

Atlas Copco
Rig Control System



Drive RCS – and leave the competition behind

Sustainable Productivity

Atlas Copco





We put computerized control on the map

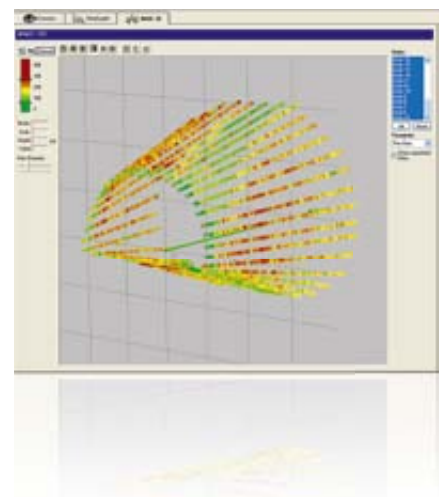
Atlas Copco introduced its Rig Control System (RCS) – a computerized control system for drilling rigs that stunned the market – as early as 1998.

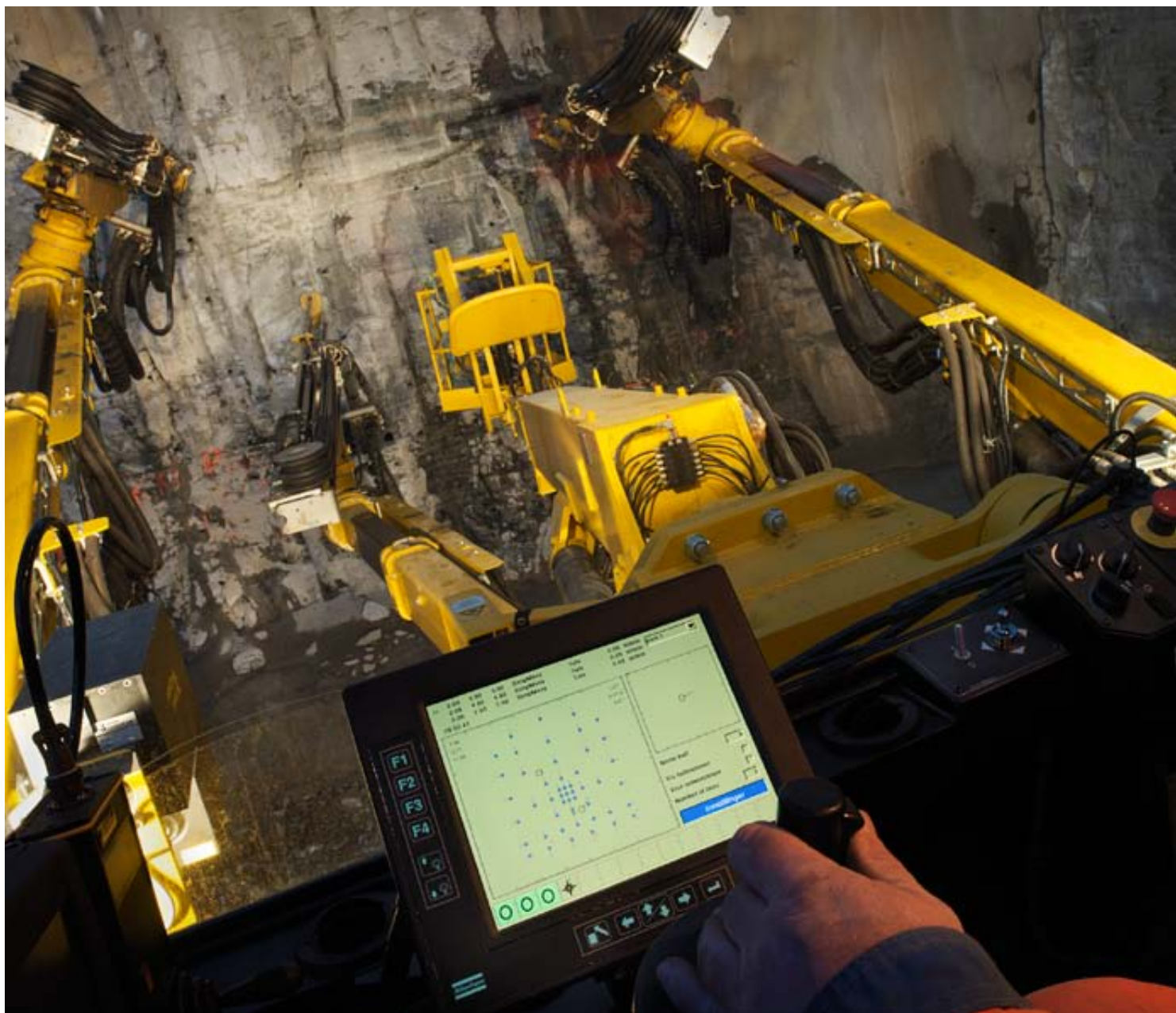
Since then, we have led development in computerized and increasingly automated rock drilling, a lead we mean to maintain.

More than 1 500 RCS rigs are currently in operation the world over. Long experience and an ongoing dialogue with customers

has resulted in increasingly sophisticated functions – with expertise that makes Atlas Copco uniquely qualified to drive development in the industry.

We simply can't imagine anyone better qualified to take the driving seat.





Get ready for new levels

It's all about creating more productive conditions for rock drilling, of course. Computerized automation definitely improves drilling rate and drill steel economy. But there are many more benefits, sometimes overlooked, such as faster fault detection, lower maintenance costs and enhanced rig availability.

A recent Norwegian study confirms that an upgrade from ABC Regular to fully automated drilling with ABCTotal offers a whole range of benefits, such as:

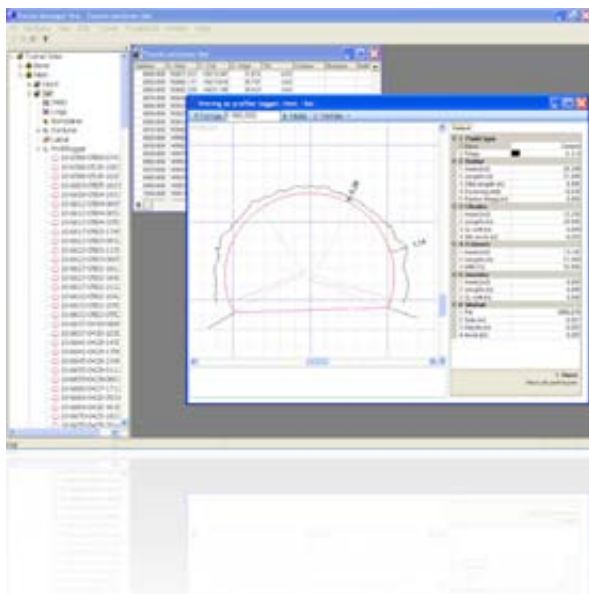
- 6 % less time at the face
- 3 % increase in advance rate per face

- 7 cm reduction in overburden per round
- TClI point improvement in contour

Consistent improvement and modification in the form of new, smarter systems and functions ensure even faster, more accurate and more efficient drilling.

Today's Atlas Copco rigs feature fourth-generation RCS automation. This latest system offers even more refined functions for planning, conducting and analyzing the drilling process, including wireless online data transmission between rig and site office.

The know-how and expertise accumulated over the years powers our drive forwards – almost automatically. We are far from finished, neither with RCS nor the range of add-on functions.



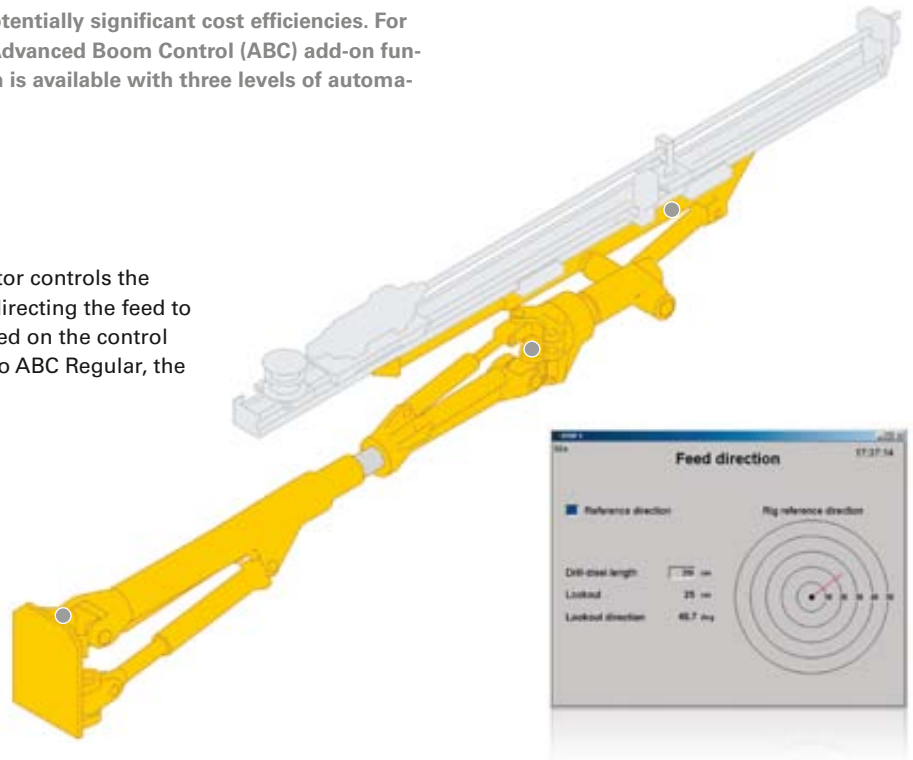
Choose the level of automation you need

Correct positioning of the borehole offers potentially significant cost efficiencies. For optimal drill results, Atlas Copco offers the Advanced Boom Control (ABC) add-on function for RCS-equipped rigs. The ABC system is available with three levels of automation, to meet different requirements.

ABC Basic

The simplest form of automation. The operator controls the maneuvering of boom and feed, as well as directing the feed to the borehole position based on data displayed on the control panel. ABC Basic can usefully be upgraded to ABC Regular, the next level of automation.

In ABC Basic configuration, each rig boom is equipped with three sensors. Via RCS, these sensors show boom and feed position and angle on the operator display.



ABC Regular

This level offers semi-automatic drilling. With the help of a predetermined drill plan – transferred to the rig's display via a USB memory – the operator can position and direct the feed for precise drilling.

The drill plan and other data are created by the site office, using Tunnel Manager software, which is included with ABC Regular.

ABC Total

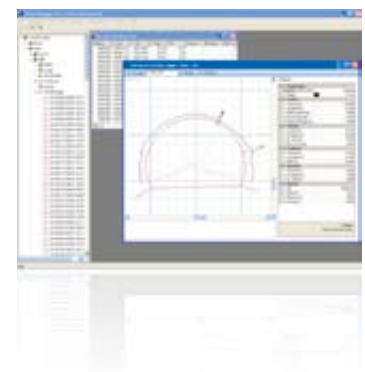
Fully-automated execution of a complete drill round according to the drill plan with drill sequences prepared in Tunnel Manager. The operator monitors the process. Using the speed buttons on the rig's display, the operator is nevertheless able to switch between manual, semi-automatic and fully-automatic positioning and drilling as and when required. The Tunnel Manager software is included with ABC Total.

Tunnel Manager

Used for the planning, storage and analysis of drill-process data. Tunnel Manager functions include:

- Drill pattern design
- Tunnel line design
- Laser line design
- Report generator for log file
- Measurement While Drilling (MWD) report generator (if included in the rig)

	ABC Basic	ABC Regular	ABC Total
Compatibility	RCS	RCS	RCS
No marking of the tunnel face required		•	•
Position of boom and feed	Manual	Manual, RCS assisted	Automatic or manual
Display feed inclination	•	•	•
Display feed look-out distance	•	•	•
Tunnel Manager software		•	•
Logging of drill hole data		•	•
Automatic boom collision control			•
Monitoring collision risk of booms during boom positioning			• During automatic positioning
Setting of common hole depth		•	•
Parallel holding of boom	Hydraulic	Hydraulic or electronic	Electronic
Upgradeable to higher level of ABC	ABC Regular	ABC Total	



A day at work with RCS

Looking at Rig Control System (RCS) from a work cycle perspective it is easy to see how the options can be selected to get the best quality and productivity in the different phases.

Get ready ...

Before you start the face drilling or the long-hole drilling, be smart. Tunnel Manager **1** is the intelligent PC-software that enables the worksite office to provide operational support to Atlas Copco rigs equipped with the RCS. The drill plan created with the Tunnel Manager software at the office is then transferred to the drill rig via a USB memory or the worksite data network using the option Rig Remote Access (RRA).

Rig Remote Access **2** option ensures fast and secure transfer of the latest data, wireless or by wire, to and from the drill rig – as well as secures storage of all necessary information. This includes all log files and planning data for the tunnel.

At the tunnel face any RCS equipped machine is rapidly navigated into precisely the right position with Total Station-Navigation **3**.

After navigation the intelligent 3D-scanning system Tunnel Profiler **4** is used for rapid and high-precision tunnel profiling. In tunnelling, the right profile saves a considerable amount of time and money. Problems with the tunnel profile can be corrected directly.

... and start working

Starting up the drilling with an RCS Boomer face drilling rig gives you three choices for how to manoeuvre the booms. Advanced Boom Control **5** from Atlas Copco can either be Basic, Regular or Total.

By applying new technology during drilling an increased detailed understanding of the rock mass is acquired. The Measurement While Drilling **6** technique gets hold of vital drilling data, such as penetration rate, feed force, rotation speed and more.

The RCS equipped Scaletec is used to clean up the tunnel face after blasting.

At the end of the tunnelling cycle the Boltec bolting rig is performing the rock reinforcement operation with support from the Bolt Plan Navigation **7** software that enables planning, guidance and logging of the process and the Bolt Angle Indication **8** system that focuses on guiding the operator to install bolts with the correct distance in between.

Optimize your tunnel cycle in the office by analyzing log files from all RCS equipped vehicles.



Boomer for face drilling



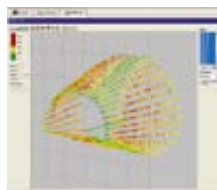
Simba for long-hole drilling



Scaletec for scaling



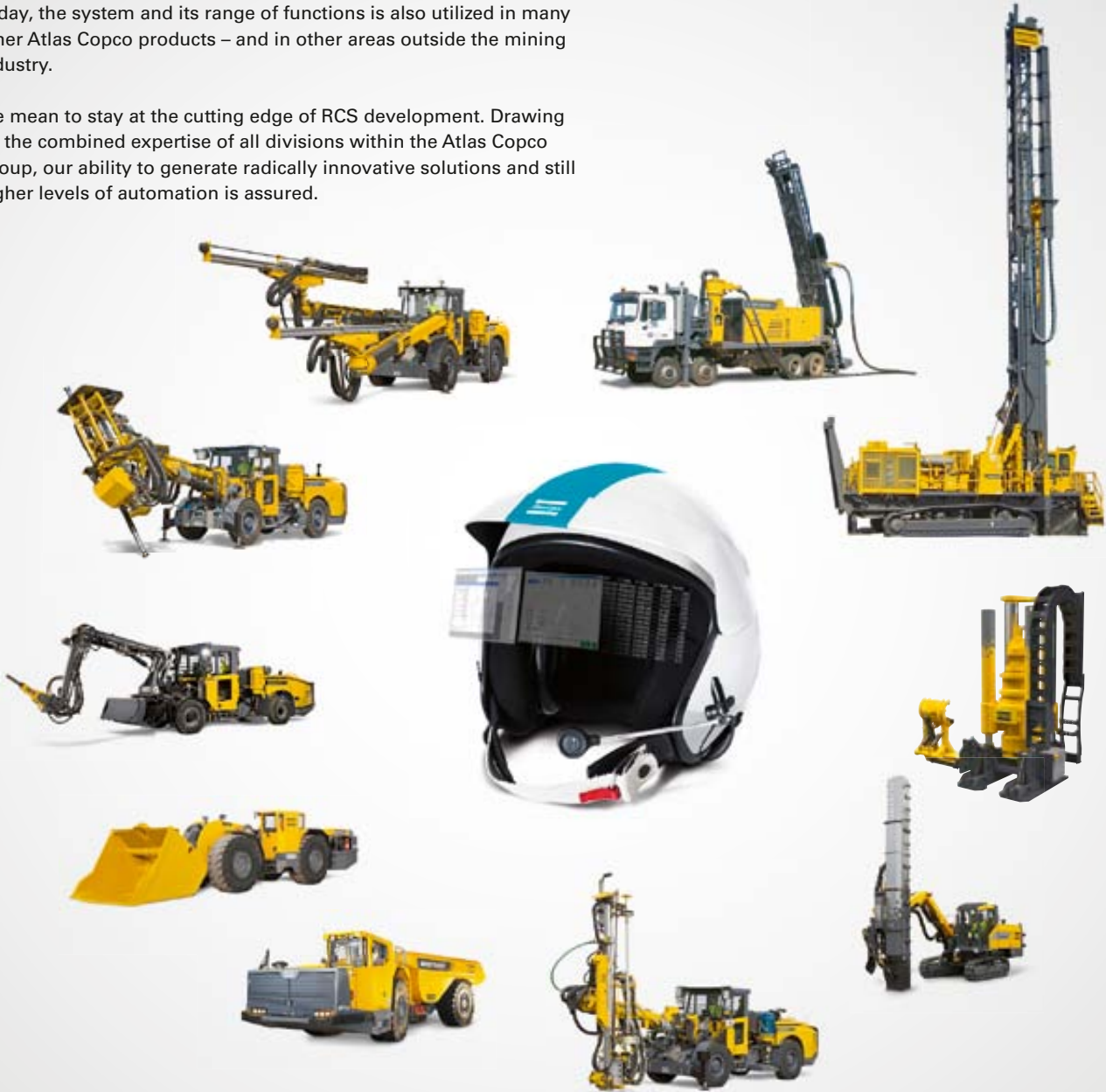
Boltec for bolting



It doesn't stop here ...

Ever since it revolutionized the market in 1998, the Rig Control System has been subject to consistent development and improvement. Today, the system and its range of functions is also utilized in many other Atlas Copco products – and in other areas outside the mining industry.

We mean to stay at the cutting edge of RCS development. Drawing on the combined expertise of all divisions within the Atlas Copco Group, our ability to generate radically innovative solutions and still higher levels of automation is assured.



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