

Introduction Dr. Roman Schiesser

MME Engineering



As a member of the Austrian Association
of Consulting Engineers represented by



Curriculum Vitae

Year of birth: 1974

Professional career

Academic and professional background Dr. Roman Schiesser

10/1994-05/2001 Technical chemistry at TU Vienna

Branch of study: Anorganic chemistry (with focus on metallurgy)



05/2001

Diploma work

„Formation of WC-platelets out of substoichiometric Co-W-C-precursors“;
International research project at the

Institute for Chemical Technology and Analytics

Ao.Univ.Prof. Wolf-Dieter SCHUBERT

Members of the international R&D project:

- H.C.Starck Germany
 - Kennametal Inc., USA
 - Mitsubishi Materials Inc., Japan
 - Sumitomo Electric Industries Ltd., Japan
 - Teledyne Metalworking Products, USA
 - United Hardmetal, Germany
 - WOLFRAM, Austria
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Curriculum Vitae

08/2001-10/2003

Doctoral thesis

„Scrap Recycling of tungsten containing secondary raw materials“; Research project financed by the company WOLFRAM

Institute for Chemical Technology and Analytics

Ao.Univ.Prof. Wolf-Dieter SCHUBERT



- Metallurgical process development in the field of tungsten-, cobalt-, nickel and copper metals for the company WOLFRAM in Austria.
- Implementation of the process design in existing production line
- Thermal oxidation of metal containing resources with subsequent alkaline leaching and metal refining
- Alkaline leaching of tungsten-copper containing resources with subsequent ammonia gas recovery
- Investigations on high temperature alkaline tungsten extraction
- Selective cobalt leaching of tungsten containing resources with acetic acid
- Acetic acid regeneration by a high pressure hydrogen process

Curriculum Vitae

Professional Experience

08/2001 – 12/2003 Scientific coworker at the „Institute for chemical technology and analytics“:
Scientific Supervision of Students

Several lectures on processes for tungsten recovery out of scrap

Analytical Techniques: UV-VIS, XRD, DTA, TGA, RFA, AAS, EDX, ICP-OES, GDMS, Electron microscopy



01/2004 – 08/2004 SIEMENS SGP VERKEHRSTECHNIK AG

Technical manager for preventive fire-protection at metro building



09/2004 – 09/2007 RHI Refractories Technology Center Leoben

Process Engineer and project leader for:

- R&D in burning techniques: rotary kilns for MgO burning, Shaft kiln technology, tunnel furnaces for refractory burning: optimization of energy efficiency, product qualities and flue gas emissions



Development of a new burning process on basis of flue gas recirculation

Curriculum Vitae

- Staged combustion at rotary kiln furnaces
 - Investigation of the FLOX burning concept
 - Development of NO_x-reduction technologies for high-temperature burning processes
 - Member of the Technical Working Group in Seville for preparation of the BREF-Document for the sector MgO/Dolomite
 - Thermodynamic simulations for chemical interactions between slag and refractory linings in the field of pyrometallurgy
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Curriculum Vitae

11/2007 – 09/2011 ENVIRGY/STRABAG AG: Industrial plant building
Process engineer



- 1) Designing and engineering of plants for flue gas treatment in the industrial fields of cement, steel, waste incineration, refineries, etc
- 2) Engineering of SCR, SNCR and SNOx-plants (catalytic recovery of sulfuric acid out of SO₂ containing exhaust gases)
- 3) Commissioning of plants for flue gas treatment at waste incineration plants and oil refineries
- 4) Process simulation with Computational Fluid Dynamics (CFD ANSYS Fluent) and thermodynamic simulation tools (Outotec HSC chemistry, Fact Sage)
 - a) Multiphase-Simulation with ANSYS Fluent
 - b) Optimization of mixing in the context of possibly low pressure drop
 - c) Design of heat exchangers
 - d) Design of guide vanes in flue gas ducts
 - e) Optimization incident flow characteristics of plant components
 - f) Simulation of multi-element chemistry

Curriculum Vitae



09/2011-04/2012

SMS Siemag Process Technology



Responsible R&D Manager and senior engineer

- Process development for hydrometallurgical processes
- Alternative route for aluminium production
- Hydrothermal iron and HCl-recovery
- Leader of the R&D Team for the chemical part

09/2012: Co-Foundation of MME Chemical Solutions

01/2013: Foundation of MME Engineering

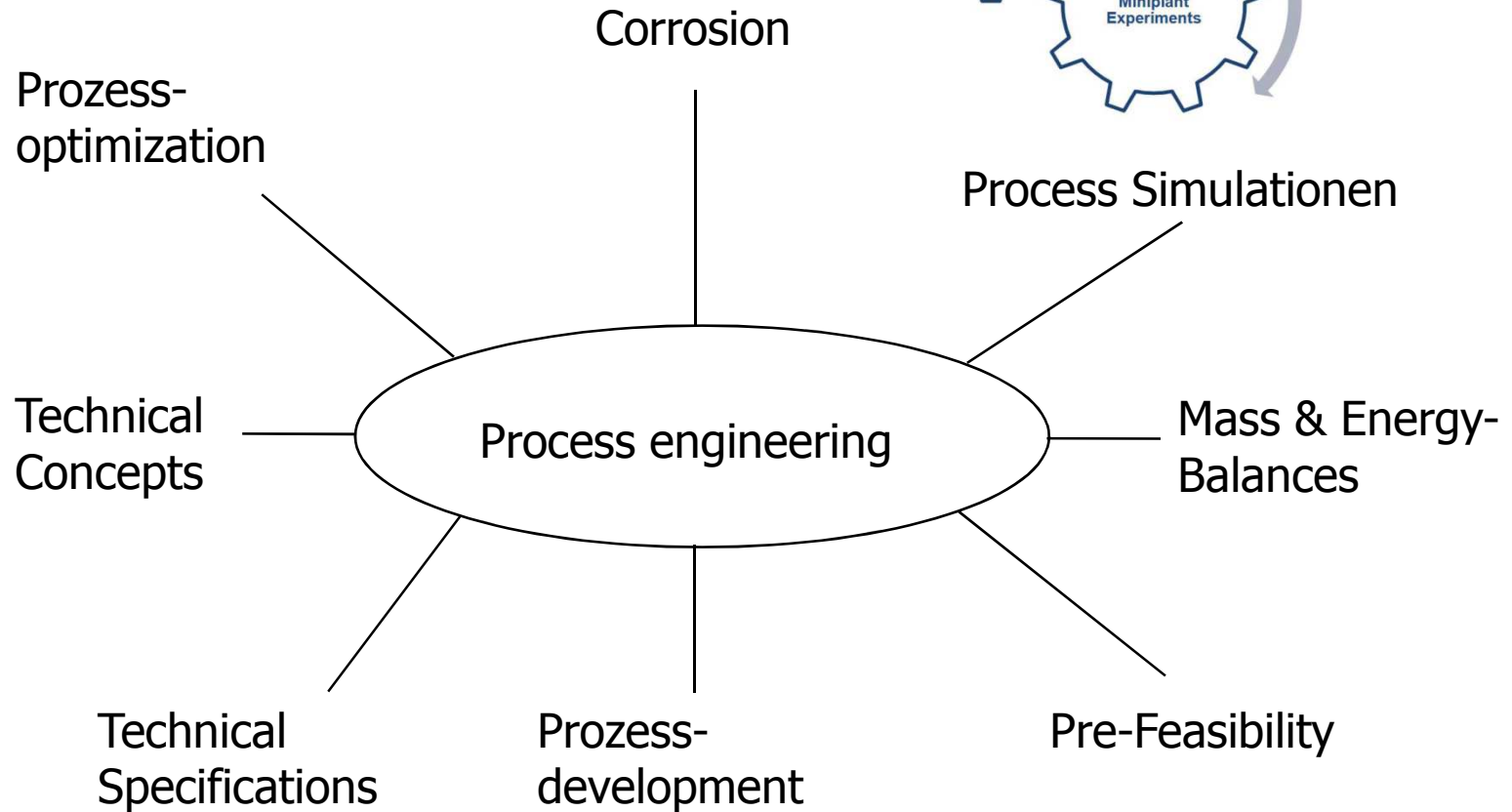
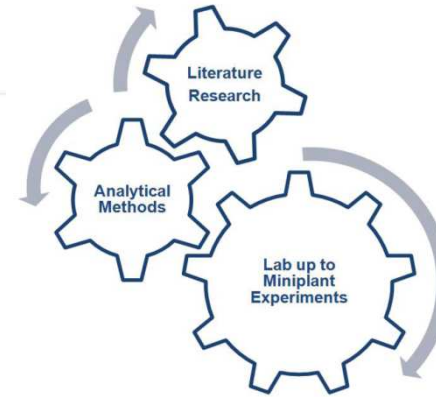
Technical background and experience

PhD in the profession inorganic technology

Work experiences following fields:

- DeNO_x , SNO_x (oil refineries OMV Austria and Petrobras) and SNCR
- engineering in the field of flue gas cleaning for waste incineration plants
- Re-burning (Thermal post-combustion) and staged combustion (rotary kiln engineering, shaft kiln engineering, tunnel furnace engineering)
- refractory producing technologies
- De-dusting
- scrubber
- Oxy-Fuel
- hydrometallurgical process development
- MgO producing technologies
- tungsten recycling technologies and hardmetal alloy development

Activities:



Prozess-
optimization

Corrosion

Process Simulationen

Technical
Concepts

Process engineering

Mass & Energy-
Balances

Technical
Specifications

Prozess-
development

Pre-Feasibility

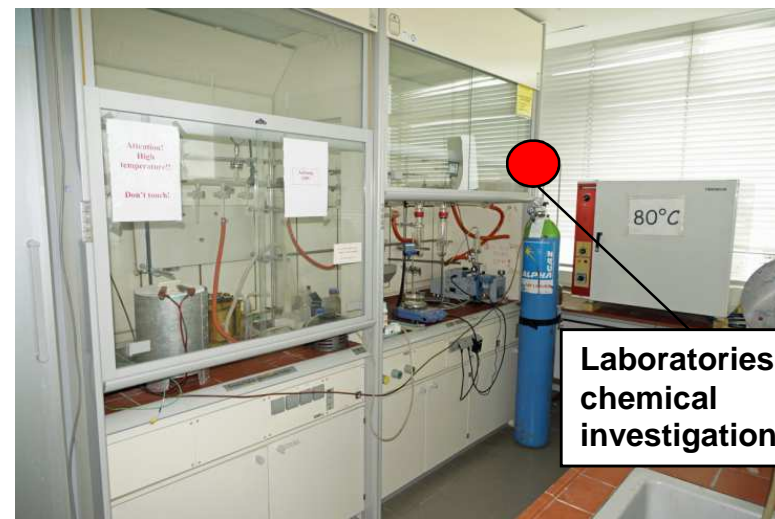
Workbench:

MME Chemical Solutions is able to decode the chemistry. We have the professional qualification to conduct this project. The access to highly sophisticated chemical analysis technologies and to a high developed infrastructure enables us to process projects in the field of chemical engineering.

Chemical investigations and the associated analyses can be performed in an uncomplicated and fast way. The activities are conducted in cooperation with the competence center CEST located 50 km south of Vienna. All mentioned analysis technologies and laboratory areas are available at this campus.



Technology center. In sum 23 000 m² laboratory area are available !!



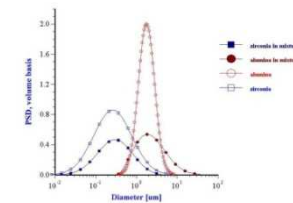
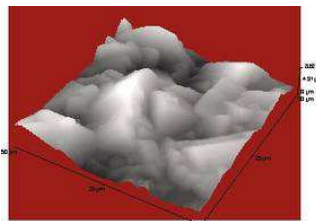
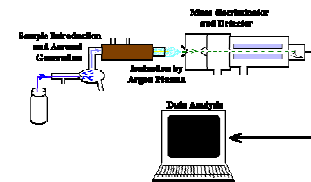
Laboratories for chemical investigations

Workbench:

Analytical Methods

- ICP/MS
- GD/OES
- Ion Chromatography
- XRD X-Ray Diffraction
- SEM Scanning Electron Microscope
- Infrared Spectroscopy
- Zeta Potential
- Raman Spectroscopy
- TOC Determination
- FIB Focused Ion Beam Quanta
- AFM Atomic Force Microscope
- High Temperature Cell
- TGA/MS

Laboratory



Scientific Database:

Literature Research

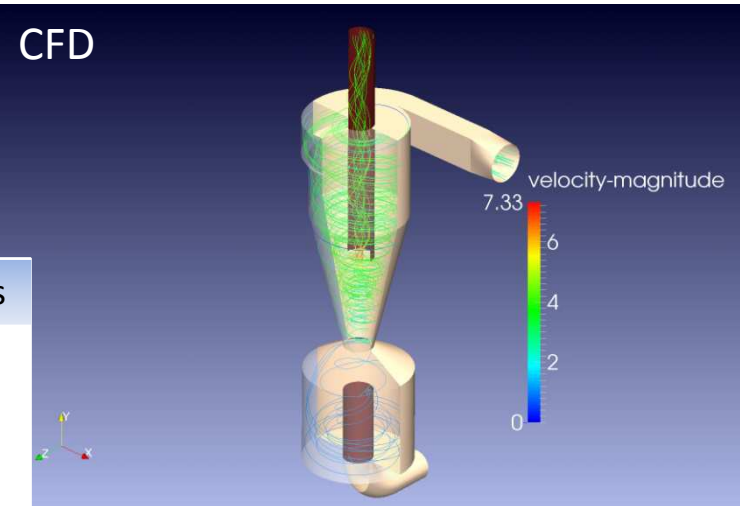


Workbench:

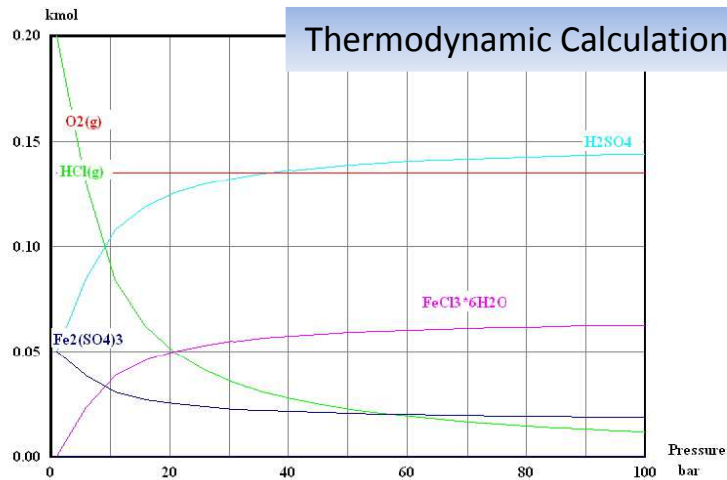
Process Simulation:

- **Computational Fluid Dynamics**
- **Thermodynamic Simulation Tools**
- **Neuronal Network**

CFD



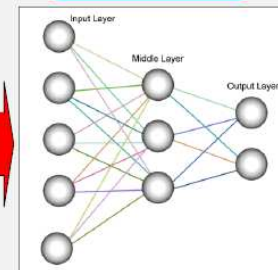
Thermodynamic Calculations



Neural network

Input

Data for self learning system (Process- and Product Quality Data):
Temperature,
Crystal size, Mass Flow,
Pressure,
pH-Value, etc.



Output

Taylor-made NN-Model for identification of the most important correlations + forecasting within the investigated system



References:

Doctoral thesis

Hydrometallurgical Process Development/WOLFRAM

Projects under MME Chemical Solutions OG

Orbite Aluminae / Mineral & Metallurgy / Canada / 2012

M&K Engineering / Mineral / USA / 2012

Strabag / Environment / Austria / 2013

RHI / Environment / Austria / 2013

Projects under MME Engineering

Combustion Solutions GmbH

Strabag Energy Technologies GmbH

Gas Connect Austria GmbH

Wolfram Bergbau und Hütten AG

Philosophy:



MME Engineering follows the philosophy of the Austrian Association of Consulting Engineers. It acts exclusively on behalf of the customer. It always protects the interests of the particular client, regardless of its own interests or those of third parties.

MME Engineering is committed to execute projects in a transparent way with the aim to supply the client with essential information focused on the given technological problem.

All involved engineers of MME Engineering are obliged to secrecy, not only throughout but also after finishing the project.

The intention of all involved technicians is to apply all their technological creativity and professional experience with the objective to solve technical problems effectively.

MME Engineering guarantees the use of state-of-the-art analytical technology. Highly qualified technicians at MME and the cooperating institutes ensure professional research and development work.

MME Engineering follows the guideline „keep it simple and effective“. Nevertheless, new technologies disclose new opportunities. MME always keeps up to date with the latest innovations of novel technologies.

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