

study

# Revolutionising the Brick Recycling Industry with World First Technology

case

**Excel Hydraulics, The Brick Pit and a team of experts worked together to design and engineer a machine to automate traditional production methods.**

Restoring/revitalising recycled bricks is a manual, time intensive and costly process. As demand increases, the need to develop more efficient methods for treating bricks is required.

## Challenges

- To automate the time intensive, manual methods of the brick recycling process
- Develop a machine robust enough to handle harsh brick cleaning conditions, while delicate enough to preserve brick quality

Keith Carqueville noticed a lack of industry specific technology and machinery to service the brick recycling industry. He wanted to change that and stated that he *"set out to develop an effective, versatile and relevant solution."*

The idea was to design and manufacture the 'Brick Rescue Machine'. The machine would take pre 1950s bricks, remove the lime-based mortar, and turn them into new masterpieces. This would be a new industry development, transforming the traditionally time intensive method of brick preparation.

## The Team

- Keith sort out Excel Hydraulics to begin working on this exciting project and a team of industry experts was formed.
- Richard Kowalczyk (electrical engineer) Kevin McCaffrey (hydraulic engineer,) and Barry Caudle (mechanical and design engineer), along with engineer and entrepreneur Keith Carqueville worked together to turn this vision into a real product.
- The team was selected based on their combined experience of 50+ years, each member bringing crucial knowledge and expertise to the project.



Left: Keith Carqueville, Owner at The BrickPit

Right: Kevin McCaffrey Excel Project Manager at Fluid Power Engineering Solutions



## The Process

The team met weekly at Excel Hydraulics to collaborate ideas for this world first technology, drawing on their combined years of experience in each of their specialities. They brainstormed concepts, developed and refined design parameters, creating a fully operational prototype. This collaboration between industry experts in conjunction with Keith's vision resulted in a specialist machine which will revolutionise the approach for the brick restoration industry.

Using Parker pumps, valves, actuators and electronic control systems. Production started at the Excel Hydraulics workshop. This was an 18 month long process where Excel overcame all the challenges presented.



Keith stated that he

**“...was always impressed by Excel’s commitment to the project, whilst also remaining flexible and collaborative. They are a true team player.”**

## Summary

- Successful development of a specialist machine which has significantly increased production output
- The new Brickpit machine outputs approx 10,000 bricks per day, compared to one man 400-600 bricks per day
- Carefully designed Hydraulic system was fundamental to the machine operation in handling robust process and continuous output
- The consistency, quality and finish of brick product has improved while meeting increasing market demands

The project is an ongoing endeavour to commercialise this technology for industry. The team continues to work together to further refine this new technology. Dust control and extraction is currently on the radar for completion over the next 6 months.

**If you have a new project or application which involves specialist design, fabrication and hydraulic knowledge contact the Excel Hydraulics team at Fluid Power Engineering Solutions, they are ready to take on the challenge.**



For more than 20 years, Excel Hydraulics™ have been selling world-best parts, designing custom parts and systems, providing maintenance, servicing and repairs, and responding to emergency call-outs.

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