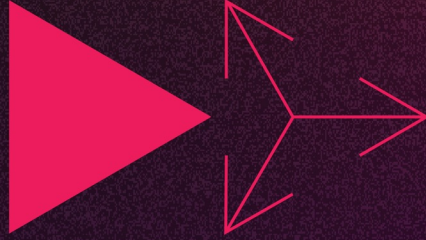


INNOVATIVE  
MANUFACTURING  
ACCELERATED

Thursday, 9 June 2022  
8:00am-1:00pm  
UTS Tech Lab Sydney



Dr Matthew Dingle  
FormFlow

Project Insights

# Measuring up: 4.0 Enabled Smart cell with vision technology to trace and continuously monitor profile shape

IMCRC | we champion  
manufacturing  
innovation

  
Australian Government  
Department of Industry, Science,  
Energy and Resources  
**AusIndustry**  
Cooperative Research  
Centres Program





Innovate.

Refine.

Scale.

# It began with an idea



**LYSAGHT**

**100**  
AUSTRALIAN MADE SINCE 1921

## **CUSTOMFLOW™**

THE REFINED CORRUGATED CLADDING SYSTEM

The new LYSAGHT CUSTOMFLOW™ system combines iconic CUSTOM ORB® corrugated cladding with the revolutionary, new FormFlow® C90™ cornered cladding to deliver a refined finish to corrugated clad buildings. In addition to completing an elegant finish for your building envelope, the patented FormFlow® C90™ cornered cladding may also deliver energy efficiency, maintenance, safety and installation benefits as well as improve the fire resistance capabilities of a structure in some applications.

EXPLORE THE REFINED POSSIBILITIES AT [WWW.LYSAGHT.COM](http://WWW.LYSAGHT.COM)

FORMFLOW™ and the FormFlow brand mark are registered trademarks and C90™ is a trademark of FormFlow Pty Ltd, ABN 59 614 354 975 (FormFlow™). If product/profile names are registered trademarks and TFL product/profile names are trademarks of BlueScope Steel limited trading as Lysaght. © June 2021 BlueScope Steel limited ABN 16 000011038.

**FormFlow**

LYSAGHT. BUILD ON.



Eliminate waste

Re-usable

Adaptable

Affordable

Fire resistant

Accessible

Reduced delivery time and cost

Transportable

Flexible

World first

Resilient

Patented

Strategic Partners:



PASSIVE PLACE



# Housing Market

Case 1: Regional rental undersupply  
45,000 to 72,000 dwellings

Climate Displacement  
20,000 dwellings

Regional rental market growth  
95,000+ per year

30+ years of strong growth forecast  
80+ council areas identified

Total Units: 160,000 per year  
\*Total Value: \$24-40 Billion

\*Depends on mix of 1,2 &3 bedroom builds



# Innovate

Our story starts with great ideas .....

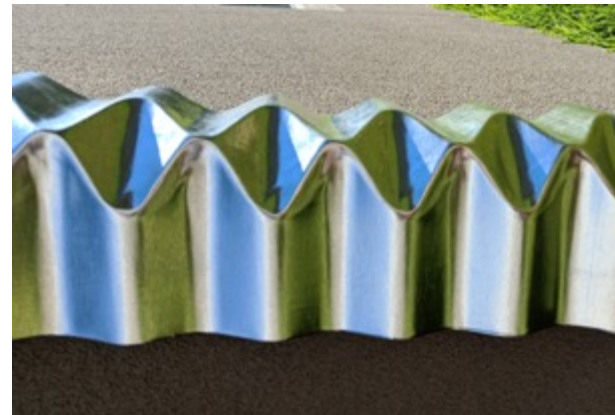
C90 bend



C60 bend



Continuous bend



Improved Fire Resistance

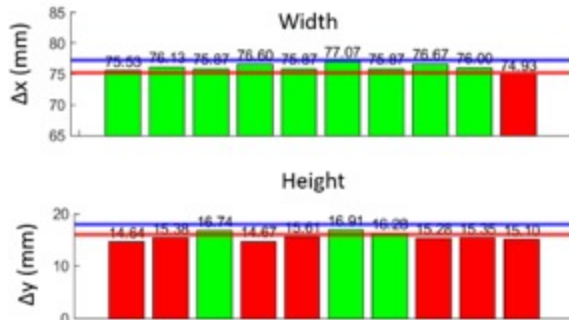
Superior energy efficiency

Reduced internal framing requirements

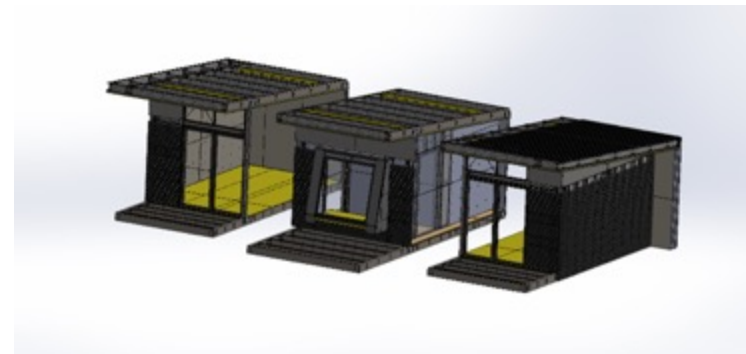
Reduced installation time/cost

Reduced material waste and energy consumption

Quality systems



Building Systems



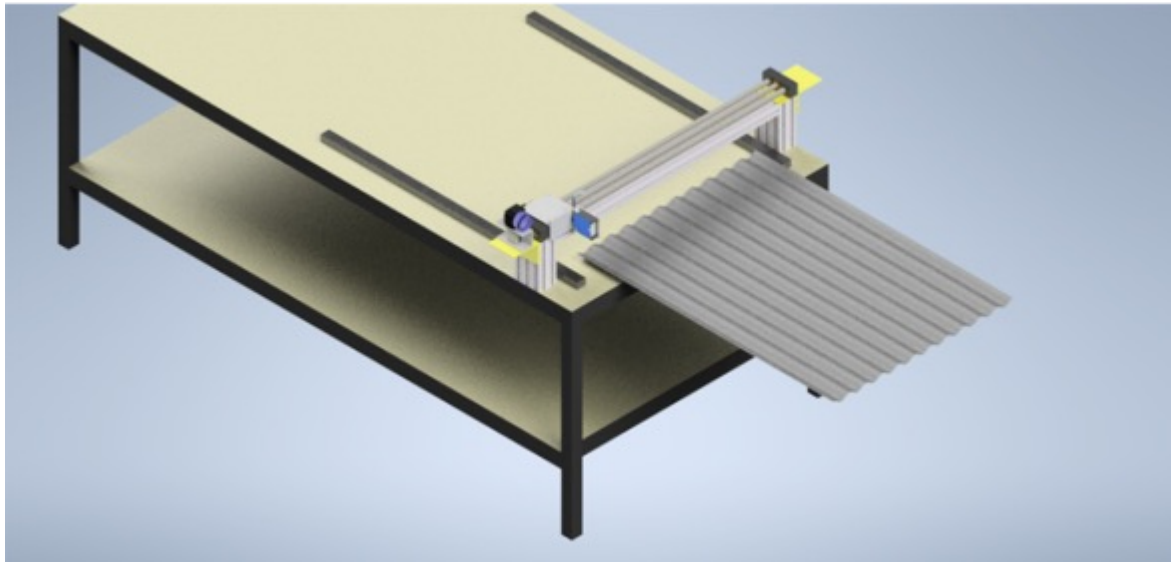


# Shape/Quality Monitoring System

To enable quality control of roll formed corrugated strip

Process monitoring and trouble shooting

Concept design

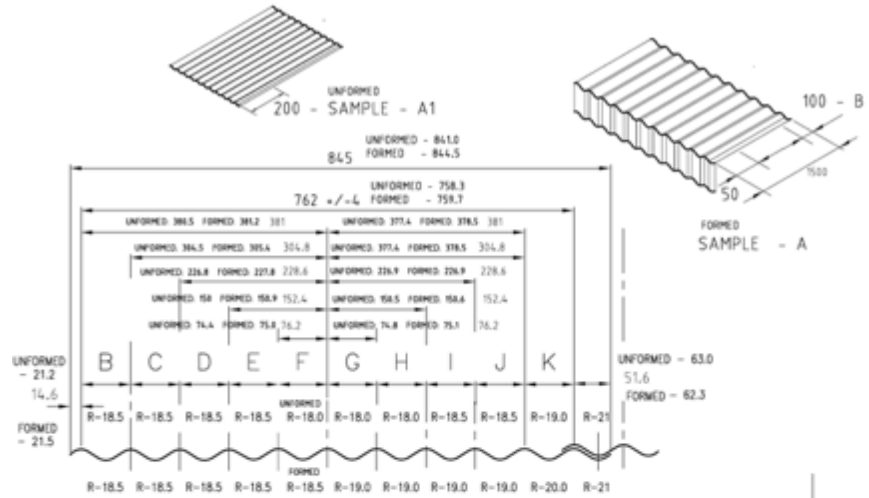


Physical prototype finalized





# Report

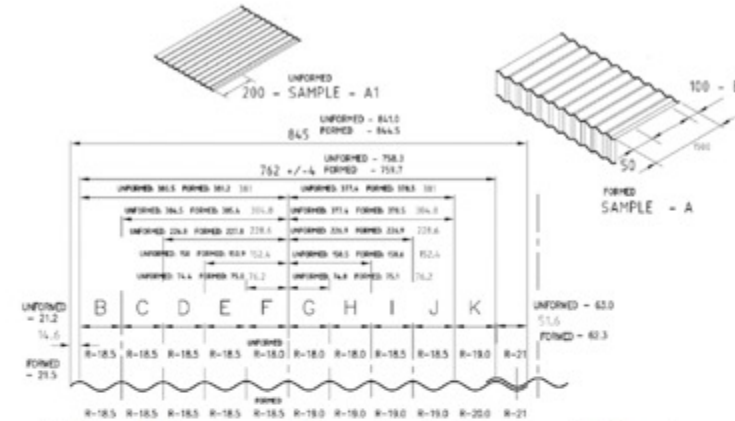


CHECK TABLE									
DIMENSIONS	DESCRIPTION	TOLERANCE IN MM		DIMENSIONS CHECKED IN MM		DESCRIPTION	TOLERANCE IN MM		DIMENSIONS CHECKED IN MM
A	Q/A WIDTH	845 REF.		C/WIDTH SINGLE SHEET (TOL. 762 ±4.0)		N/A	N/A		N/A
A1	C/WIDTH 762	762 +/- 4.0		UNFORMED 758.3	FORMED 758.7		17 ± 1.0	UNFORMED	FORMED
B	RIB PITCH	75.8 TO 76.6		76.0	75.6	RIB DEPTH	16 TO 18	16.7	17.0
C	RIB PITCH	75.8 TO 76.6		77.0	76.9	RIB DEPTH	16 TO 18	17.0	16.9
D	RIB PITCH	75.8 TO 76.6		76.9	76.9	RIB DEPTH	16 TO 18	17.0	16.93
E	RIB PITCH	75.8 TO 76.6		76.2	76.3	RIB DEPTH	16 TO 18	17.45	17.0
F	RIB PITCH	75.8 TO 76.6		74.4	76.2	RIB DEPTH	16 TO 18	17.50	17.18
G	RIB PITCH	75.8 TO 76.6		74.7	76.8	RIB DEPTH	16 TO 18	17.30	17.15
H	RIB PITCH	75.8 TO 76.6		75.1	76.8	RIB DEPTH	16 TO 18	17.40	17.0
I	RIB PITCH	75.8 TO 76.6		76.8	76.2	RIB DEPTH	16 TO 18	17.1	16.97
J	RIB PITCH	75.8 TO 76.6		76.2	76.2	RIB DEPTH	16 TO 18	16.9	16.90
K	RIB PITCH	75.8 TO 76.6		75.1	76.2	RIB DEPTH	16 TO 18	17.14	16.81
		AVERAGE RIB PITCH = 75.9 - UNFORMED WITHIN TOL.				AVERAGE RIB DEPTH : Q/A AVERAGE 17.14 - UNFORMED WITHIN TOL.			
		AVERAGE RIB PITCH = 76.4 - FORMED WITHIN TOL.				Q/A AVERAGE 16.90 - 16. FORMED WITHIN TOL.			
L	ARC LENGTH	21.5 TO 25.5		30	XX				
M	ARC LENGTH	21.5 TO 25.5		25.5	XX				
ROLLFORMER RIB TOOLING BY HAYES GED TO LYSAGHT PROFILE DWG P100272 - 2016 FOR LYSAGHT - GEOLONG									

BMT: 0.48	TOT/A	MEASURED 200 FROM AN END
SAMPLE LENGTH - 2000	COATING: AN 130 COLORBOND	
YIELD STRESS: 5550 MPa	TEST REPORT No.: NA	
PROFILE CHECKED BY: R. GALLATY	DATE: 19/5/20	
PRINT NAME:		
SIGNATURE:		

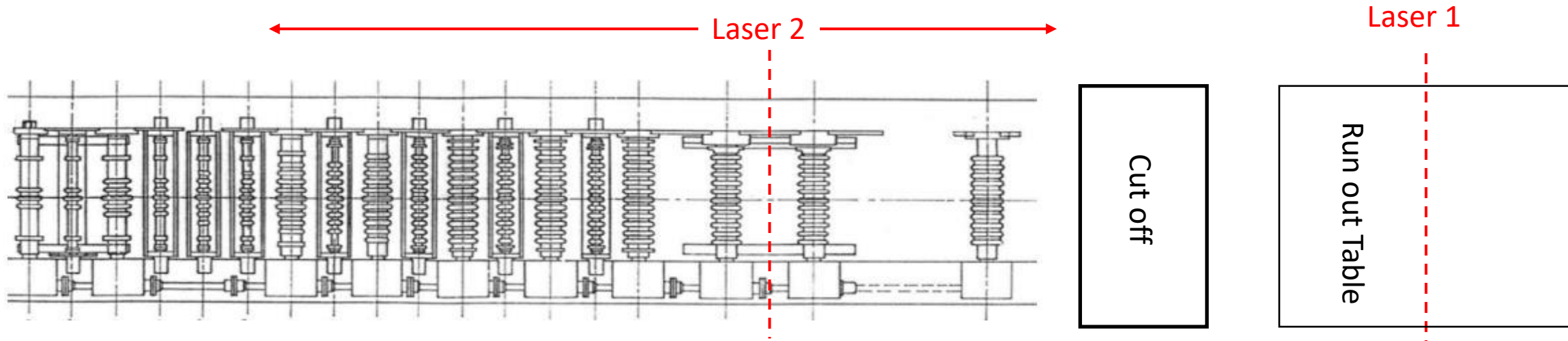
COMMENT:  
PRODUCTS MEASURED:  
1. 'FORM FLOW' FORMED FROM 2000 LONG EX GEELONG 0.48 BMT, 5550 AS ROLLED SAMPLE, 'A' REC. 18-5-20  
2. CUSTOM DRB, 0.48 BMT, 5550, EX-GEELONG, AS ROLL 2000 LONG SAMPLE 'AT REC. 18-5-20

Date: 02/03/2021	Project: Profile Check Sheet	Material:
Time: 09:43:31	Title: Laser scanned sample	Sample Length:



Rib	Pitch Tolerance (mm)	Pitch Dimensions (mm)	Depth Tolerance (mm)	Depth Dimensions (mm)
B	75.8 TO 76.6	36.64	16 To 18	22.82
C	75.8 TO 76.6	75.62	16 To 18	16.32
D	75.8 TO 76.6	77.37	16 To 18	16.72
E	75.8 TO 76.6	76.22	16 To 18	16.19
F	75.8 TO 76.6	77.4	16 To 18	16.57
G	75.8 TO 76.6	76	16 To 18	16.22
H	75.8 TO 76.6	76.8	16 To 18	15.87
I	75.8 TO 76.6	77.14	16 To 18	16.11
J	75.8 TO 76.6	76.21	16 To 18	14.94
K	75.8 TO 76.6	76.88	16 To 18	15.09
L	75.8 TO 76.6	77.11	16 To 18	14.11
M	75.8 TO 76.6	67.52	16 To 18	5.12

# Future Applications



## Laser 1:

- 2D measurement at the push of the shear cut-off button
- Integrated software highlights if the shape is out of tolerance

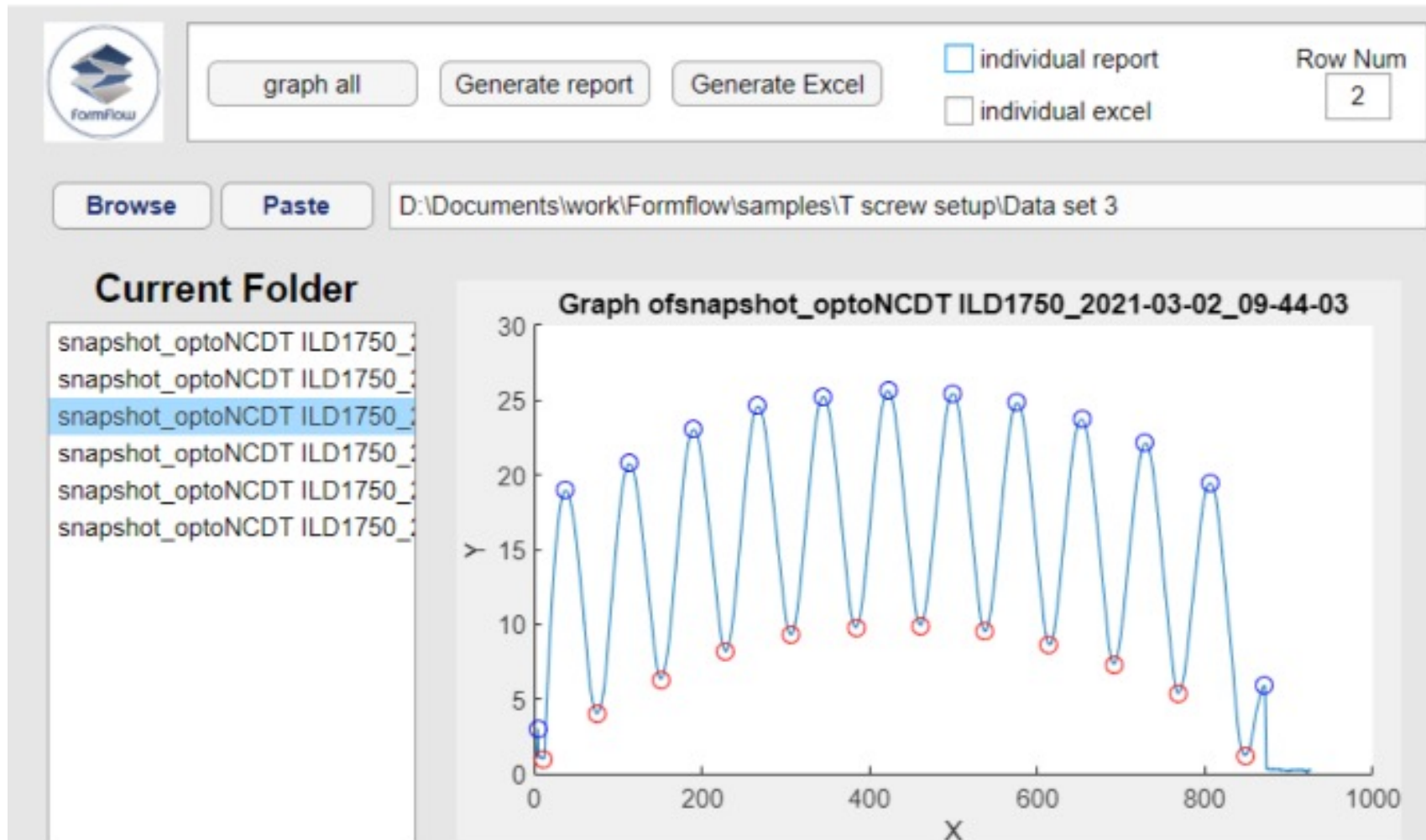
## Laser 2:

- Positioned after the critical adjustment station and connected in parallel to laser 2
- Movable between stations - Can be used for trouble shooting and to assist with tool setting
- Can be used for the monitoring of tool wear in critical forming stations.



# Shape/Quality Monitoring System

- The laser creates a 2D x-y data file that can be imported in a rapid evaluation package.



1. Select individual input files
2. Paste individual directory
3. View snapshot
4. Monitor shape tolerances
5. Generate report

# Pitch and Depth





# Underlap and overlap

