



CASE STUDY



LOCATION

South America

OBJECTIVE

To increase productivity by accurately controlling bench elevation

OUTCOME

87.5% improvement in bench elevation accuracy using the ProVision Shovel System

CONTENTS

- Challenge
- Solution
- Benefits
- Conclusions

87.5% Improvement in Bench Elevation Accuracy

A South American open-pit coal mine, demonstrating a massive annual production of approximately 32 million tons of thermic coal, shares how cutting-edge Modular technologies improved efficiency and reduced operational costs by targeting bench elevation control issues.

Challenge

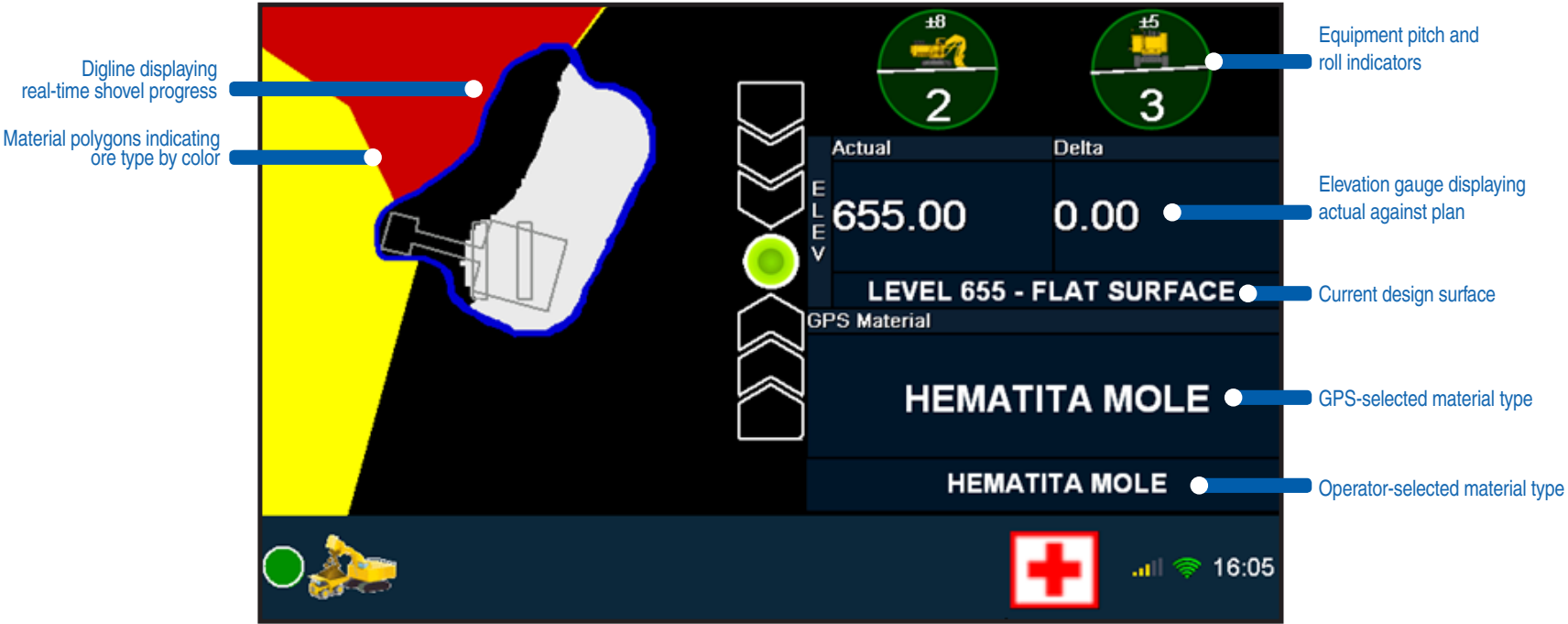
Bench elevation control issues were the driving factor behind this customer's decision to install the ProVision system. Like many mine sites, they had a high variability in compliance to planned bench elevation. In fact, the average deviation from plan was 3.22 meters (10.6 feet). This high variability significantly increased usage of support equipment, blasting costs, shovel delays, and spotting times.

Solution

ProVision systems were installed on 6 shovels. Twelve staff members were fully trained on system usage, maximizing system utilization while allowing them to allocate, coordinate, and manage resources more efficiently.

How the ProVision Shovel System Works

The ProVision Shovel System provides a real-time indicator of ore boundaries and shovel elevation against plan. Operators receive immediate warnings when the elevation is above or below the desired value set by the mine planning team, or when their material selection does not match the plan.



The ProVision Shovel system guides operators in real time without the need for manual survey.

Other Benefits

In addition to directly improving bench elevation control, implementing the ProVision Shovel System also helped this customer:

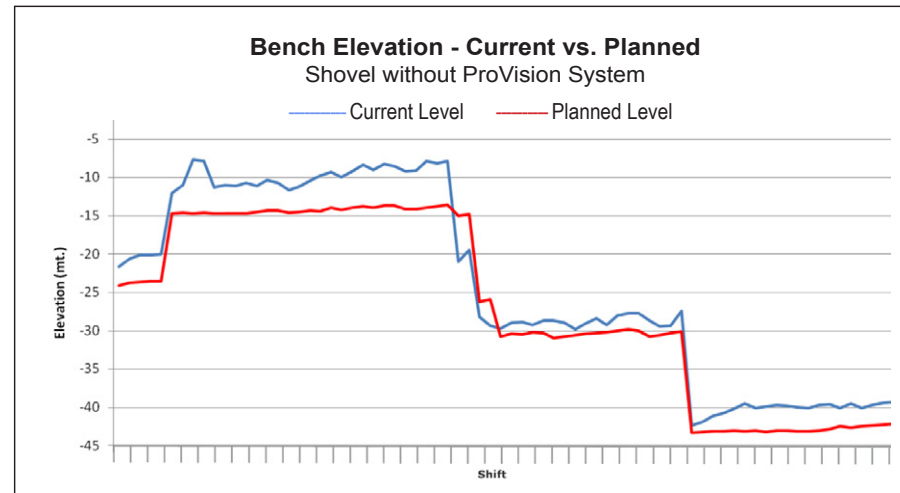
- Reduce spot time for haul trucks
- Reduce drill navigation time
- Reduce dozer cleanup time at loading areas
- Reduce shovel stand-by time while waiting for cleanup
- Reduce truck stand-by time and auxiliary equipment bench re-work during rainy shifts, due to proper elevation and water drainage at benches

Conclusion

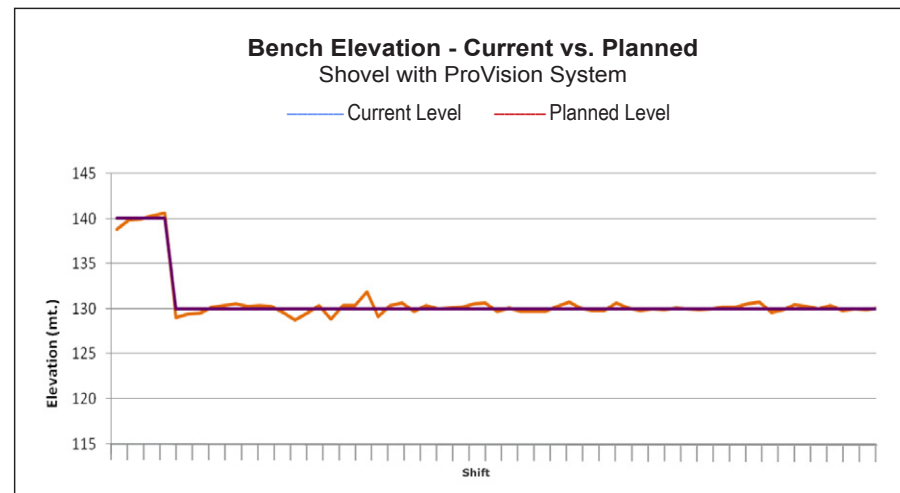
In just three months time, this Modular customer experienced an 87.5% improvement in bench elevation variance through effective use of the ProVision shovel system. Bench accuracy improved to within 40 cm of plan, resulting in decreased spot time due to a more level loading area. More consistent bench grades also reduced drilling time for subsequent benches, decreased dozer cleanup time and increased shovel productivity through an overall reduction in bench maintenance.

**IMPROVEMENT:
87.5%**

Real World Performance



An average of 3.22 meters (10.6 feet) was left behind on benches before the ProVision system was installed.



Bench accuracy improved to less than 40 cm variance (15.7 inches) using the ProVision system.



Special thanks to Jaime Angulo for his hard work, research and calculations provided for this paper.

Please contact your Modular account manager for more information on how the ProVision system can empower your maintenance team to achieve excellence.

LEGAL NOTICE

The contents of these materials are protected by federal and international intellectual property laws. No portion of these materials may be reprinted, republished, modified, reproduced, sold or distributed in any form without the express written consent of Modular Mining Systems, Inc. Modular®, IntelliMine®, DISPATCH®, MineCare®, ProVision®, ShiftBoss®, RoadMap®, MasterLink®, PowerView™, and ModularReady® are trademarks and/or registered trademarks and the sole and exclusive property of Modular Mining Systems, Inc. These materials may contain third party copyright and/or trademark materials, the use of which has not always been specifically authorized by the intellectual property owner. All copyrights and/or trademarks contained in these materials are the sole and exclusive property of their respective owners.

These materials, including third-party information, are provided for information purposes only. Actual specifications may vary from those documented in these materials. Consult your local Modular office for further details.

Modular Mining Systems, Inc.

3289 E. Hemisphere Loop
Tucson, AZ 85706-5028
U.S.A.

Phone: (520) 746-9127 | Fax: (520) 889-5790
www.modularmining.com

©2011 Modular Mining Systems, Inc. | CS-PVELVA-US-10-R2