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Delivering innovation through facilitated action learning in a heavy industrial environment
An account of practice

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Bill Woodworth

Introduction – Bill Woodworth

Business Improvement Specialist

Bell Bay Aluminium

Bell Bay Tasmania

- 35 years in the primary aluminium industry
- Various technical, production and project management roles
- Six Sigma Black Belt
- 9 years in business improvement role
- Action learning facilitator with the Business Action Learning Tasmania (BALT)

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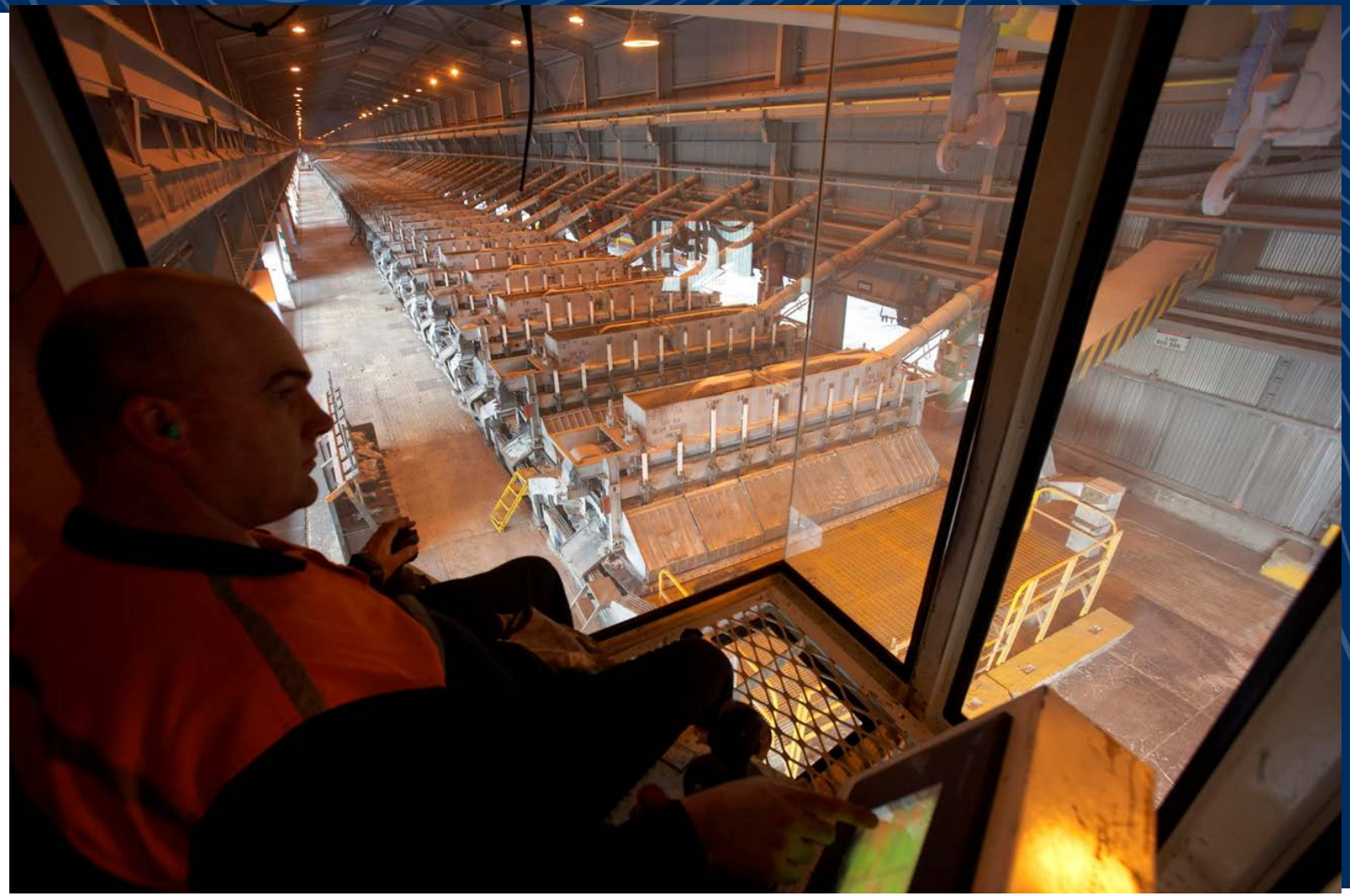
Introduction – Bill Woodworth

Connection to place

Bell Bay Aluminum

- Commissioned in 1955
- 190,000t of primary aluminium produced in 2019
- Electrolytic process at high current and high temperature:
  - 125,000 Amps
  - 970^{O}C
- Electricity from 100% Tasmanian renewable energy



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The back story to the problem

- Electrolyte bath level control is critical to maintain cell performance
- Excess bath was drawn from cells into crucibles and either transferred to other cells or poured into large sows for cooling and further processing
- This process had been basically unchanged for several decades.
- Handling molten materials is inherently hazardous

Bath handling at BBA circa 1998

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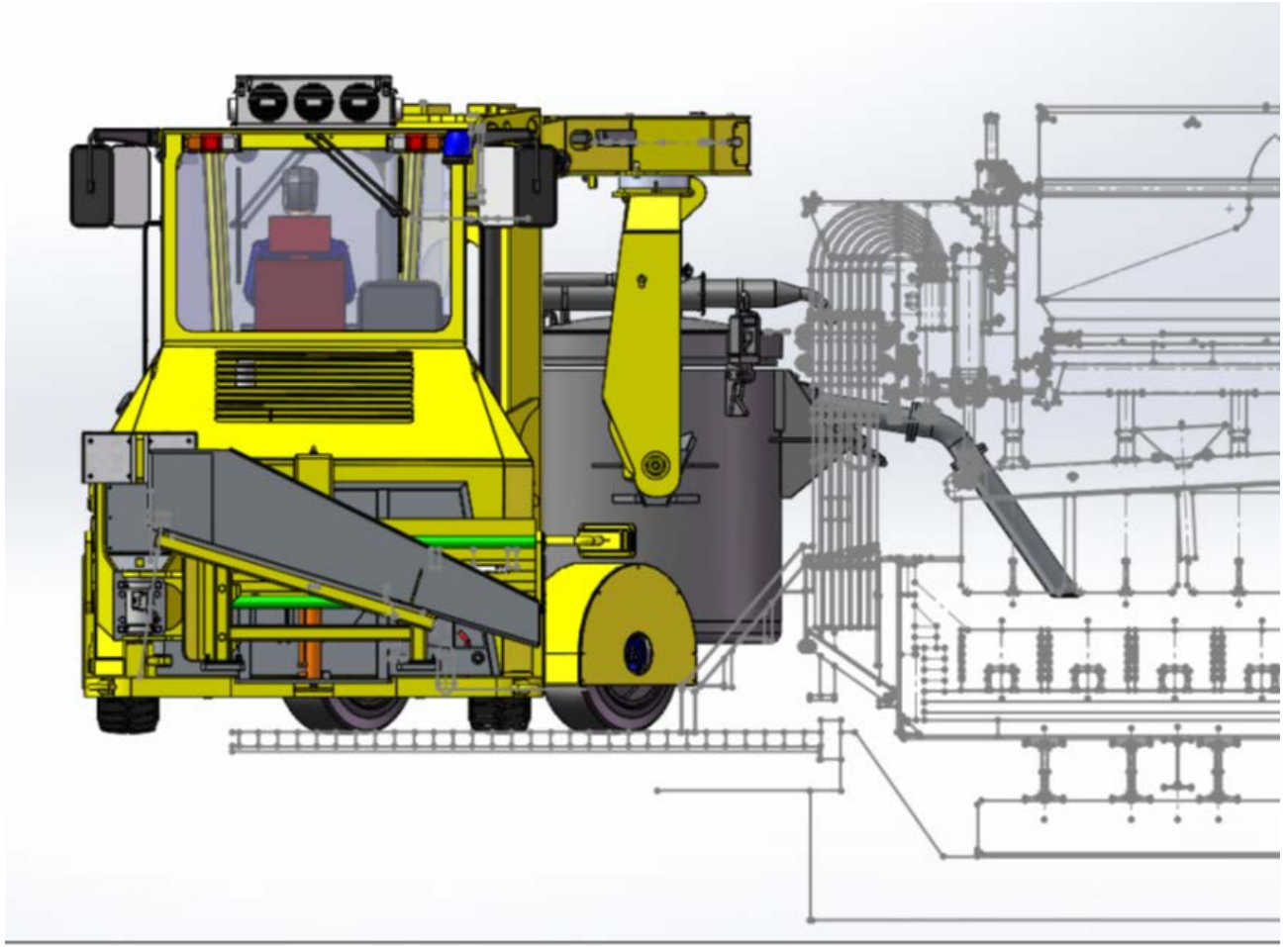
The problem

How to safely integrate a state of the art molten bath transfer system into a 60 year old smelter?

- Vehicle based systems assessed to be world's best practice – 2 units ordered
- Myriad of potential interactions with existing equipment and processes
- Limited experience in the production team in managing the introduction of large scale process changes
- More changes planned over 2-5 years



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Why use action learning?

The action learning approach to problem solving and personal learning and development is well suited to this situation.

- The problem is a wicked one in that there is no right answer way to implement the change and there are many unknowns to explore in determining the final pathway.
- There is a business need for increasing change management experience and problem-solving skills
- The key personnel required to implement this process change are “comrades in adversity”, Revans (1980), and realise the shortcomings of their own knowledge in how to tackle this project. No one person has all the answers.
- The problem is real for all set members as the outcome is likely to affect their own areas of work in some significant way.

Revans, R.W. (1980) *Action learning: new techniques for managers* (London, Blond & Briggs).

Consultant project engineer vs Action learning set

Consultant Project Engineer:

- Project and change management experience
- No deep understanding of existing problems
- Limited transfer of knowledge and skills to operating team
- Leads to poor integration with existing systems
- Poor operator acceptance
- Rework
- Cost $$$
- New knowledge gained leaves the business

Action Learning Set:

- Opportunity for gaining new knowledge
- Set members bring their various experiences to help solve the problem
- Set members develop new knowledge and skills through questioning and actions – stays in the business
- Deep understanding of existing systems held within the set
- Leads to better solutions that address all issues
- Solution done “by us” not to “to us” – better acceptance
- No external cost
- Risk of mistakes/opportunity for learning

The set

- Learning and development officer with accountability for operator and maintainer training
- Project engineer with accountability for design and sourcing the vehicles
- Graduate process engineer currently acting in a frontline production leadership role
- Service team support officer with accountability for managing material handling logistics
- Four process controllers with accountability to maintain control of the reduction cells on each of the four shift crews.
  - To attend the set meetings when ever the meetings coincided with their shift rostered days on.
- Production planner with accountability for process scheduling
- Facilitator with accountability for managing the action learning process

Set member desired learning outcomes

Set Member	Summarised Learning Outcome Objectives
Graduate Engineer	How to run projects How to manage the main steps of introducing new equipment
Operations Planner	How to effectively identify and overcome critical issues How to manage major projects
Training Officer	How to deal with all parts of the business to achieve objectives
Service Support Officer	How to implement this type of project so they can apply learnings to next project How to overcome problems
Project Engineer	How to engage people across different teams to help project How to look at problems from others' point of view
Process Controller (x4)	How to introduce change into production areas

Defining the scope

Initial set meeting :

- Key stakeholders invited
- Each stakeholder was asked to state the problem from their point of view
- Set members asked clarifying questions of the stakeholder
- The stakeholder was then asked to restate the problem in light of any new knowledge exposed by the questioning
- Each requirement from all stakeholders was recorded
- Decision from stakeholders on what requirements were in, or out, of the set's scope
- Project sponsor reviewed and agreed on the final scope

Asking the impossible

- Driving innovation through questioning:

  “ What needs to happen for the impossible to be true?”

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Set meetings

12 weekly meetings

- Meeting room in department turned into a project hub

- Information left on display, room open to all in department to see progress and leave comments

- The basic meeting framework was:

• Review actions from previous week	Specific team members
• Learnings from actions	All
• Develop actions for next week	All
• Reflection	All
• Set agenda items for next week	All
• Requests for support from sponsor	All

What worked well

- Set members got very comfortable with respectfully challenging the current state and tightly held myths
- Set members made every effort to complete their allocated tasks each week to report learnings back to the set
- The diverse experiences and knowledge of the set members led to greater questioning and deeper understandings
- Set members sought help from others to increase their understanding
- The set explored many different solutions before settling on the final plan

Challenges faced

Process Controller attendance

- Getting the process controllers away from the operations to attend set meetings was very difficult
- Operational leaders too focused on the “now” to give priority to the project

Facilitator seen as the expert or team leader

- An expectation among the set and key stakeholders that the facilitator should have all the answers
- A lot of energy and time spent directing stakeholder enquires to the set members
- Set member frustration at having their questions reflected back at them by the facilitator

Outcomes

Innovative solution – solid bath handling

No other smelter has eliminated pouring of liquid bath into open sows

Bath cooling facility – Concept to reality in 6 months

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Outcomes

Safe bath transfers

- 12 new procedures written
- New training program developed and delivered
- 40+ procedures reviewed and revised
- Major changes to key operations implemented
- Process fully integrated into Potroom operations

- BTV video (2minutes)

Set member outcomes

All set members were surveyed and interviewed at the end of the project:

- Learning outcomes for the process controllers were not met due to limited attendance due to rosters and process demands
- The remaining set members all had their learning objectives met
- Three set members joined the implementation teams for subsequent major projects
- One set member took parental leave directly after the project implementation plan was approved
- One set member took a promotion with another organisation claiming that their experience with the set gave them the confidence to apply for the new position

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Set member outcomes

Their comments on the survey shows glimpses of their personal development:

“Deliver on your actions. If you don’t do your actions, you let the team down”

“The power of questions”

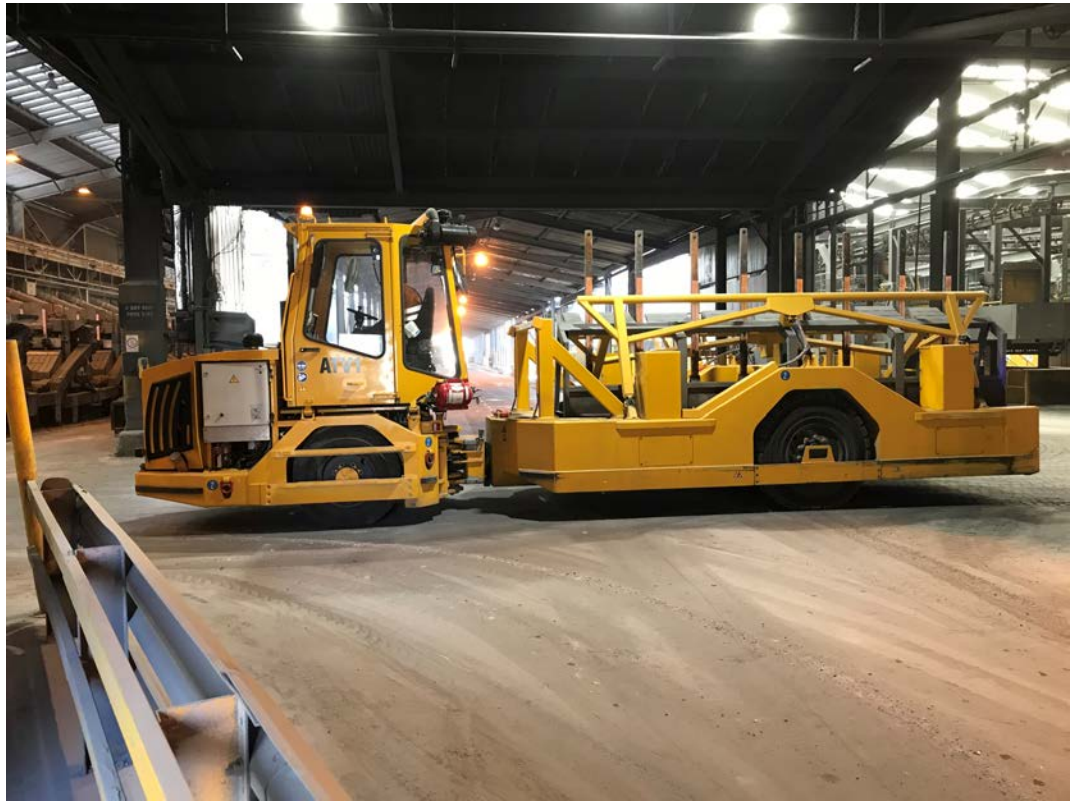
“Understand the total scope of the problem and tackle the whole problem. Don’t allocate 25% of the problem to a team and expect the other 75% to be done”

“Everyone has different strengths to bring to the team. No one person has the complete answer”

“I have a greater understanding of the different jobs and tasks other teams do across the business”

Next projects……

Metal transport vehicles



Anode transport vehicles

Summary

Action learning:

- Is effective in developing change management skills within an organisation
- Can deliver innovative solutions to problems in heavy industrial environments

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Questions

Chat room questions

- **Innovation:**

  How to drive innovation through action learning?

- **Facilitated action learning traps:**

  What are they and how do you avoid them?

Pick one and join a room

10 minutes – write your comments in the chat

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