

1. **Family Name:** Imgrund
2. **First Names:** Thomas
3. **Date of Birth:** November 08, 1975
4. **Nationality:** German
5. **Civil Status:** married

6. **Education:**

Institution:	University of Applied Sciences Georg Agricola, Bochum/ Germany
Date:	1999 – 2003
Degree:	Discipline: Geotechnical Engineering Degree: Dipl.-Ing. (Graduate Engineer)

7. **Language Skills:** (1 = working knowledge, 5 = excellent)

Language	Reading	Speaking	Writing
German	native language	native language	native language
English	5	5	5
Spanish	1	1	1

8. **Membership of Professional Bodies:**

Association of German Mining Engineers (Ring Deutscher Bergingenieure e.V.)

UNECE Ad Hoc Group of Experts on Coal Mine Methane

ISO TC 263 Coal Bed Methane

9. **Present Position:** Senior Engineer

10. **Years within the Company:** since 2003

11. Key Qualifications:

Consulting and Engineering

- Mining
- Gas Management/ Gas Drainage
- Gas Outburst Prevention
- Mine Ventilation
- Gas Content Tests & Gas Make Forecasts
- Risk Assessment
- Coal Seam Gas Resource Assessment
- CMM, VAM & CBM Recovery & Utilisation
- Mine Closures & Abandoned Mine Methane (AMM)

Ventilation Modelling (Ventsim)

Reservoir Modelling (SIMEDWin)

Accredited Expert for mine gas emission control
(State of North Rhine Westfalia/ Germany)

Project Management

12. Specific Foreign Countries Experience:

Country	Date
Albania	2018
Australia	2011 - 2013
Bosnia - Herzegovina	2009
China	2007 - 2010, 2016
Czech Republic	2010, 2017
France	2003, 2006, 2007
Germany	2003 - 2018
India	2010, 2013, 2014, 2016
Iran	2015
Kazakhstan	2010 - 2018
Mexico	2013 - 2017
Poland	2014, 2015
Russia	2007, 2011 - 2017
Slovenia	2013
Sweden	2008
Switzerland	2008
Turkey	2012 - 2015
Ukraine	2009 - 2011
USA	2009, 2010, 2013 - 2016
Vietnam	2012

13. Professional Experience Record:

Date:	since 2008
Location:	Germany
Company:	DMT GmbH & Co. KG
Position:	Mining Consultant Accredited Expert
Description:	Mining Consulting and Engineering Ventilation and Gas Management Business Development
Date:	2003 - 2007
Location:	Germany
Company:	DMT GmbH
Position:	Project Engineer
Description:	Ventilation and Gas Management
Date:	1996 - 1999
Location:	Germany
Company:	Lohberg-Osterfeld Colliery/ Deutsche Steinkohle AG, Germany
Position:	Skilled Mine Worker
Description:	U/G gas drilling, maintenance of gas drainage system, mine ventilation

14. Major Projects:

Date:	2010 - 2018
Location:	Kazakhstan
Company:	Arcelor Mittal, Kazakhstan
Position:	Consultant & Project Manager
Description:	Improvement of gas outburst management at Karaganda coal mines - Review and audit of gas outburst management at 8 u/g coal mines - Review of organisational structures and procedures - Review of gas outburst regulation - Recommendations on improving gas outburst management with respect to operational safety & health and efficiency - Investigation of two large scale gas outbursts Introduction of gas content and sorption isotherm testing - Design and delivery of lab for gas content and sorption isotherm tests - Design, delivery and introduction of sampling equipment - Training of laboratory and sampling staff

Date: 2013 - 2018
Location: Mexico
Company: Minera del Norte, Mexico
Position: Consultant & Project Manager
Description: Improvement of gas outburst management at 3 u/g coal mines
- Audit of gas outburst prevention
- Recommendations on drilling schemes and remote development
- Recommendations on improving management structure and processes
- Improvement of pre-degassing and ventilation
- Investigation of gas outburst
Turn-key delivery of coal sampling and gas laboratory equipment
- Design and delivery of lab for gas content, desorption and sorption isotherm tests
- Commissioning of sampling equipment and laboratory
- Training of staff for underground drilling and lab tests

Date: 2003 - 2018
Location: Germany
Company: RAG Deutsche Steinkohle AG, Germany
Position: Accredited Expert Gas Emissions
Description: Consulting and Expert Opinion for 8 u/g coal mines and 10 u/g dewatering shafts at Ruhr, Ibbenbueren and Saar Basins
- Evaluation and forecast of longwall gas emissions
- Reservoir modelling and permeability tests
- Improvement of gas drainage
- Management of CH₄ and CO₂ emissions
- Ventilation and gas control along with closure of large mining complexes
- Gas control without ventilation during backfilling of up to 1,500 m deep shafts
- Gas control during access to abandoned mine workings
- Auditing of safety measures
- Training of ventilation supervisors
- R&D projects

Date: 2004 - 2018
Location: Germany
Company: STEAG, Germany
Position: Project Manager & Consultant
Description: Consulting & Design for Abandoned Mine Methane (AMM) projects at Ruhr, Ibbenbueren and Saar Basins
- Evaluation of gas reserves
- Forecast of extractable gas flow from closed mines and sealed mine workings
- Evaluation of several gas recovery projects
- Detailed Engineering of gas production well

Date: 2015 - 2018
Location: Iran and China
Company: IMIDRO, Iran
Position: Consultant
Description: Owners Engineer for Parvadeh IV Coal Mine Project, Tabas
- Review of design options and ventilation planning for u/g coal mine
- Evaluation of mining method and equipment proposed by contractor and inspection of method at coal mine in China

Date: 2018
Location: Albania
Company: Albchrome, Albania
Position: Consultant
Description: Improvement of gas management at Bulqiza Chromite Mine
- Recommendations to manage emissions of H₂ and CH₄
- Recommendations to improve ventilation, gas drainage and monitoring
- Review of design report and implementation of Chinese contractor

Date: 2017
Location: Russia
Company: Evraz, Russia
Position: Project Manager
Description: Technical analysis of Raspadskaya Koksovaya mining efficiency
- Site visit and review of mine development plans
- Recommendations for improving productivity and recovery of room & pillar mining operation in 11 m thick seam
- Evaluation of gas drainage/ ventilation and assessment of improvement potential
- Evaluation of safety measures (gas outbursts, rock bursts, floor heaving and spontaneous combustion) and assessment of improvement potential
- Advising client regarding mine developments strategy and selection of mining method (room & pillar vs. longwall)

Date: 2017
Location: Australia
Company: Metropolitan Collieries Pty Ltd/ Peabody Energy, Australia
Position: Consultant
Description: Review of gas outbursts in longwall operations
- Review of documentation of 2 CO₂ gas outbursts at longwall 27 of Metropolitan Colliery
- Review of documentations of gas outbursts in German longwalls
- Evaluation and comparison of relevant factors leading to gas outbursts and of safety measures
- Recommendations for improving gas outburst management

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- Date: 2017
Location: Europe
Company: Arcelor Mittal, Luxembourg
Position: Consultant
Description: Due Diligence for acquisition of u/g coal mines
- Review of ventilation, degassing, spontaneous combustion and health & safety
- Assessing risks in acquisition of mine operations
- Date: 2006 - 2017
Location: France
Company: European Gas Ltd./ Francaise de l'Energie, France
Position: Consultant
Description: Assessment of Abandoned Coal Mine Methane (AMM) projects at Nord/Pas de Calais, Loire and Gardanne coal basins
- Evaluation of gas in place and gas reserves
- Forecast of extractable AMM flow and reservoir pressures
- Conceptual Design for dewatering and gas extraction
- Date: 2014 - 2016
Location: Turkey
Company: Polyak Eynez Enerji, Turkey
Position: Consultant
Description: Gas Studies for 4.5 mtpa u/g thermal coal mine project
- Determination of gas content according to ISO 18871:2015
- Gas content contour mapping
- Gas make forecasts for 9 conventional and LTCC longwall panels
- Risk Assessment
Review of mine design and access options
- Conceptual Design of ventilation options
- Advice on gas management & prevention of spontaneous combustion
- Mine design workshop with client's professionals
- Date: 2014 - 2015
Location: Poland
Company: NWR Karbonia, Poland
Position: Consultant
Description: Pre-Feasibility Study for Debiensko U/G Coal Mine Project
Gas & Ventilation Study
- Review of mine, ventilation, gas drainage and air cooling designs
- Review of gas make forecast
- Risk Assessment and recommendations for Feasibility Study work program

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- Date: 2013 - 2014
Location: India
Company: Electrosteel Castings Ltd, India
Position: Project Manager
Description: Design of gas drainage system for 1 mtpa u/g coal mine
- On-site investigation of gas emissions sources
- Forecast of gas emissions
- Conceptual Design & Basic Engineering
- CAPEX & OPEX estimations
- Advice on organisational structures, training, approval procedures and implementation plan
- Advice on ventilation of room & pillar workings
- Training of mine management and workforce
- Auditing of implementation
- Date: 2013 - 2014
Location: India
Company: ACC Minerals, India
Position: Consultant
Description: Owners Engineer for Bicharpur Coal Mine, India
- Review of mine and ventilation designs for 1 mtpa room & pillar project
- Review of gas content tests and gas make forecast
- Date: 2013 - 2014
Location: Turkey
Company: TTK, Turkey
Position: Project Manager
Description: Introduction of gas content and sorption isotherm testing
- Design and delivery of lab for gas content and sorption isotherm tests
- Training of laboratory and sampling staff
- Advice on improvement of gas outburst prevention
- Date: 2012 - 2014
Location: Turkey
Company: Soma Holding, Turkey
Position: Consultant
Description: Determination of gas contents and consultancy for 2 u/g coal mines under construction
- On-site assessment of gas emissions and ventilation
- Supervision of gas content tests
- Advice on ventilation and gas emission control
- Date: 2014
Location: Kazakhstan
Company: GIZ, Deutschland/ Kazgeologiya/ Kazakhstan
Position: Consultant
Description: Master Class
- Coal Bed Methane extraction strategies

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- Date: 2013
Location: India
Company: SAIL & Tata JV, India
Position: Consultant
Description: Pre-feasibility Study on pre-degassing & CBM
- Review of exploration results and mine design
- Comparison of different gas drainage strategies
- Conceptual Design for surface boreholes and underground borehole schemes
- Evaluation of feasibility of CBM extraction
- CAPEX, OPEX and cash flow model
- Date: 2006 - 2013
Location: China, Russia, Ukraine, Bosnia-Herzegovina, Czech Republic, Germany
Company: Several international clients:
RWE (Germany), STEAG (Germany), MTM Capital Partners (UK), Mercuria Energy Trading (Switzerland), One Carbon (Netherlands), Greengas International (Netherlands/ Czech Republic)
Position: Consultant
Description: Consultancy on 50+ mine gas recovery & utilisation projects (CMM, VAM)
- Technical Due Diligence
- Coal sampling and gas content testing
- On-site verification of gas emissions
- 10 year gas emission forecasts
- Basic Engineering of improved gas drainage
- Conceptual Design of gas utilisation facilities
- Review of projects and reserve assessments
- Date: 2011 - 2012
Location: Australia
Company: Vale, Australia
Position: Project Manager & Consultant
Description: Peer Review, Concept Study and Pre-Feasibility Study for 10 mtpa underground multi seam coal mine project
- Project management
- Mine design and risk assessment workshops
- Mine Design Engineering Study
- Gas and Ventilation Engineering Study
- Development of innovative approaches for gas outburst management
- CAPEX & OPEX estimations
- Date: 2012
Location: Russia
Company: SUEK, Russia
Position: Consultant
Description: Consultancy on gas content testing
- Review of existing equipment and international best practice
- Consultancy on gas emission forecasting and outburst risk assessment

Date: 2012
Location: Vietnam
Company: CFT, Germany
Position: Consultant
Description: Consultancy on gas drainage and establishment of gas utilisation at underground coal mine
- On site visit, review of gas emission and mining situation
- Gas drainage and utilisation strategy

Date: 2010 - 2011
Location: Ukraine
Company: Arcelor Mittal, Luxembourg
Position: Consultant
Description: Due Diligence for Lubel U/G Coal Mine Project
- Supervision of coal sampling and gas content testing
- Review of ventilation design and H&S

Date: 2010 - 2011
Location: Germany
Company: BASF Corporation, USA
Position: Consultant
Description: Market analysis on Ventilation Air Methane (VAM) utilisation
- Review of worldwide coal mine gas emissions
- Review of technologies for VAM utilisation
- Assessment of possible application of catalyst technology
- Assessment of pollutants

Date: 2010
Location: Ukraine
Company: DTEK, Ukraine
Position: Consultant
Description: Review of gas drainage system at large u/g coal mine at Donbass Basin
- Audit of entire gas drainage system and longwall ventilation on-site
- Analysis of gas emission data
- Gas emission forecast
- Basic Engineering of improved gas drainage

Date: 2007
Location: Russia
Company: Saar Energie AG, Germany
Position: Project Engineer
Description: Assessment of gas drainage and ventilation systems at Vorkuta Basin u/g coal mines
- 2 weeks on-site assessment of gas emissions and practise of gas management
- Coal sampling and gas content testing
- Gas emission forecasts
- Basic Engineering of improved gas drainage and gas emission control

Date: 2003
Location: France/ Germany
Company: HBL, France
Position: Project Engineer
Description: Expert Opinion for closure of deep coal mine shaft at Lorraine-Saar Basin
- Evaluation of gas emissions
- Ventilation and gas management along with mine closure and backfilling of 1,070 m deep service shaft

15. Publications & Papers:

IMGRUND, T., BALTZ, R., BAIMUKHAMTOV, S. and POLCHIN, A. (2017): Managing Mishaps. World Coal May 2017 Volume 26 Nr. 4. Palladian Publications/ UK

IMGRUND, T., STUDENY, A. and ZITZER, A. (2015): Reliable ventilation modelling – Merging geotechnical assessment and ventilation planning. World Coal May 2015 Volume 24 Nr. 5. Palladian Publications/ UK

IMGRUND, T. and SHALASHINSKI, A. (2015): Directional drilling – a new technology to improve the efficiency of preliminary degassing at Russian coal mines. Mining Report 55 (2015) Number 1. VGE Essen/ Germany

IMGRUND, T. (2014): Introducing international best practice of mine safety. Paper presented to International Conference and Exhibition on Occupational Health and Safety in Mines 2014, Istanbul/ Turkey, December 4 - 5

IMGRUND, T. (2014): Using expensive machinery effectively - Reducing mine methane influence on production rates. Paper presented to MINEX 2014, Moscow/ Russia, October 14

IMGRUND, T. (2013): Relaxation and gas drainage boreholes for high performance longwall operations in low permeability coal seams. Paper presented to International Scientific and Practical Conference Underground Mining - 21st Century 2013, Leninsk Kuzneski/ Russia, October 16 - 18

IMGRUND, T., TE KOOK, J. and STUDENY, A. (2013): International experience on influence of strata control on gas emission control. Paper presented to International ISM Congress 2013, University of Aachen/ Germany, September 16 – 20

IMGRUND, T. (2013): Sharing best practice – Review of international best practice for gas management. World Coal May 2013 Volume 22 Number 05. Palladian Publications/ UK

IMGRUND, T. and BAUER, F. (2013): Relaxation and gas drainage boreholes for high performance longwall operations in low permeability coal seams. Paper presented to AIMS Aachen International Mining Symposia 2013, University of Aachen/ Germany, May 22 - 23

IMGRUND, T. and SHALASHINSKI, A. (2013): Modern Practise in Methane Management. Paper presented to Mining World Russia 2013, Moscow/ Russia, May 14

IMGRUND, T. and THOMAS, R. (2013): International experience of gas emission and gas outburst prevention in underground coal mines. Paper presented to Coal Operators Conference 2013, University of Wollongong/ Australia, February 14 - 15

IMGRUND, T. (2012): Gas outburst prevention – International experience. Paper presented to 2nd International Research and Practice Conference, Problems regarding methane in coal mines and ways of their solution, Karaganda/ Kazakhstan, June 26 - 27

BRANDT, J., IMGRUND, T. and BECKMANN, K. (2011): Ausgasungsprobleme im internationalen Bergbau und ihre Lösung. Paper presented to 11. Bergbau Forum, Cologne/ Germany, September 8 - 9

KUNZ, E. and IMGRUND, T. (2011): Pre-drainage of Deep Coal Seams. Paper presented to UNECE Workshop on Coal Mine Methane Recovery and Utilization, Donetsk/ Ukraine, September 21 – 22

IMGRUND, T. (2010): Internationale Projekte zur Grubengasverwertung - Erfahrungen eines technischen Beraters. Glückauf 146 (2010) Nr. 3. VGE Essen/ Germany

IMGRUND, T. (2009): International CMM and VAM Project Development - Experiences of a Mining Consultant. Paper presented to US Coal Mine Methane Conference 2009, Birmingham/ USA, September 30 – October 1