

Curriculum Vitae

1. **Family name:** Pinkel
2. **First names:** Michael
3. **Date of birth:** 15 February 1965
4. **Nationality:** Austria
5. **Civil status:** Married
6. **Education:** Technical highschool

Institution	Degree(s) or Diploma(s) obtained
From (month/year) – To (month/year)	
Higher technical college (Highschool), Mödling September 1979 – June 1984	General certificate of education Mechanical Engineer
Institution	Degree(s) or Diploma(s) obtained
From (month/year) – To (month/year)	
College Wiener Neustadt, Academic education for business management and communication September 1995 – April 1997	Certificate

7. Language skills (1 - excellent, 5 - basic)

Language	Reading	Speaking	Writing
German (mother tongue)	1	1	1
English	2	2	3

8. Membership of professional bodies:

- Business Forum
- Austrian Standard Specification Institute, standards committee 157 waste management, working group 26 "Fire precaution secondary fuel", 2008 – ongoing
- Working group on alternative fuels and incineration, Association of Austrian Waste Management Companies VOEB, 2015 - ongoing

9. Other skills:

- More than 30 years of experience in the field of waste management
- Education for project management, university of economics, (1995)
- Certified expert for fire precaution and security techniques (ÖBV-certified, institution for fire precaution techniques – IFBS) (since 1997)
- License for civil engineering office in the field of engineering – environmental techniques (2000)
- Business license for management consultancy (2022)
- Lecturer at the Montanuniversitaet Leoben, Department of Environmental and Energy Process Engineering, Chair of Waste Processing Technology and Waste Management (since 2012), lectures for the project planning of waste treatment facilities

10. Present position:

General Manager of Ingenieurgemeinschaft Innovative Umwelttechnik GmbH

11. **Years within the firm:** Since 1999

12. Key qualifications:

- Technical and economical rating of waste sorting technologies
- Strategic waste management
- Evaluation and comparison of waste management concepts
- Verification and assessment of plant sites regarding waste managerial qualification aspects
- Screening of waste managerial plant sites “Due Diligence”
- Preparation of documents for administrative authorization procedure according to waste management act, environmental impact assessment act and industrial code
- Project manager of various waste managerial projects
- Engineering and supervision of waste management plants
- Safety engineering for locations, fire precaution and protection of workers’ health and safety
- Surveyor of the Austrian Ministry for environment in the control of old car collectors and handlers examining their compliance to the old car regulation, 2005

13. Specific experience in the region:

- Austria
- Bulgaria
- Canada
- Croatia
- Czech Republic
- Denmark
- Finland
- Germany
- Hungary
- Slovakia
- Slovenia
- South-Africa

14. Professional experience (abstract)

Date from - Date to	Location	Company	Position	Description
2021	Tiefenbach, Austria	IUT	Chief project engineer	<p>Waste management and fire protection concept</p> <p>Creation of a waste management concept for the entire plant during a new and change permit. Creation/adaptation of a fire protection concept during the approval of a plant change and site expansion according to §37 Waste Management Act.</p> <p>Client: Gaugl Metallhandel GmbH</p>
2021	Inzersdorf, Austria	IUT	Chief project engineer	<p>Up-Grading a mechanical-biological treatment plant</p> <p>Location development concept for possible "up-grading measures" of an existing MBT in the direction of RDF treatment. Creation of a submission project for the approval of the interim storage of 12,000 t/a substitute fuel including other changes and extension of the operating times.</p> <p>Client: Bezirksabfallverband Kirchdorf - AWZ Inzersdorf</p>
2021	Himberg, Austria	IUT	Chief project engineer	<p>SRF processing plant</p> <p>Approval project according to Austrian law for the construction of a new and modification of an existing solid recovered fuel treatment plant including expanding capacity. Coordination of technical consultants and support of official procedures</p> <p>Client: Nemetz Entsorgungs & Transport AG</p>
2018-2020	St. Michael, Austria	IUT	Chief project engineer	<p>Design for a mechanical fuel treatment and sorting plant</p> <p>Creation of approval documents according to §37 of the Waste Management Act for the during the change approval of a plant site approved in accordance with the EIA Act. Changes of the existing plant and expansion of the plants for the treatment of composite materials and substitute fuel.</p> <p>Client: confidential</p>

Date from - Date to	Location	Company	Position	Description
2018-2020	Wulka-prodersdorf, Austria	IUT	Chief project engineer	<p>Design for a sorting plant for recyclables together with a mechanical fuel treatment plant</p> <p>Technical and commercial evaluation of a concept for the construction of a recoverable material sorting plant with regards to „circular economy“.</p> <p>Client: Oswald Hackl e.U.</p>
2017-2020	Krems, Austria	IUT	Chief project engineer, mechanical sorting specialist	<p>Mechanical waste sorting plant for SCPW, Feasibility study</p> <p>IUT has been ordered to design pre-planning-proposals for a automatically sorting plant for separate collected packaging waste including interim storage and output storage area.</p> <p>An investment and operating cost calculation have been performed including different specific calculation parameters based on assumptions from the client.</p> <p>Client: confidential</p>
2016	Austria	IUT	Chief project engineer, mechanical sorting specialist	<p>Design of a secondary mechanical treatment step to upgrade the final RDF-fraction</p> <p>Feasibility study for "upgrading" a finished substitute fuel by ejecting a hard plastic fraction, processing tests and support of lab analysis, plant concepts for different treatment processes and SWOT-analysis as a decision support for the client.</p> <p>Client: Müllex-Umwelt-Säuberung-GmbH</p>
2015	Austria	IUT	Chief project engineer	<p>Evaluation of a concept for the construction of a sorting plant for recyclables</p> <p>The task of the project is the technical design check and the economical evaluation of a project to gain recoverable materials out of several waste input streams. Technical and commercial evaluation with regards to „circular economy“.</p> <p>Client: Oswald Hackl e.U.</p>

Date from - Date to	Location	Company	Position	Description
2015-ongoing	Germany	IUT	Chief project engineer, mechanical sorting specialist	<p>Design of a mechanical treatment plant to gain plastic basic material for a further depolymerisation process</p> <p>The task of the project is to develop a new process which connect different mechanical process steps together with windshifting and washing units to gain a very high material quality for the following depolymerisation process. In the design it is also necessary to define the size and technical figures of the interim storage to save a continuous process chain independent from different troughput capacities inside the different process steps.</p> <p>The whole capacity on the input side should save 180.000 t/a of a high quality plastic fraction mainly consist of PP and PE on the output.</p> <p>IUT is responsible for the design and the investment as well as the operating cost calculation for all mechanical treatment equipments.</p> <p>Client: confidential</p>
2014-ongoing	Innsbruck, Austria	IUT	Chief project engineer, solid waste specialist, procurement, environmental specialist	<p>“Up grading” of a mechanical treatment plant</p> <p>In Innsbruck there was an existing mechanical waste treatment plant for solid domestic and commercial waste, input capacity 75,000 up to 100.000 t/a.</p> <p>In the first project step, the task was to check the existing process and to define possible future process steps to increase the quality of the produced solid recovered fuel on the one hand and to take out recyclables like plastics and metal on the other hand. The sorting analyses and the feasibility consideration for the selected process steps were done together with the Montanuniversitaet Leoben. The feasibility was an additional basis for decision for the owner representatives.</p> <p>Another task has been to do the basic design for the selected new process steps, preparing technical specifications and tender documentation and carrying out the call for tender for the mechanical part including also the tender evaluation.</p> <p>Client: Abfallbehandlung Ahrental GmbH</p>

Date from - Date to	Location	Company	Position	Description
2014-ongoing	Croatia	IUT	Mechanical sorting and biological treatment specialist	<p>Design check of a mechanical and biological waste treatment plant</p> <p>IUT has been ordered by the company to check the design and the installed technical equipment according to the operation guidelines out of a purchase agreement. The main task was the review of plant performance and the efficiency of the treatment steps as well as the function control of each machine. Together with the Montanuniversitaet Leoben there was also taken samples of each material stream to make labour analyses of the main parameters (e.g. caloric value, grainsize, water content).</p> <p>Another task has been to do the basic design for the overall site development considering a following biological treatment step and other logistics establishments.</p> <p>An investment and operating cost calculation have been performed for each variant.</p> <p>Client: confidential</p>
2011-2013	Hartberg, Austria	IUT	Chief project engineer, solid waste specialist, procurement, environmental specialist	<p>“Up grading” and rebuilding of MBT-Plant Hartberg of Abfallwirtschaftsverband Hartberg</p> <p>In Hartberg there was an existing mechanical and biological waste treatment plant for solid domestic and commercial waste as well as separately collected packaging waste (plastics), input capacity 14,000 t/a. 2013 the plant was reconstructed to improve the mechanical treatment. In the mechanical sorting facility the waste is now sorted automatic as well as manual to gain materials for recycling (paper, cardboard, plastics, metals) as well as fractions for further thermal and biological treatment.</p> <p>The processing machinery consists of pre-sorting, bag opening, screening, ballistic sorting (heavy and light), metal separation and a manual sorting stage. The installation of e dedusting system and air cleaning with a baghouse-filter was also a task of the project. The output materials are compressed in a baler. The fine fraction is separated for biological treatment.</p> <p>Client: Abfallwirtschaftsverband Hartberg</p>

Date from - Date to	Location	Company	Position	Description
2009-2013	Unterpremstätten, Austria	IUT	Chief project engineer, solid waste specialist, procurement, environmental specialist	<p>Upgrade a WEEE-sorting plant of company SDAG</p> <p>Compilation of specifications, handling of the award of contracts and construction supervision of a treatment plant for waste electric appliance and polluted scrap for 20,000 t/a</p> <p>The processing machinery consists of pre-sorting, special shredding system, screening, metal separation, manual sorting, wind shifting, secundar shredder, all-metal separation and automatical sorting with NIR-seperation as well as color seperation. The installation of e dedusting system and air cleaning with a baghouse-filter was also a task of the project. The output materials are different kind of metals and plastic as well as material for further thermal treatment steps.</p> <p>The main task of the system is the extraction of various metals for material recycling.</p> <p>Client: Saubermacher Dienstleistungs AG</p>
2011-2013	Helsinki, Finland	IUT	Mechanical sorting specialist	<p>Mechanical waste treatment plant, Feasibility study, design work</p> <p>IUT has been ordered by company Paperinkeräys in order to design various pre-planning-proposals for a waste treatment and logistics centre. The proposals have to be prepared for various green field locations.</p> <p>The main business on the future site should be sorting and baling of paper. But the overall plant is also consisting of a WEEE-treatment plant and a security shredding facility.</p> <p>Another task has been to do the basic design for the overall site development considering the logistics on site, all necessary infrastructure and transfer stations for different other waste streams.</p> <p>An investment and operating cost calculation have been performed for each variant and each of the different site locations.</p> <p>Client: Paperinkeräys Oy</p>

Date from - Date to	Location	Company	Position	Description
2011-2012	Klagenfurt, Austria	IUT	Mechanical sorting specialist	<p>Mechanical treatment plant for municipal solid and industrial waste</p> <p>Execution of engineering for a mechanical treatment plant for municipal solid waste and industrial waste with 35.000 t/a.</p> <p>KAB`s existing mechanical waste treatment plant was 2008 and 2009 enlarged with different facilities: sorting plant for packaging and commercial waste, shredding of waste wood, interim storage for hazardous waste from households, interim storage places for different kinds of waste, office building, weigh bridges and repair shop.</p> <p>In spring 2011 a fire incident destroyed the sorting plant. The plant had to be rebuilt as soon as possible. The new design contains now a state-of-the-art sorting plant for commercial waste and for packaging waste. The waste is now sorted automatic as well as manual to gain materials for recycling (paper, cardboard, plastics, metals) as well as fractions for further thermal treatment. The processing machinery consists of shredding, metal separation, screening, air separation and a manual sorting stage. The output materials are compressed in a baler.</p> <p>IUT was responsible for planning the machine-technology aspects of the project and sophisticated measures for fire prevention. Starting with the basic engineering, a set of permitting documents were drawn up in accordance with the respective laws and the technical specifications and tender documents were prepared.</p> <p>Starting-up of the plant was in November 2011, the takeover was in spring 2012.</p> <p>Investment 6,5 Mio. €</p> <p>Client: KAB Kärntner Abfallbewirtschaftung GmbH</p>
2010-2012	Estonia, Tallinn	IUT	Specialist for mechanical sorting	<p>Supervision of construction of a mechanical-biological treatment plant</p> <p>Ragn Sells AS is going to build a mechanical-biological waste treatment plant with a capacity of 90,000 t/a. The plant consists of a pre-treatment, bio-drying and final treatment facility.</p> <p>Metals are separated and the overall waste stream is separated into a biological and high calorific fraction in the pre-treatment. The biological fraction will be handed over into 6 bio-drying tunnels for a certain period to reduce the organic content and to dry the material before blending with the high calorific fraction. The high calorific fraction will be shredded to a size of approx. 25mm and will be blended with the dried fraction before entering 3 storage boxes. The final material will be extracted from the boxes and loaded into trucks for external incineration.</p> <p>The construction phase started in March 2011. The project is currently in the stage of take-over.</p> <p>Client: Ragn Sells AS</p>

Date from - Date to	Location	Company	Position	Description
2009-2010	Varna, Bulgaria	IUT	Chief project engineer	<p>Due diligence of a mechanical-biological treatment plant</p> <p>A Bulgarian enterprise is going to build a mechanical-biological waste treatment plant with a capacity of 140,000 t/a. The overall waste stream is separated into a biological and a high calorific fraction in the pre-treatment. Metals are separated with magnet and eddy current separators recyclables are separated with several stages of hand and automatic near infrared sorting machines conform to the sector's latest technical standards. The biological fraction will be handed over into 10 bio-drying tunnels for a certain period to reduce the organic content and to dry the material. The final material will be extracted from the boxes and loaded into trucks for external usage.</p> <p>An Austrian enterprise intended to establish a joint venture with the Bulgarian company for the erection and operation of the plant. For this reason, the enterprise ordered a technical due diligence of the project from IUT.</p> <p>Client: Saubermacher Dienstleistungs AG</p>
2008-2010	Schwedt, Germany	IUT	Solid waste specialist	<p>Solid recovered fuel plant Leipa</p> <p>Engineering and project management for a treatment plant for SRF (solid recovered fuel) with a quantity of approx. 220.000 t/a and a transport system for paper reject.</p> <p>Approx. 220,000 tons per year of residues originating from paper production in Schwedt/Oder as well as externally supplied alternative fuels (SRF) are used as fuel for a fluidized-bed combustion boiler. The overall plant comprises storage facilities for various fuels, a post-processing plant for the alternative fuels supplied externally, the boiler plant inclusive a flue-gas cleaning, a condensing turbine and conveying facilities for all flows of materials. IUT was involved in the engineering and project management of following parts of the overall project:</p> <ul style="list-style-type: none"> • Storage and manipulation of the SRF-pre-product (bunker + automatic crane system) • SRF-treatment plant (shredding, metal separation, sifting) • Storage and manipulation of the SRF-final-product (bunker + automatic crane system) • Automatic transport to the SRF-bin in front of the boiler (520m material transport) • Storage and manipulation of rejects of the paper production (dehydrated paper sludge) <p>Automatic transport of the rejects to the paper reject-bin in front of the boiler</p> <p>Client: Austrian Energy & Environment</p>

Date from - Date to	Location	Company	Position	Description
2008-2010	Unterpremstätten, Austria	IUT	Chief project engineer, solid waste specialist	<p>Treatment and interim storage plant for hazardous waste</p> <p>Execution of engineering for a mechanical treatment and interim storage plant for hazardous waste from repair shops, waste electrical and electronic equipment, and other hazardous waste. The total capacity for treatment and storage is 120.000 t/a.</p> <p>SDAG`s existing location for treatment and storage of hazardous waste in Unterpremstätten was enlarged in two main steps. One part is a treatment plant for oily and flammable waste from mainly motorcar repair shops and similar facilities. Another important part of the location is a treatment and interim storage for waste electrical and electronic equipment</p> <p>Client: SDAG Saubermacher Dienstleistungs AG</p>
2008-2010	Vienna, Austria	IUT	Chief project engineer, mechanical sorting specialist	<p>Waste management centre</p> <p>Design of a waste management centre as backup solution for unforeseen shutdowns of the 4 incineration plants in Vienna. The waste management centre consists of an input bunker with a semi-automatic crane system, two treatment lines including baling, bale wrapping and an extensive bale storage for 50,000 tons. The throughput capacity of the machinery is 130 t/h and 280,000 t/a. Also included are storages and treatment for bulky waste, a public collection centre for recyclable, health care and other hazardous wastes and other peripheral and administrative buildings and components</p> <p>Client: WKU Wiener Kommunal-Umweltschutz-Projektgesellschaft mbH</p>
2007-2010	Hartberg, Austria	IUT	Solid waste specialist	<p>Treatment plant for waste including interim storage plant for hazardous wastes</p> <p>Execution of engineering for a mechanical treatment plant for municipal solid waste and industrial waste with 16.000 t/a and an interim storage plant for healthcare waste and other hazardous waste with 5.000 t/a.</p> <p>In 2008 WSA established a new facility in Hartberg for treatment and storage of non-hazardous and hazardous waste, including shredding of waste wood and medical waste, interim storage places for hazardous sludge, oil, and different liquid waste, distillation of solvent, office building, weigh bridge and repair shop. Essential part of the new plant was an interim storage for health care waste and other hazardous waste.</p> <p>2010 the WSA enlarged the interim storage place for the hazardous waste and changed the position within the location. Therefore a new approval procedure was necessary.</p> <p>Client: WSA – Waste Service GmbH</p>

Date from - Date to	Location	Company	Position	Description
2007-2009	St. Andrä, Austria	IUT	Chief project engineer, mechanical sorting specialist, procurement, environmental specialist, supervision of construction	<p>Waste management centre (waste transfer station. bring in site of storage place for recyclables and hazardous waste)</p> <p>Design of a waste management centre, consisting of a transfer station for municipal waste and a bring in site and storage place for different kind of hazardous waste.</p> <p>The municipal waste of the region will be shredded, separated from Fe-metals, pressed and prepared for the transport to the incineration plant. The throughput capacity is 11,000 t/a. The bring in site is intended for the takeover of all kinds of recyclables, like paper, plastics, metals, glass, biogenic waste, wood, textiles, and tires.</p> <p>The collection centre for hazardous waste is planned to take and store waste with all possible properties which render them hazardous, according to the EU Council Directive 91/689/EEC on hazardous waste: explosive, oxidizing, flammable, irritant, toxic, harmful, carcinogenic, corrosive, infectious, teratogenic, mutagenic and ecotoxic.</p> <p>Client: AWV Lavanttal</p>
2006-2008	Alesd, Romania	IUT	Expert for mechanical treatment of waste	<p>SRF plant, Basic and detailed planning of mechanical engineering, conveyor facilities and fire protection, calculations of investment and operational costs, call for tenders</p> <p>SRF- solid recovered fuel treatment plant with capacity of 20,000 t/a for pre-separated high-calorific wastes from local and foreign sources and transport-, dosing-, and feeding installation until the kiln (main burner inlet) at a cement plant.</p> <p>IUT was charged with the design of a plant, in that a two-step shredding process and a foreign parts separator will be used to turn pre-sorted, high-caloric wastes into fuel ready for co-processing. The fuel is to be transported to the main burner of the kiln via newly erected conveyors and to be added to the process by means of pneumatic transport and rotary feeders.</p> <p>Since it was to be erected in the vicinity of the local cement kilns, IUT was entrusted to plan not only the SRF treatment plant but also the entire systems engineering for the transport to the rotary kiln and its feeding.</p> <p>Client: Holcim Romania/ecovalor</p>

Date from - Date to	Location	Company	Position	Description
1999-2008	Frohnleiten, Austria	IUT	Specialist for mechanical treatment of waste	<p>Mechanical-biological waste treatment plant</p> <p>Execution of engineering for a mechanical and biological treatment plant for municipal solid waste and transfer station for the residues going to the landfill, 76.000 t/a.</p> <p>The mechanical-biological residual waste treatment plant in Frohnleiten consists of a mechanical preparation part, in which the different wastes are homogenized, mixed and appropriate humidified. After this treatment a closed intensive composting in boxes and tunnels takes place for the duration of 4 weeks. These boxes and tunnels are ventilated and watered. The input into the boxes is made by automatic conveyor systems, the output with wheeled loader. After 4 weeks intensive composting the waste is transported to a transfer station, consisting of a feeding conveyor and an automatic container loading station. The containers are transported to the open final composting facility on a landfill area. After further approx. 10 - 12 weeks, in which the material is regularly converted and humidified, there is a final screening. In accordance with the Austrian landfill decree (Österreichische Deponieverordnung) the screenings can be inserted as landfill product. Starting-up of the plant was in September 2003, the takeover was in August 2005 and the end of the defect notification period was in August 2008.</p> <p>Client: Gemeindebetriebe Frohnleiten / Servus Abfall Dienstleistungs GmbH & CoKG</p>
2006-2008	Beli Izvor, Bulgaria	IUT	Expert for mechanical treatment of waste	<p>SRF plant</p> <p>SRF-solid recovered fuel treatment plant with a capacity of 20,000 t/a for pre-separated high-calorific wastes from local and foreign sources and transport-, dosing-, and feeding installation until the kiln (calcite inlet) at a cement plant.</p> <p>IUT was charged with the design of a plant, in that a two-step shredding process and a foreign parts separator will be used to turn pre-sorted, high-caloric wastes into fuel ready for co-processing. The fuel is to be transported to the pre-heater of the kiln via newly erected conveyors and to be added to the process by means of rotary feeders.</p> <p>IUT was entrusted to plan not only the SRF treatment plant but also the entire systems engineering for the transport to the rotary kiln and its feeding.</p> <p>Client: Holcim Bulgaria</p>

Date from - Date to	Location	Company	Position	Description
2003-2007	Fischamend, Austria	Ing. Rudolf Rottner GmbH	Chief project engineer, mechanical sorting specialist, procurement, environmental specialist, supervision of construction	<p>Mechanical-biological waste treatment and sorting plant</p> <p>In Fischamend there was an existing mechanical and biological waste treatment plant for solid industrial, commercial and domestic waste, input capacity 27,000 t/a.</p> <p>2004 the plant was reconstructed to improve the mechanical treatment. In the mechanical sorting facility the waste is now sorted automatic as well as manual to gain materials for recycling (paper, cardboard, plastics, metals) as well as fractions for further thermal treatment. The processing machinery consists of shredding, metal separation, screening, air separation and a manual sorting stage. The output materials are compressed in a baler. A fine fraction is separated for biological treatment, Investment 4,0 Mio. €</p> <p>Client: Ing. Rudolf Rottner GmbH</p>

15. Other relevant information (eg, Publications)

Lectures at various waste management seminars, e.g.:

- Austrian standard committee, solid recovered fuel, Vienna 2003
- Production of solid recovered fuel in the regional setting, (customer seminar), Graz 2003
- Waste treatment for gaining solid recovered fuel, (customer seminar), Seebenstein 2004
- Intermediate storage of wastes, seminar Matthiessen, Salzburg 2008
- Safety and risk of intermediate storage of wastes, Austrian Water and Waste Association, Seminar, Vienna 2008
- Fire and explosion precaution for waste treatment plants, seminar Matthiessen, Salzburg 2009
- Fire and explosion precaution for RDF-production plants, internal seminar Thermo Team 2010
- Sorting solutions and treatment systems for MSW, seminar Dakofa, Copenhagen 2010
- Fire and explosion precaution for RDF-production plants, seminar VÖB, Eisenstadt 2013
- Effects of the IPPC to the operation of waste treatment plants in Austria, seminar VÖB, Wien 2013
- What's the achievement of recycling and where does the journey end? Austrian Water and Waste Association, Seminar, Schwechat, 2014
- Treatment processes of thermal waste treatment for solid municipal waste, IRRRC Waste to energy, Vienna 2014

- „Circular Economy Village“, an unique combination for waste processing, recovery and recycling processes at one location, Styrian Chamber of Commerce 2017
- Modern waste treatment plants (smart waste factory 4.0), Depotech Leoben 2018
- Development of waste treatment plants of the future, Depotech Leoben 2020