatment Hartberg	2000
Integral ZT GmbH	Consulting during authority engineering and for improvement of waste water facilities for a slaughterhouse	2017 – lfd
Kohlroser Franz	Basic and authority engineering: <ul style="list-style-type: none"> <li>• Bioethanol production</li> <li>• Treatment of residues of the biogas plant</li> </ul>	2007
LOBBE MTU GmbH	Hazardous waste treatment plant Werndorf/Styria/Austria Basic, authority (AWG, GewerbeR, WasserR) and detail engineering Building supervision Start up	2002 1997 1996
DI Dr. Schippinger ZT GmbH, Graz	Study on gas-emissions from the closed communal landfill Leoben Study on decontamination of the Kiener Landfill, Bachmanning Market survey of the Austrian waste management	1995 1995 2000
SDAG Austria (as subcontractor of IG-IUT, Seebenstein)	Feasibility study on pre-processing organic waste	2011
SDAG Slo (as subcontractor of IG-IUT, Seebenstein)	Feasibility study on implementation of an anaerobic MBT in Slovenia	2011
Stadtgemeinde Frohnleiten	Supervision for the communal landfill	1996-2007
VTU Engineering GmbH	ABRG Arnoldstein: hydrometallurgy <ul style="list-style-type: none"> <li>• Basic, authority and detail engineering</li> </ul>	1996
ZUSER Peggau	Supervision of the waste management site in Peggau	2012/15

## Safety analysis

client	Scope of activity	year
ABRG Arnoldstein	Safety analysis	1999
LOBBE Werndorf	Safety analysis	1997
DI Dr. Schippinger ZT GmbH, Graz	Safety analysis for the waste treatment plant AWV Liezen	1996
	Safety analysis for the waste treatment plant RMVG Eisenerz	1995
VTU Engineering GmbH, Graz	Safety analysis for cement works Gartenau	1999
Zementwerkes Leube GmbH	Analysis of potential risks and dangers	2005/10/ 18

## Other

client	Scope of activity	year
AWV Liezen	Tendering process for transportation of household waste and biowaste	2003
		2010
AWV Knittelfeld u.U.	Tendering of engineering services for a canalization project	2009
AWV Murau	Tendering of logistic services for paper transportation	2013
Township of Knittelfeld	Tendering of engineering services for a canalization project	2013
Biodiesel Vienna GmbH	Tendering of waste management services	2007
Hans Hütter GmbH	Expertise on the characteristics of the product Renoxal	2002
MCI Innsbruck	Lectures at the University MCI Innsbruck	2008-09
ÖSB Unternehmensberatung, Graz	Lecture on regulations for operational facilities	1997
ÖWAV + LEA	Lectures at biogas operation course	2006-08
Philips Components Lebring	Expertise on compliance with the Austrian dissolvent regulation	1997
Rotreat Abwasserreinigung GmbH Graz	Organisation of the congress „1. österreichische kommunale Membrankläranlage“, Weiz	2002
		1998
VTU Engineering GmbH, Graz	Consulting for process engineering and design of P&I Diagrams for DSM-Chemie, Linz	1998

## Membership

- Chamber of Commerce, Styria
- Chamber of Engineers IZS, Slovenia
- Fachverband Biogas e.V., D
- Green Tech Cluster - Steiermark
- Association of Certified Austrian Experts
- ÖWAV, Austria
- DWA, Germany