

Thyssen Schachtbau Group



Thyssen Schachtbau GmbH



THYSSEN MINING
Focused on... Safety, Quality, and Cost



Technologie + Service 

TS



Thyssen Schachtbau Group

- Family owned for over 130 years -



August Thyssen
Founder



Fritz Thyssen



**Anita Countess
Zichy-Thyssen**



**Claudio Count
Zichy-Thyssen**
Present Owner

Thyssen Schachtbau's roots go back to the Industrial Revolution in Europe and the company's founder, August Thyssen (1842 - 1926). August Thyssen quickly became a self-made millionaire through the use of vertical integration of his companies. Recognizing the vast natural resources of the Ruhr for iron and steel production, Thyssen literally transformed the region and is considered one of the fathers of the Industrial Revolution in Europe.

- **1867** - Thyssen founded his first rolling mill.
- **1871** - August Thyssen established the firm "Gewerkschaft Deutscher Kaiser", which united all his coal and steel companies under one name. The company sunk its first shaft in the Hamborn coalfields.



Shaft Sinking 1872 - Deutscher Kaiser I

- **1905** - The company began including shaft freezing techniques within its field of operations.

- **1911** - The company sank two shafts in Belgium, its first international work.

The company's core business at that time was shaft sinking and exploratory drilling. Shafts were initially constructed using conventional sinking methods, but the company then went on to employ the newly developed freeze sinking technique - and it was this which established Thyssen's reputation in the field of mine-shaft construction.

- **1919** - the Mülheim-based company changed its name to Schachtbau Thyssen GmbH.

Activities at that time included all kinds of drilling and boring work, shaft fitting, colliery operations and the setting up of branch offices in Germany and elsewhere, as well as the acquisition of, and investment in, undertakings with similar business objectives.

Thyssen's holdings eventually extended from Germany to France, Belgium, the Netherlands, India, Russia, and South America. His companies became the biggest coal operators in Germany, employing over 50,000 workers and producing over one million tons of steel and iron per year

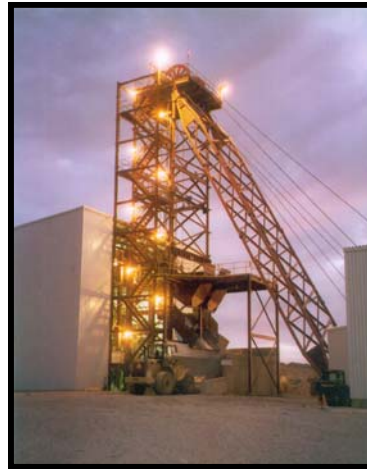
- **1926** - Fritz Thyssen succeeded his father and took over the family's iron, steel, and coal business at the age of 53.



He combined the family holdings into a trust (Vereinigte Stahlwerke AG (United Steelworks Co.) that controlled more than 75 percent of Germany's coal reserves and employed over 200,000 people. In the break up of German heavy industry imposed by the Allies following World War II, the Vereinigte Stahlwerke was liquidated, and the steel-making firm, August Thyssen-Hutte AG, was one of 18 companies created from the remains. After World War II, Thyssen Schachtbau GmbH became the main private holding of the Thyssen family. Under Amelia zur Helle Thyssen, the company continued to grow and diversify into mining, construction, and manufacturing. The company also expanded internationally through acquisitions and the start up of new enterprises.

- **1968** - the change of name to Thyssen Schachtbau GmbH registered the fact that the company had its roots in the shaft sinking business.
- **Today** - Thyssen Schachtbau GmbH's consists of almost 20 companies operating on all continents with over 4,000 employees. Its business units include Mining International, Mining Germany, Production Germany, Construction Germany, and Construction International.

The Thyssen Group, through subsidiaries, partnerships, and joint ventures, works internationally in Europe, Great Britain, Africa, Asia, Australia, and North and South America. The company is privately owned by Count Claudio Zichy-Thyssen (1942 - present), the great-grandson of industrialist August Thyssen.



Getchell Gold Headframe, NV, USA

The company has sunk over 300 shafts worldwide for a total depth exceeding 150,000 meters. In addition, the company has completed well over 1,000 km of tunnels and lateral development utilizing a variety of equipment such as road headers, tunnel boring machines, and drill jumbos. The company is recognized around the world as one of the pre-eminent names in mine construction.

Our Assets

- The driving force behind our success -

- Our People -

The success of our business is due entirely to the dedication and experience of our people. Our senior staff offers a wealth of experience in all aspects of underground mining, obtained all over the globe. We pride ourselves on having a highly skilled workforce and the willingness to pass these skills on to the next generation of miners. We strive to treat all our people and our clients with respect, fairness and integrity.

- Our Systems -

Safety is the #1 priority for us, and that is reflected in our workers, our management, and in our culture. Training manuals and systems are provided for our employees, and safe work procedures and equipment maintenance systems are in place to ensure that a job gets done safely, on-time and successfully the first time and every time.

- Our Technology -

We pride ourselves on using modern, innovative techniques and equipment, allowing us to provide the best services possible to our clients. With many of our companies having in-house engineering and rebuilding capabilities, and being able to work in remote areas and extreme cold/heat, there is no challenge that we cannot meet and perform successfully.

- Our Diversity -

Whether your requirements are bored or frozen shafts, mine development, civil or hydro tunnels, the Thyssen Group can pull key personnel and equipment from around the globe to meet your specific needs.



Our Achievements

- They make us stand out from the rest -

The Thyssen Group of companies has successfully completed in excess of 2,000 projects across the globe, over a period spanning 132 years.

Some statistics:

- 267 conventionally sunk shafts with a total shaft depth of 114 km and a depth of up to 1,350 m in a single shaft.
- 74 shafts and shaft collars sunk using the ground freezing technique, with approximately 19 km of ground frozen to a depth up to 600 m.
- 51 mechanically bored shafts using a shaft borer with a diameter ranging from 4.5 m - 8.2 m, up to 1,260 m in a single shaft and with a combined length of 19 km.
- Well in excess of 1,000 km of horizontal development in coal and metal mines, currently excavating approximately 75 km per year.
- In excess of 50 km of vertical development using raise boring and Alimak raising methods.
- Construction of 129 coal bunkers up to 195 m in depth, with combined depth of more than 5 km.
- Over 40 km of railway and road tunnels completed.



Tunnel Lining and Bolting Techniques

Some specific achievements:

- **Shaft boring:** The TS-Group is the world leader in shaft boring. The deepest shaft sunk using a shaft borer in the world was completed in Primsmulde, Germany, with a depth of 1,260 m and final diameter of 7.0 m. The pilot hole was drilled with a maximum deviation of 60 cm over 1,260 m. The reaming of the 1.8 m diameter pilot shaft also set a world record for longest single pass raise bored hole and was completed at an average reaming rate of 40 m per day.

Thyssen has successfully bored shafts in rock with a UCS in excess of 500 Mpa. Currently, shaft operations are taking place in Australia, Canada (Saskatchewan and Quebec), the US (Kansas), Germany and Switzerland.

- **Trackless mine development and production:**

The TS-Group is a leader in the safe development and operation of underground hard rock mines in Australia and North America. Over the years, this expertise has been successfully exported to countries as



Completed inset with steel rings and concrete backfilling

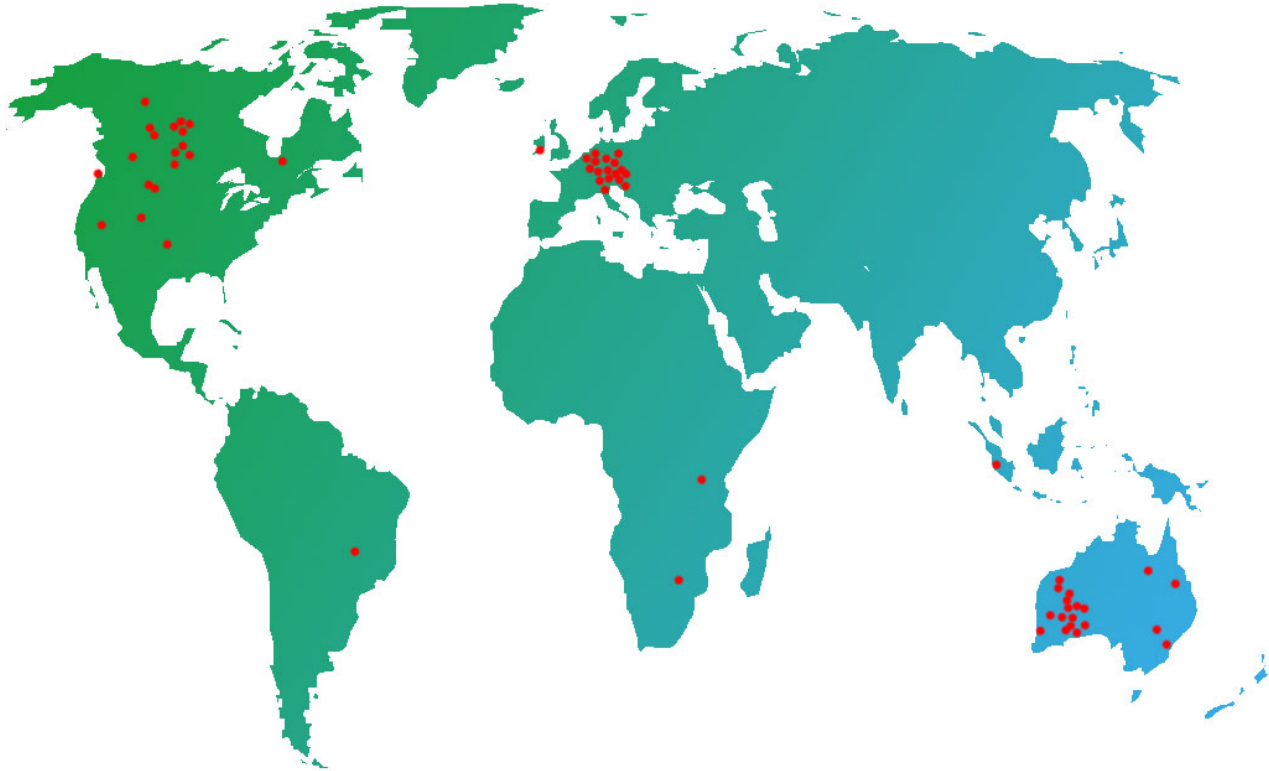
diverse as Tanzania, Ireland and South Africa. An example is the ongoing development of Barrick's Bulyanhulu gold mine, where a combined expatriate and local work force has regularly achieved in excess of 1,000 m of drifting per month.

- **Ground freezing:** The Thyssen Group started using the ground freezing technique to sink through wet, unconsolidated overburden in 1905. In 1960, TMCC's predecessor was established in Canada to introduce the freezing technique to North America and sink shafts for Saskatchewan's emerging potash industry. Today, Thyssen is arguably the only mining contractor with the in-house expertise and equipment to design and execute frozen shafts and collars. Currently, the technique is used at three projects in Canada and the US.
- **Engineering:** The Thyssen group has a history of innovative engineering, resulting in not only the on-going development of the shaft boring and freezing techniques but also in the development of shaft and tunnel lining methods (fully mechanized bolting, screening and shotcreting, precast lining of spiral coal chutes), deep exploration and directional drilling, shaft hoisting systems, cover grouting systems, etc.



A Few of Our Recent Projects / Clients

- There is no location too remote -



America (TMCC)

- ❖ Cameco
- ❖ Cogema/Areva
- ❖ Phelps Dodge
- ❖ Placer Dome
- ❖ BHP Biliton
- ❖ PCS Potash
- ❖ CVRD
- ❖ IMC
- ❖ Underground Vaults & Storage
- ❖ Shore Gold

Europe (Thyssen Schachtbau, Oestu-Stettin)

- ❖ DSK (GER)
- ❖ K+S (GER)
- ❖ DBE (GER)
- ❖ ARGE Transco (CH)
- ❖ Esco (GER)
- ❖ Siemens Power Generation (GER)
- ❖ Boliden (Ireland)
- ❖ Lufthansa
- ❖ Öester. Bundesbahnen
- ❖ Deutsche Bundesbahn

Australia/Africa (ByrneCut Mining, Jetcrete)

- ❖ Gold Fields
- ❖ Newcrest
- ❖ Newmont
- ❖ Harmony Gold
- ❖ WMC Resources
- ❖ Barrick
- ❖ Aditya Birla Group
- ❖ Tritton Resources
- ❖ Homestake Resources
- ❖ Normandy Ltd.



Our Companies

- The Cornerstone of Who We Are -



Thyssen Schachtbau GmbH

machinery and equipment, the Division's highly-trained personnel are mainly engaged in driving level development roads in coal and stone. This primarily involves roadway drirage work and the construction of underground cavities of all types. TS Mining Division also provides a wide range of general mining services.

TS *Shaft Sinking and Drilling Division* provides a full range of shaft construction, sinking and drilling services for mining industries around the world. Access to the resources of subsidiaries and affiliates means that the Division can quickly increase its highly skilled manpower, and its operating equipment, to meet the requirements of international clients.

What We Offer

- Mine Development
- Shaft Sinking
- TBM and Roadheader Applications
- Shaft Boring
- Hard / Soft Ground Tunnelling
- Underground Support
- Grouting and Shotcreting
- Raise Boring
- Directional Drilling
- Diamond Drilling
- UG Construction (Mechanical / Electrical, Shaft Pipes/API)
- Conventional and Alimak Raising
- Cover Grouting
- Ground Freezing
- Tunnelling
- Civil Construction
- Shaft Repair Work
- Engineering

Thyssen Schachtbau GmbH's Mining Division employs some 850 people and most of its operations are carried out for Deutsche Steinkohle AG collieries in the Ruhr and Saar areas. Equipped with an extensive pool of

Dipl.-Ing. Michael Haccius
Friedrich-Ebert-Straße 120
Postanschrift:
Ruhtstraße1
D-45468 Mülheim an der Ruhr
Tel.: (+49) 208 3002 - 261
Fax: (+49) 208 3002 - 276
bergbau@thyssen-schachtbau.com
<http://www.ts-bergbau.de>

Dr.-Ing. Norbert Handke
Friedrich-Ebert-Straße 120
Postanschrift:
Ruhtstraße1
D-45468 Mülheim an der Ruhr
Tel.: (+49) 208 3002 - 281
Fax: (+49) 208 3002 - 395
schachtbau@thyssen-schachtbau.com
www.shaftsinking-mining.de



THYSSEN MINING
Focused on... Safety, Quality, and Cost

Thyssen Mining Construction of Canada Ltd. provides a comprehensive range of specialist mining services for customers in North America. This comprises shaft construction, shaft boring and mine

development work up to and including complete contract mining services. The company maintains a large, well-equipped workshop and an extensive fleet of modern mining equipment, complemented by a highly motivated and skilled workforce, with the result that clients can be assured of the most reliable and cost effective solutions to their mining requirements.

René Scheepers
President
2409 Albert St. North
Regina, SK, Canada S4P 3E1
Tel.: +1 (306) 949-6606
Fax: +1 (306) 543-5844
info@thyssenmining.com
www.thyssenmining.com

What We Offer:

- Shaft sinking
- Shaft boring
- Mine development (level, ramp, and raise)
- Mine operation (stoping, trammig, hauling, etc.)
- Mine rehabilitation and dewatering
- Ground control
- Raise boring & mining
- Civil tunneling
- Civil and mine construction
- Mechanical and electrical installation
- Ground freezing
- Grouting
- Shotcreting
- Road header operation
- Project Management



- Thyssen Schachtbau Group – Your Mining Partner! -



Our Companies

- The Cornerstone of Who We Are -

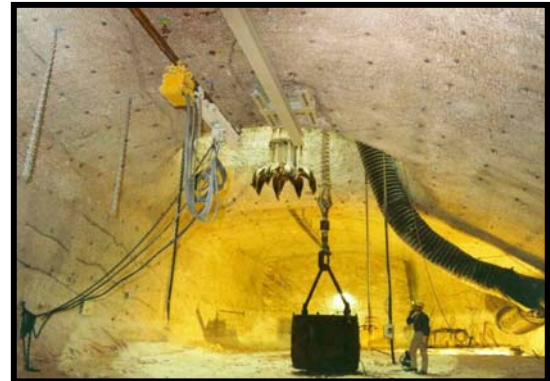


ByrneCut Mining Pty Ltd. specializes in minerals exploration, development and extraction. ByrneCut Mining provides an efficient and cost-effective range of services in conjunction with the very high safety standards practiced by one of the world's leading mining services companies. Originally established as an underground mining company in western Australia, the company has extended its operations to include Indonesia, Africa and Europe. The company is now in a position to carry out a whole range of specialist mining operations, both above and below ground, in places as far apart as Europe, Africa and North and South America.

Steve Coughlan
Managing Director
130 Fauntleroy Avenue
Redcliffe WA
Australia
Tel.: (+61) 8 9270 1000
Fax: (+61) 8 9270 1001
steve@byrneCut.com.au
www.byrneCut.com.au



Dembach road tunnel - Germany



Gorleben exploratory site for radioactive waste disposal



Östu-Stettin Hoch- und Tiefbau GmbH - Formed from the successful merger of Östu (Austrian shaft-construction and civil engineering company) and Stettin Hoch- und Tiefbaugesellschaft Ges.m.b.H., the company combines the performance of these two highly capable partners to provide a wide range of technical services backed up by extensive operating experience.

Ing. Peter Jelitzka
Hans-Günther Marchl
Münzenbergstraße 38
A-8700 Leoben, Österreich
Tel.: (+43) 3842 - 42 52-3
Fax: (+43) 3842 - 42 52-3-33
leoben@oestu-stettin.at
<http://www.oestu-stettin.at>

What We Offer:

- Structural and Civil Engineering
- General Contracting Work
- Bridge Construction
- Industrial Building Projects
- Power Station Installations
- Underground Construction Projects
- Tunnel and Adit Construction
- Shaft Construction
- General Mining Projects
- Formwork Erection
- Underground Railway Projects
- Specialist Civil Engineering Work



- Thyssen Schachtbau Group – Your Mining Partner! -



Our Companies

- The Cornerstone of Who We Are -



TS Bau GmbH - In addition to structural engineering and industrial construction (which includes turnkey projects), the company's range of activities includes the construction of landfill sites, road building, track laying, civil engineering work, industrial site dismantling with waste recycling, specialist mining projects, pipe laying work, trenchless laying of pipes and various special techniques for the renovation of water pipes and sewage pipes.

Dipl.-Ing. Roland Stelzig
Sandstraße 107 - 135
D-45473 Mülheim an der Ruhr
Tel.: (+49) 208 - 99 92-0
Fax: (+49) 208 - 99 92-191
info-muelheim@ts-bau.com
<http://www.t-s-bau.de>



Jetcrete Australia Pty Ltd. employs the latest techniques and specially adapted placement materials to provide a shotcreting service for the mining and construction industries. Jetcrete has demonstrated that it can operate even in an "unsafe" environment to provide rapid ground consolidation under the most difficult of conditions. The shotcreting work is carried out without disrupting the ongoing mining operations. When a suitable concrete mix or a special type of operating equipment cannot be obtained for a particular contract, Jetcrete backs the intuition, knowledge and experience of its staff to develop the right solution for the job.

John Mitchell
30 Warratale St.
Kirrawee, NSW 2232, Australia
Tel.: (+61) 2 - 95 21 87 33
Fax: (+61) 2 - 95 21 89 92
jetcreteaustralia@jetcreteaustralia.com.au
<http://www.jetcreteaustralia.com>

What We Offer

- Concrete Spraying
- Shotcreting
- Excavation
- Bolting
- Meshing
- Doweling
- Steel Fixing
- Form Work



Gräbern Tunnel - tube umbrella



Plabutsch Tunnel - slope protection

Technologie + Service

TS

and assembly, plant maintenance and dismantling. With a high-performance machinery and equipment pool, some 7,600 square metres of production space and crane capacities for item weights of up to 75 tonnes, the company is also able to manufacture very heavy and large-sized structures. With highly-motivated and skilled personnel at every level, and supported by an accredited quality management system to DIN EN ISO 9001, the company is able to guarantee high-quality workmanship and maximum customer satisfaction.

TS Technologie + Service GmbH is a modern-thinking services company which undertakes contracts on behalf of clients - from the design and planning stage through to technical realization - in a wide range of fields, including engineering, manufacturing

Dipl.-Ing. Michael Haccius
Sandstraße 107 - 135
D-45473 Mülheim an der Ruhr
Tel.: (+49) 208 - 30 02-460
Fax: (+49) 208 - 30 02-401
t.s@thyssen-schachtbau.com
<http://www.thyssen-schachtbau.de/techserv>



- Thyssen Schachtbau Group – Your Mining Partner! -

