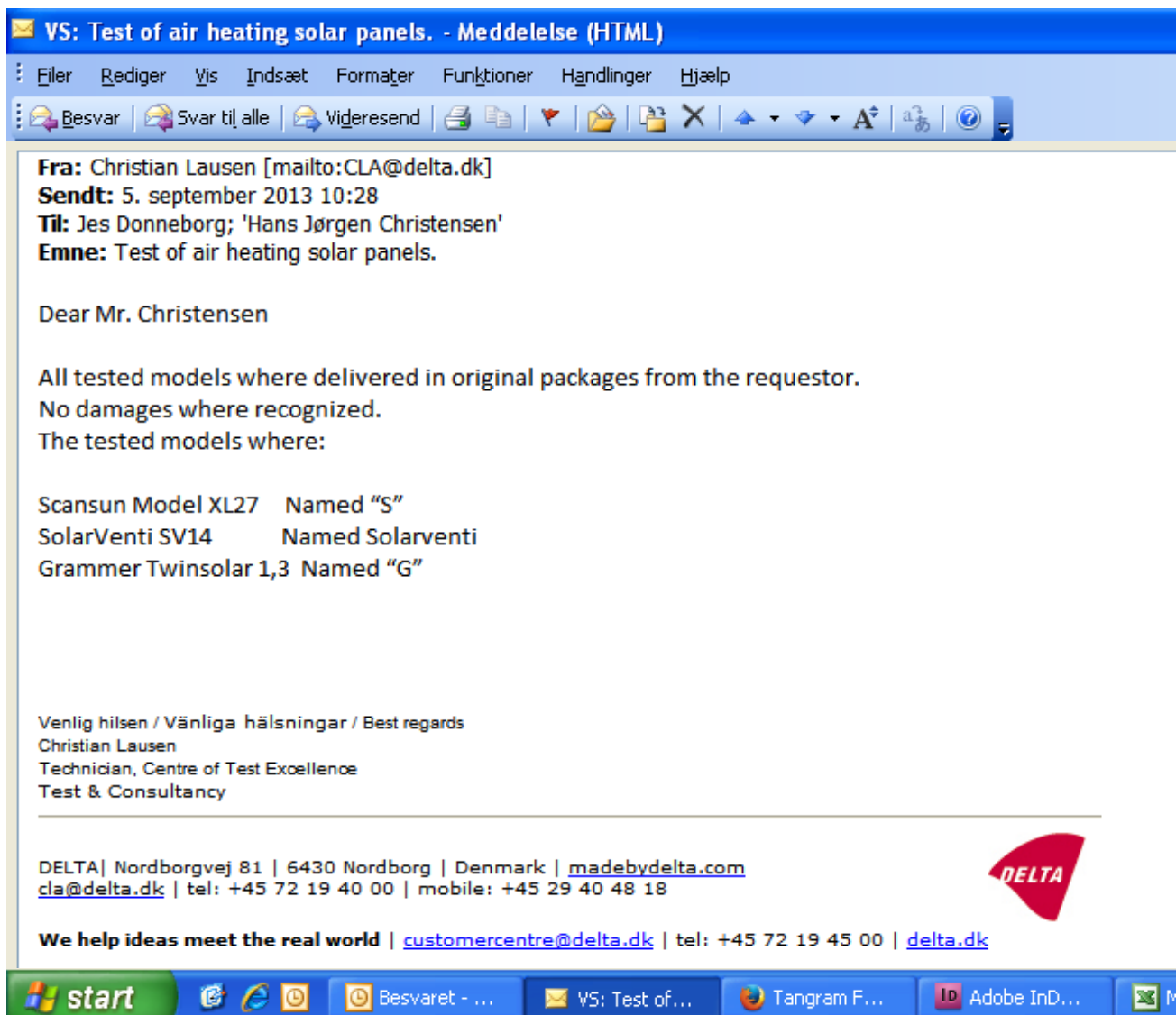


The logo for SolarVenti, featuring the brand name in a bold, blue, sans-serif font with a registered trademark symbol. The text is set against a yellow background with a pattern of thin, parallel diagonal lines.

## About the Delta Test

### Mail from Christian Lausen (Delta Test Laboratory)

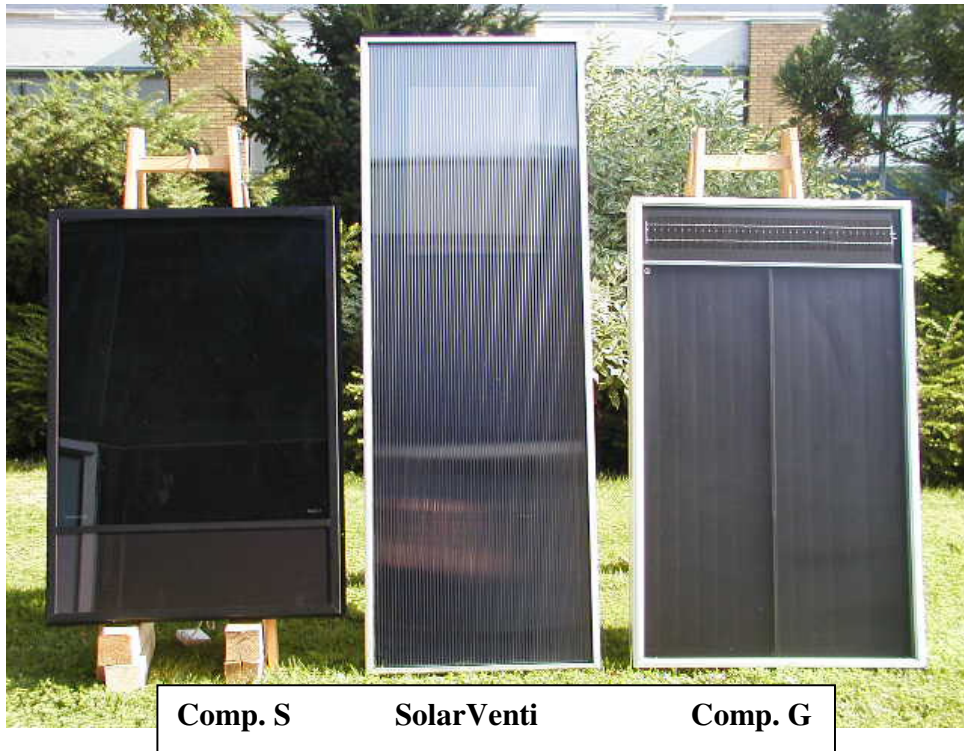
A screenshot of an email client window. The title bar reads "VS: Test of air heating solar panels. - Meddelelse (HTML)". The menu bar includes "Filer", "Rediger", "Vis", "Indsæt", "Formater", "Funktioner", "Handlinger", and "Hjælp". The toolbar contains icons for "Besvar", "Svar til alle", "Videresend", and other standard email actions. The main content area shows the email details: "Fra: Christian Lausen [mailto:CLA@delta.dk]", "Sendt: 5. september 2013 10:28", "Til: Jes Donneborg; 'Hans Jørgen Christensen'", and "Emne: Test of air heating solar panels." The body of the email starts with "Dear Mr. Christensen" and discusses the testing of solar panels. It lists three models: Scansun Model XL27 (named "S"), SolarVenti SV14 (named Solarventi), and Grammer Twinsolar 1,3 (named "G"). The email concludes with a sign-off: "Venlig hilsen / Vänliga hälsningar / Best regards", followed by the name "Christian Lausen" and his title "Technician, Centre of Test Excellence Test & Consultancy". At the bottom, there is contact information for DELTA: "DELTA | Nordborgvej 81 | 6430 Nordborg | Denmark | [madebydelta.com](\"http://madebydelta.com\") | [cla@delta.dk](\"mailto:cla@delta.dk\") | tel: +45 72 19 40 00 | mobile: +45 29 40 48 18". A red DELTA logo is positioned to the right of this text. Below the contact information, a slogan reads: "We help ideas meet the real world | [customercentre@delta.dk](\"mailto:customercentre@delta.dk\") | tel: +45 72 19 45 00 | [delta.dk](\"http://delta.dk\")". The Windows taskbar at the bottom shows the Start button and several open applications: "Besvaret - ...", "VS: Test of...", "Tangram F...", "Adobe InD...", and a mail icon.



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## Test of air heating solar panels.

Task reference: T205234-5



Requestor: Solarventi A/S  
**Hans Jørgen Christensen**  
Fabriksvej 8  
8881 Thorsø

**Report by:** Christian Lausen, Tel.: +45 2940 4818  
Test engineer, Centre of Test Excellence

**Report date:** 2013-09-05

**Number of pages:** 5

**Report no.:** 205234-5

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## About Delta

DELTA is an independent technology company based in Denmark

We pride ourselves of being at the forefront of innovation of advanced technologies. And we serve as a strategic partner to our clients and society.

We are the technology pathfinder within our cores technology domains and specialise in

- electronics
- information technology
- micro and nano technology
- sensor systems
- acoustic and vibration technology
- light technology and optics

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With more than 70 years of experience we have extensive expertise in development of technology driven products within sectors such as health and welfare technology, climate, energy and the environment. Every year we help more than 2,000 customers worldwide with their product development process from product idea, product extreme testing to product launch.

DELTA is a highly reputable international company and part of GTS – Advanced Technology Group approved by the Danish Ministry of Science, Innovation and Higher Education.

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## Products tested:

Panel	Width	Height	Thick	Area	Weight	Fan
	cm	cm	cm	m <sup>2</sup>	Kg	
"S"	90	127	6	1,14	22	Sunon 4,7 Watt
Solarventi SV14	70	198	5,5	1,39	14	Sunon 3,4 Watt
"G"	88	145	15,5	1,28	34	4,0 Watt

### Test set up.

The solar panels are mounted according to manufacturer specifications and set 90° upright, facing south.

The panels are set to produce the highest possible ventilation from fresh air.

The measurements were performed Wednesday 14 of august, in a very changing weather with clouds and open sky.

### Measuring.

The measurements are simple relative measurements that only speak of how the panels perform relative to each other, under the specific conditions of the day.

The strength of the solar radiation, sun azimuth and height, amount of clouds and air temperature makes it impossible to make absolute measurements with the real sun.

On the other hand absolute measurements, made in a weathering chamber, would lack the changing reality of nature.

The temperature difference produced by the solar panel, and the airflow produced by the fan, is measured by an anemometer tube equipped with a temperature gauge.

The three sets of anemometer tubes (one for each solar panel) have been internally calibrated. As well have the temperature gauges.

The uncertainties of the measurements are as follows:

Temperature  $\pm 0,1$  °C

Air flow  $\pm 2$  m<sup>3</sup>/h

Power  $\pm 20$  W

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T205234-5

The measurements were performed at 17/07 - 2013

The panels are exposed to the sun.

Angel to the horizon 70°. The measurements have not been compensated for Azimuth and solar height.

Direction South

Air density 0,00129 Kg/L

Specific heat of air 1005 J/ (kg \* Kelvin )

The panels are set to produce the highest possible ventilation.

	Temp.			Relative Efficiency	Power (1m <sup>2</sup> ) w/m <sup>2</sup>	Power (unit) w/unit	Air flow /Unit m <sup>3</sup> /h
	Out °C	In °C	Difference °C				
Measurement 1. 09.11							
Comp "S"	26,3	19,4	6,9	60	73	83	33,5
Solarventi	27,4	19,4	8	100	123	171	59,2
Comp "G"	29,2	19,4	9,8	50	62	79	22,4

Measurement 2. 10.56

Comp "S"	35,5	22,7	12,8	76	220	251	54,5
Solarventi	34,7	22,7	12	100	289	401	92,8
Comp "G"	40,6	22,7	17,9	84	244	312	48,4

Measurement 3. 12.00

Comp "S"	39	23,7	15,3	71	261	298	54,0
Solarventi	39,4	23,7	15,7	100	366	508	89,9
Comp "G"	44,7	23,7	21	86	314	402	53,1

Measurement 4. 13.03

Comp "S"	41,3	24,1	17,2	71	323	368	59,4
Solarventi	42,2	24,1	18,1	100	452	628	96,3
Comp "G"	47,3	24,1	23,2	90	407	521	62,3

Measurement 5. 14.37

Comp "S"	35,6	24,9	10,7	50	187	213	55,4
Solarventi	40	24,9	15,1	100	376	523	96,1
Comp "G"	45,2	24,9	20,3	89	333	426	58,3

Measurement 6. 15.50

Comp "S"	36,8	25,7	11,1	51	171	195	48,9
Solarventi	40	25,7	14,3	100	336	467	90,7
Comp "G"	43,8	25,7	18,1	76	257	329	50,4

Measurement 7. 17.00

Comp "S"	35,7	25,8	9,9	66	139	158	44,3
Solarventi	36,5	25,8	10,7	100	211	294	76,2
Comp "G"	39,3	25,8	13,5	74	157	201	41,3

## DELTA

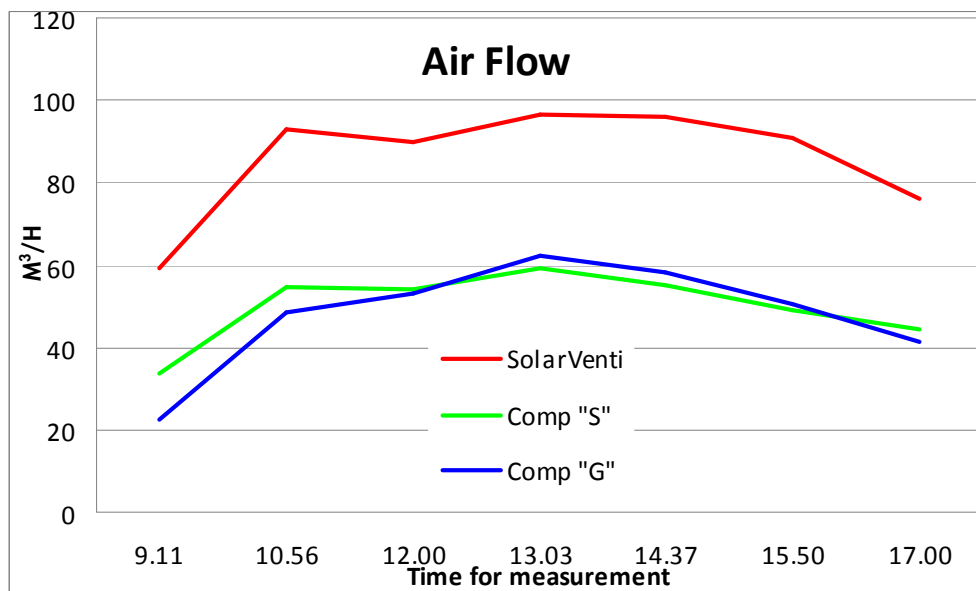
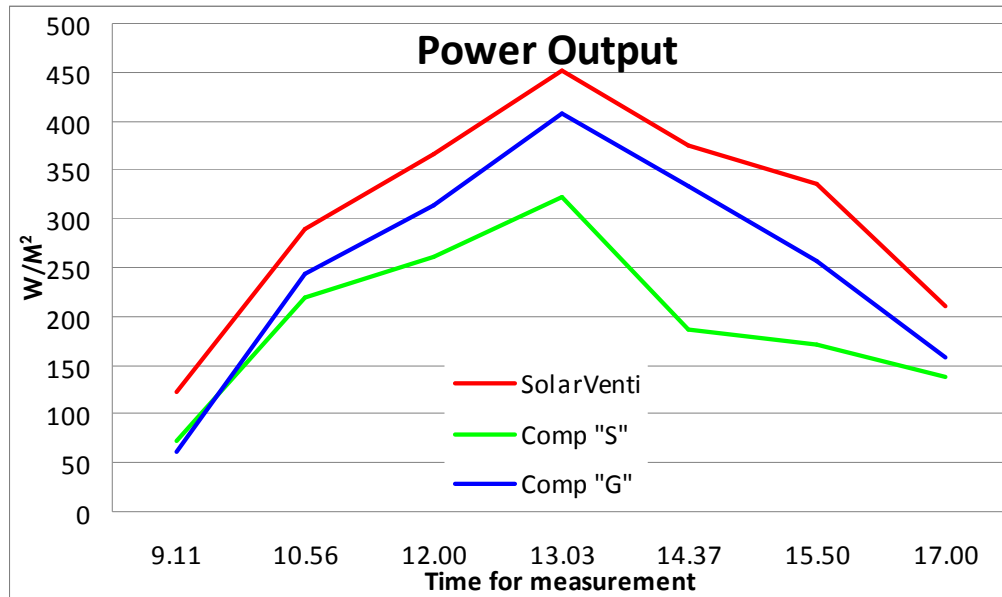
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The outputflow can be described in 2 Curves:



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