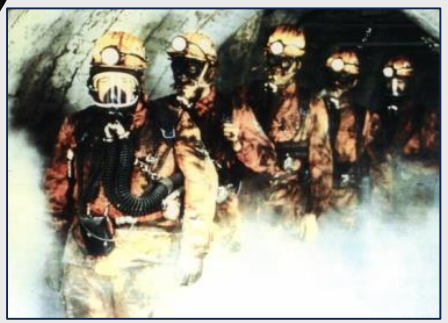
„Our way to Zero Accidents“

Mine Rescue Teams: Always ready



Successful deployment of rescue capsules

1955 1955 First deployment **Mine** Dahlbusch (3 miners)

Iron ore mine Lengede-Broistedt, Germany

7.11.1963 **(11 miners from 56m depth)**

Quelle: Montanhistorisches Dokumentationszentrum (montan.dok) beim Deutschen Bergbau-Museum/Fotothek 024000153000

Copper-Gold mine San Jose, Chile

13.10.2010 **(33 miners from 625m depth)**

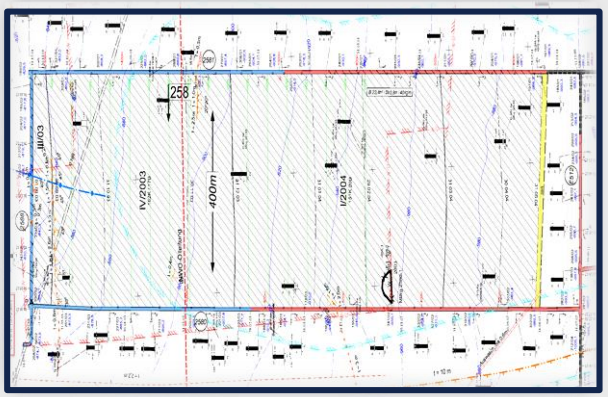
Quelle: Internet

2002 **Examples of subsequent deployments**

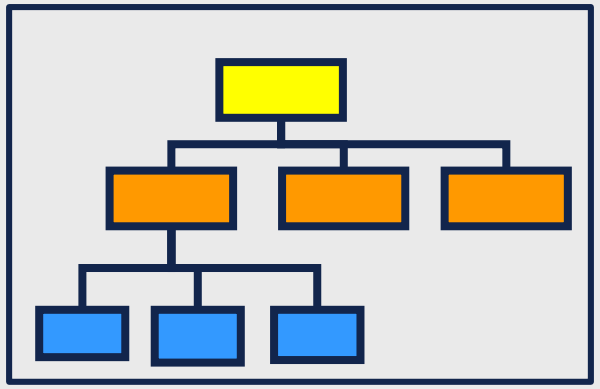
2002 Quecreek Mine, Lincoln Township USA (9 miners)

Conditions for successful and safe work

Right planning



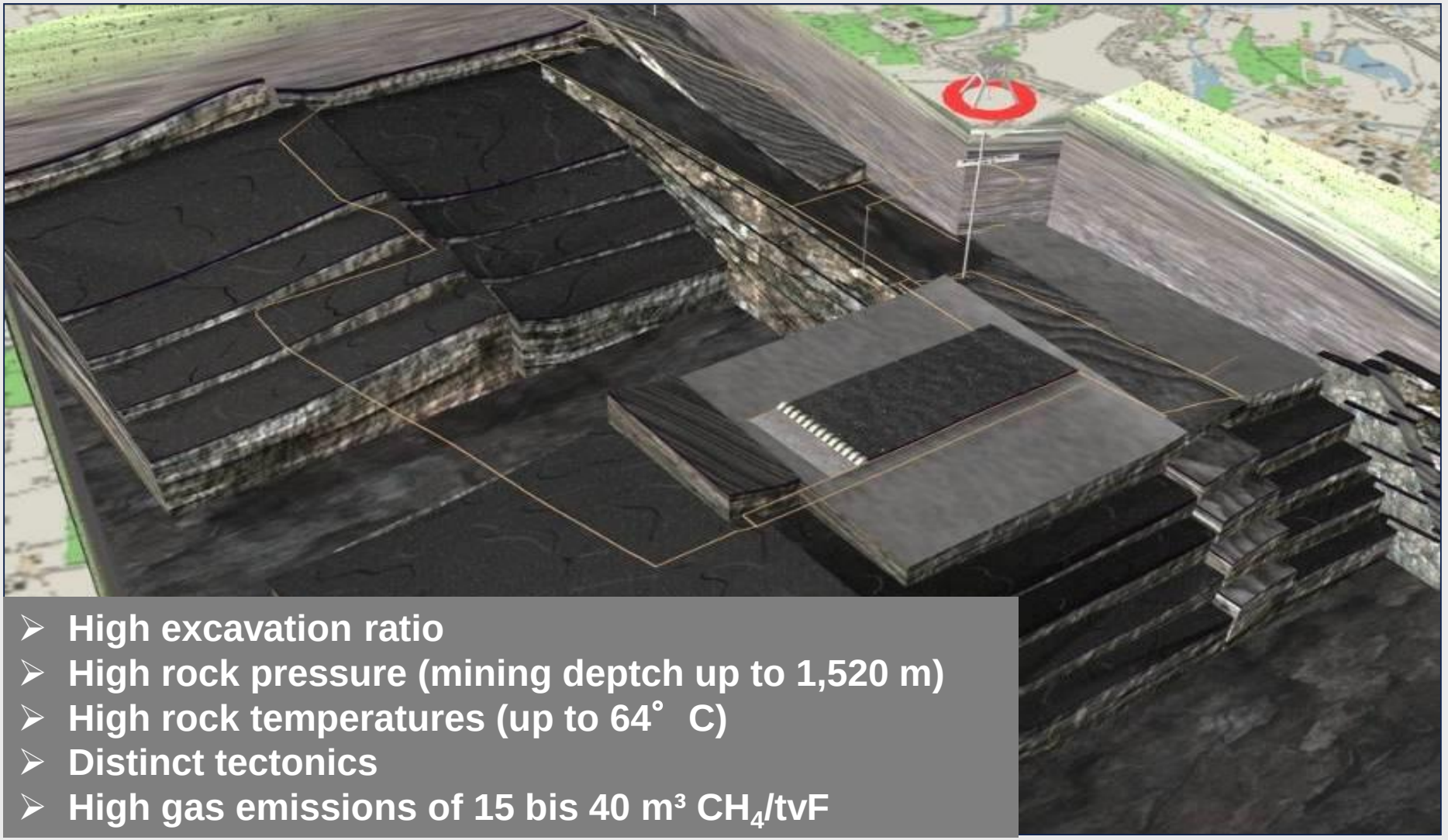
Sophisticated technology



Optimised, efficient organisation

Motivated/ qualified personnel

Challenging frame conditions



- High excavation ratio
- High rock pressure (mining deptch up to 1,520 m)
- High rock temperatures (up to 64° C)
- Distinct tectonics
- High gas emissions of 15 bis 40 m³ CH_4/tvF

Modern technology and safety installations (examples)

Road heading

Water curtain sprays
Automated cutting

Transport-T.

Modern EHB-generation
CH 4 Monitoring

Mining

Compression-volume flow sprinkling SL 750

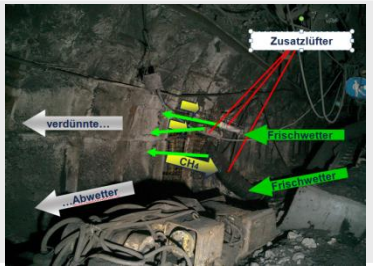
Infrastructure

Manriding 3,2 m/s, flame retardent belts

Expl.-protect.

Explosion protection with water trough barriers

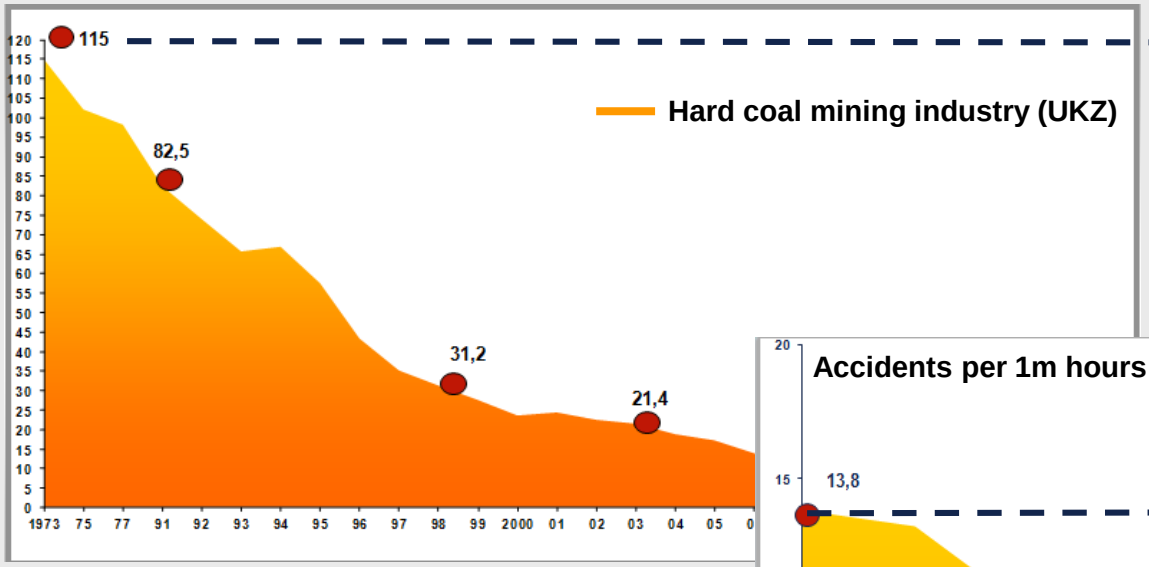
ventilation, air conditioning



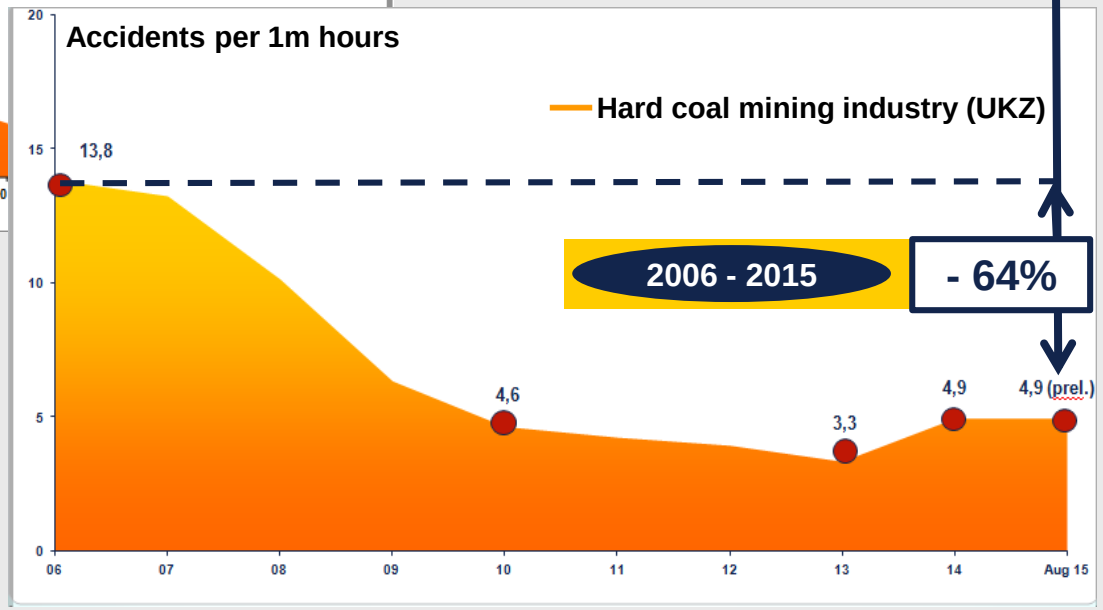
Air windows on goafside roads

Accident development Hard coal mining industry 1973 respectively 2006 to 2015

RAG Aktiengesellschaft: Our way to Zero Accidents



1973 - 2015 **- 96%**



2006 - 2015 **- 64%**

Accidents per 1m hours

Further development from the TOM Model

Resume: We do a lot, but nevertheless accidents happen due to…

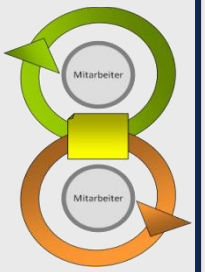
…inattentiveness despite knowledge

Also decisive are…

- …knowledge, attentiveness, preparedness,
- …brain
- …individual action

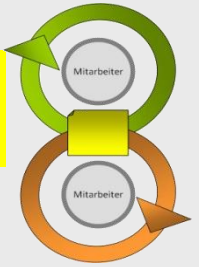
Concept

Safe until 2018

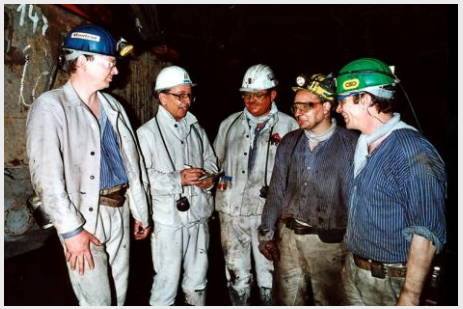


Raise knowledge of risks for underestimated tasks

Concept
Safe until 2018



Aim: Raise knowledge of risks for underestimated tasks!



Measures

Develop knowledge: Revise, amend and record current risk evaluations!

Ensure implementation: Compare recorded knowledge with employees behaviour!

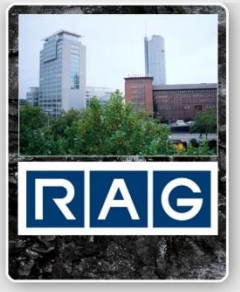
Dialogue (= effevtive factor) aims to lead to a change in behaviour; include new knowledge in the risk evaluation!

Safety check before commencing work („no check - no go!")

Availability of mine rescue teams during the phasing-out period

Further developmnent of the RAG

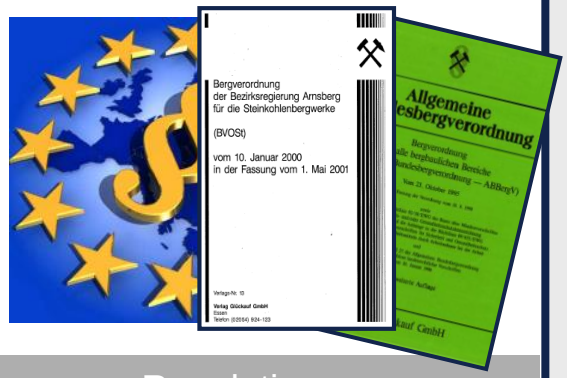
1969	1997	2007	2018	2019
Foundation of Ruhrkohle AG	Reconstruction to diversified group with divisional structure RAG	Concentration on the German Hard Coal Mining Industry	Termination of subsidised Hard Coal Mining Industry	Continuation of RAG with Mining follow-up activities



Significant safety-related developments (examples)

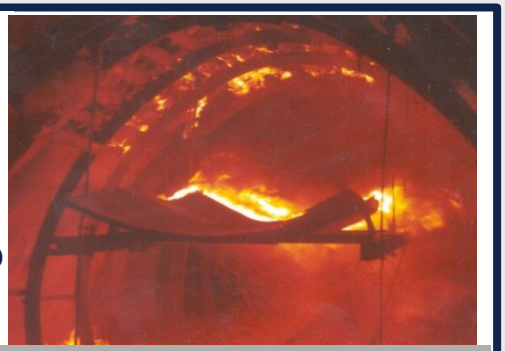
More than “nice to have“

General



Regulations

General below ground



General testing of flame-retardent belts/plastic insets

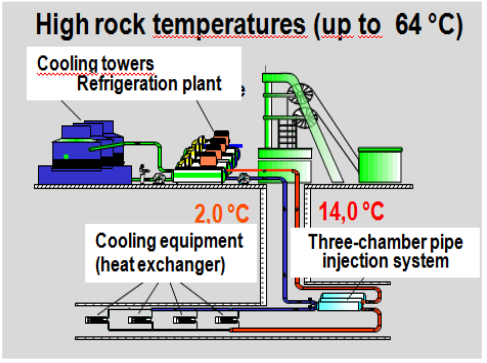
Road heading

Combined support systems

General below ground

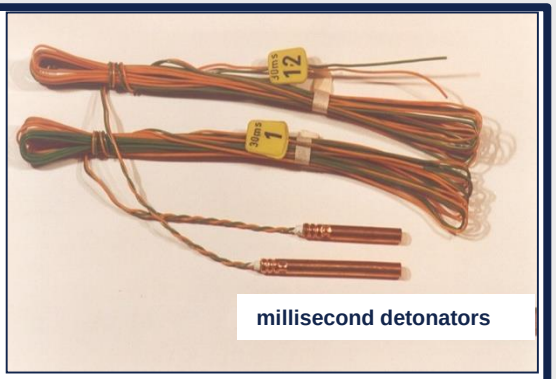
Explosion protection

General below ground



Air Conditioning

Road heading



Safe blasting techniques

Resume and outlook: On the right way

- Occupational safety is a condition for profitable production
- Occupational safety is of crucial importance and a natural part of every day work
- Achieved reductions of accident figures confirm the success and efforts of RAG AG
- Consistency, discipline and responsible actions are imperative
- By including all action fields as well as raising safety awareness it is possible to achieve 'Zero' accidents
- Existing knowledge about occupational priorities/achievements should be retained internationally

Firedamp coal-dust explosion Luisenthal (7 February 1962)

Funeral service 1962 for 299 dead miners

Memorial service 2012