

TITLE

QUARTZ CASSETTE
ALUMINISED STEEL
POLISHED OR DULL

CCII-00018

VERSION

V1.0

AUTHOR

DR. GERARD M^CGRANAGHAN



DATE CREATED

04/04/14



C2i2

CERAMICX CENTRE FOR
INFRARED INNOVATION

		Technical Report			
Title:	CCII 00018 Quartz Cassette Aluminised Steel Polished or Dull?				
Author:	Create Date:	Supersedes:	Document		Full Report
			Code	Number	
Dr. Gerard McGranaghan	04/04/14		<i>CCII-00018</i>		Y

Introduction

Aluminised steel is supplied from the manufacturer with one side shinier than the other. Until now, Ceramicx have formed Quartz bodies with the polished side facing out for aesthetic reasons. Given that the Herschel can now easily test and compare minor changes in performance, it was decided to also investigate if there was any significant difference in quartz element output if the polished or dull side were used. Two “polished side in” elements were tested against two standard construction elements with the polished side out. One of the “polished in” cassettes was worked (folded) with the protective film on, the other with the film removed. This was to assess the impact of scratches that may be caused by working, if any. As a comparison, a competitor body was also tested, however, the competitor element was re-tubed from its original 500W to 1000W so as to compare it with Ceramicx 1000W. A list of the elements tested is shown in Table 1.

Table 1: List of Elements tested

Test Number	Specimen number	Type	Power (W)		
1	1	Al St	1000	Ceramicx	Std0713
2	2	Al St	1000	Ceramicx	Std0613
3	3	Al St	1000	Ceramicx	Polished in
4	4	Al St	1000	Ceramicx	Polished in
5	5	Al St	1000	EU Competitor body	

Results

The graph in Figure 1 shows the experimental results. All elements perform within a very narrow band, the maximum spread at 100mm was 1.13%. Thus performance of all elements under test can be considered almost equal. The highest performing elements in the group were the Ceramicx and re-tubed competitor body which both returned 58.3% at 100mm distance. The other elements showed a normal experimental scatter from 57.1% up to 58.3%.

The elements did not show any deterioration or blackening of the reflecting surfaces (Ceramicx and competitor) despite rear wall temperatures reaching around 450°C.

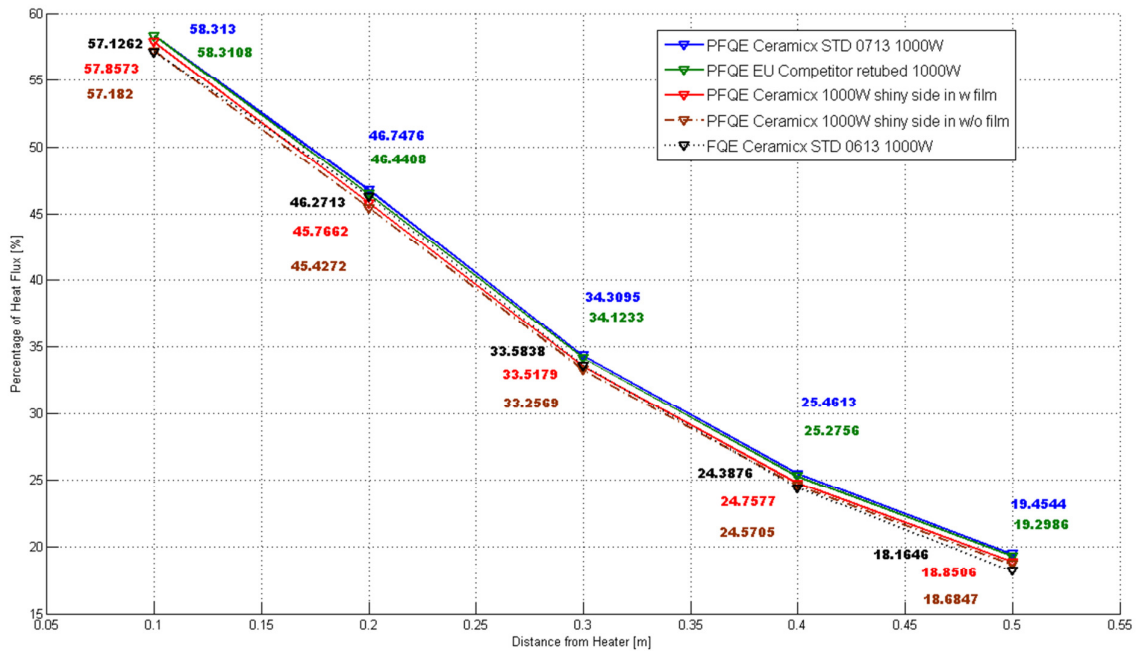


Figure 1: Overall results from Aluminised Steel tests

Summary

All 1000W elements tested perform in the same region and Ceramicx performance levels were consistent with a competitor body. No discernible difference can be detected in reversing the polished side or dull side of the aluminised steel. Therefore, the current design of the aluminised steel bodies for the quartz elements which keeps the polished side outward can be continued.