

PREPARING FOR THE INDUSTRY OF TOMORROW

Building Infrastructure with Autonomous Machines

Built Robotics and Black & Veatch

The following CE credits are offered for this session:





1.0 AIC CPD Credit | AGC of America has been approved to offer Continuing Professional Development (CPD) credits for qualifying programs by the <u>American Institute of</u> <u>Constructors</u> (AIC).



AGC of America is registered with the National Association of State Boards of Accountancy (NASBA) as a sponsor of continuing professional education on the <u>National Registry of CPE</u> <u>Sponsors</u>.

This session is designated for **1.2 CPE credits** in the field of Information Technology.



How to earn CE hours for this session

Participants must:

- 1. Check in with attendance scanner at the door or in the back of the room.
- 2. Attend at least 95% of the session.
- 3. Complete the session and post-program evaluation.

Additional instructions will be emailed to attendees requesting CE credits.

You may contact **Jo-Anne Torres**, Manager of Professional Development and Continuing Education, at **jo-anne.torres@agc.org** or (703) 837-5360 for questions.



Sean Terrell

President at Overland Contracting, a Black & Veatch company



BLACK & VEATCH

Gaurav Kikani

Vice President of Strategy & Operations at Built Robotics

BUILT ROBOTICS



Agenda



- Overview of technology in construction
- Introduction to autonomous construction equipment
- Driving innovation as a large EPC
- Engagement between Black & Veatch and Built Robotics





How has technology evolved in construction?



Evolution of Technology









Evolution of Technology



Continuous tracked machines	Hydraulics	GPS	Digital technology
Improved propulsion allowing operators to better navigate soft terrain	Dramatically increases power and efficiency	Use of new positioning systems and eventually machine control helps enhance precision on site	Software enables tools to complete projects faster and more profitably



Technology in Construction Today











Automation: the next leap in construction technology







Need for automation



80%

of contractors can't fill skilled trade positions

\$2 trillion

unfunded need for infrastructure upgrades

7.3 million

shortfall in housing units in the US

We are facing an unprecedented demand for construction, and there are not enough qualified people to do it.





How does autonomous heavy equipment drive value on projects?



Safety Advantages



Every year, nearly 1,000 people die on the job while working in construction. We can take people out of harm's way.







Sense & avoid

Geofence

Wireless emergency stop



Extended Operations







Greater labor productivity









How can you develop an internal culture of innovation?



Building a Culture of Innovation



- **Create champions:** Designate internal personnel whose main job is to guide external technologies through the organization
- Align incentives: Support and align internal goals to facilitate learning and responsible deployment of new technology
- Start from the top: Building a vision and pushing for progress begins with leadership at the executive level





How does a large EPC effectively engage with new technology?



Engaging with New Technology



- Involve operating groups: Get buy-in early from construction teams and encourage them to pilot in actual field settings
- **Commercial focus:** Focus on creating business cases and achieving quick wins. Set realistic goals and expectations.
- Investment: Consider investing as a way to partner closely and align incentives









BLACK & VEATCH

BUILT ROBOTICS



Built Robotics and Black & Veatch







Initial Focus



Greenfield development

Avoid urban settings to simplify the environment and maximize safety

Repetitive activities

Select tasks that are easily automated through repetition

Large projects

Focus on verticals with large, long-running projects



Partnership steps





Ignite accelerator & investment Identify target project Solar pilot deployment

Training & handoff

Automate subsequent activities



Pilot deployment







What's next?



- Develop tools and process to operationalize and integrate robots in the field
- Train operators to manage robots
- Identify opportunities to standardize construction methods and deploy across organization





Questions

