

Big freeze bursts Highvelders' g

WAS IT the freak severe weather on the West Rand which caused many solar panels to burst almost two weeks ago, or were the affected solar heating systems not suited to frost-prone areas in the first place?

Last week, when black frost hit parts of Joburg and Pretoria, scores of solar water heating panels froze and burst, and hours later, as temperatures rose, hundreds of litres of water went gushing out of the damaged panels, down roofs and into gardens.

So was this an act of nature, in which case affected homeowners must claim from their insurance companies, pay their excesses and lose their no-claim bonuses; or were the systems not fit for purpose, meaning the installing companies need to foot the entire replacement costs?

Erik Larsen of Benoni was one of the affected homeowners. He paid Teljoy Solar R22 600 for his solar water heating system in March this year, less R4 400 in terms of Eskom's subsidy programme. He was told it was fitted with a mechanical anti-freeze valve, but on the morning of June 16 when the extreme weather hit the area, components of the panel froze and then burst.

He initially commended Teljoy Solar for their "fantastic" response – the company sent out plumbers on the public holiday to disconnect the system and connect his geyser to electricity. So like all the other affected Teljoy Solar customers, he's back to being completely reliant on electricity for hot water in his home, for now.

Larsen presumed that the panel would be replaced by Teljoy Solar at no charge. So he was not impressed when he received an e-mail from the company stating: "The damage to the solar panel was caused as a result of the extreme and unusual weather conditions such as sub-zero temperature, accompanied by black frost and wind. Accordingly, the damage should be covered in terms of your homeowners' insurance policy."

He told Consumer Watch: "That's not acceptable to me."

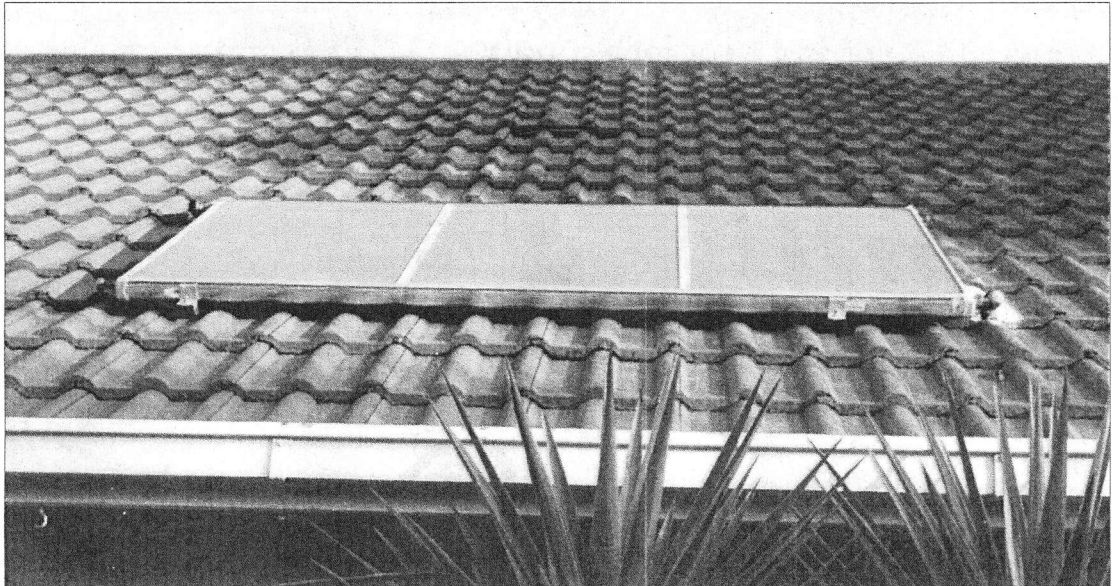
"When I was looking at installing a solar panel system, the sales pitch I got from Teljoy was that its system has an anti-freeze valve to prevent freezing."

"We could get such extreme conditions during any of our harsh winters – I don't want a system which has to be replaced every year. Clearly there are systems which can withstand such extreme weather, so the excuse that the burst was caused by extreme weather conditions does not hold water, and I've been reliably informed that my insurance would reject my claim," he told Consumer Watch.

Before contacting Teljoy Solar, I asked one of South Africa's solar water heating pioneers – who asked not to be named – to comment on why a system with an anti-freeze valve would still freeze and burst.

Simply put, he revealed that most South African consumers aren't aware of: there are two kinds of solar water heating systems: direct and indirect.

The former is cheaper and slightly more efficient – the water



JUST FOR SHOW: Erik Larsen's recently installed Teljoy Solar water heating panel was among scores which froze and ruptured during the bitterly cold snap which hit parts of Joburg the week before last.

in the panels is heated by solar energy and then moves into the tank. But these direct systems should only be used in areas which do not have freezing temperatures, because if the water in the panels freezes, bang goes the panel, as happened in Joburg last week.

In such frosty areas, only indirect systems should be installed, as the panels contain a solution of anti-freeze. This heats up and it is this heat, rather than the liquid, which is then transferred to the water in the tank.

"As those of us who were in the game in the early years found out, anti-freeze valves don't work in real-life situations," he said.

"The only reason the SABS has approved them is because they test them by putting them in a freezer."

"In a freezer they will function just fine, because a freezer cools very slowly. But up on the roof, the freezing happens incredibly fast, too fast for the valve to cope with."

Asked to comment on the failure of panels, Theo Rutstein, executive chairman of the Teljoy Group of companies, said his company's solar water heating system was "fully tested" by the SABS and was Eskom compliant, "so this was as unexpected an occurrence to us as it was to our customers".

And Teljoy Solar apparently wasn't the only company which had this problem on that day.

An industry source put the number at more than 100.

Having paid for plumbers to visit each affected customer and isolate their geysers from their solar panels, Rutstein said, the company consulted the panel manufacturers in Brazil, the anti-freeze valve manufacturer in Chicago and the SABS and CSIR in order to "obtain clarity on exactly what caused the failure".

This analysis could take until the end of July, Rutstein said, stressing that the company was not attempting to evade responsi-

bility for the warranty.

"We will advise that customers should merely have notified the insurance companies of the damage so that they are aware, in case there is a valid claim. The insurance company should be referred to us for discussion."

"We will tell the insurance companies that we are conducting a very in-depth investigation to determine the cause of the damage," he said.

In the worst-case scenario, Rutstein said, the company would have to replace all the affected systems with indirect systems, a massive cost which the company would have to bear.

"If there is any doubt that it falls within the ambit of insured cover, then they will not be required to pay either the customer or ourselves but we will replace the damaged panels, with a suitable product, at our cost entirely."

"If following the thorough independent technical evaluation, it emerges that there is no doubt that the damage arose from an insured incident, then, and only in those circumstances, will we expect the insurer to honour their commitment to their customer, on the basis that they have, and continue to, receive ongoing premiums to cover that type of incident," Rutstein said.

"I believe that we have been honourable and will continue to behave in that way with all reasonable customers."

Rutstein said Teljoy chose not to go with the indirect systems partly because they were more expensive and less efficient than direct systems.

"Our panel supplier advised us on the appropriate freeze protection mechanism and the SABS tested that it worked to the relevant national specifications."

"We were advised that freeze protection would be required, but were assured by all concerned that this was a fairly simple matter to achieve."

"We did learn that many years ago some solar water heating installers had experienced problems with anti-freeze valves, but

we were assured by our panel suppliers that the problems had been overcome and that today's valves were significantly different to the old ones – we felt confident that there would be no problems."

"The truth at the moment is that no one knows whether the valves failed or what the real cause of the damage was..." he said.

Regarding the comments made by my unnamed local solar water heating system industry veteran, Rutstein said that as a Teljoy competitor, "he obviously has a conflicting interest".

But Herman Weber of Kwikhoh, which closed down its solar water heating division in the 1980s after several thousand direct systems failed over the course of two to three years, told Consumer Watch that his company had repeatedly warned Teljoy Energy's technical manager James Vermeulen not to install direct systems with anti-freeze valves in frost areas.

"I don't want to get caught in a wrangle – I just know that those valves don't work, not under those conditions."

"There was no alternative to the direct system at the time," Weber said.

"And believe me, we tried everything to make it work – all our anti-frost mechanisms failed."

"We lost millions replacing panels when they burst during Highveld cold snaps – often we'd replace a panel, and then have to replace that one two weeks later."

Responding, Rutstein acknowledged that such discussions had taken place.

"However, our understanding was that back then they did not have any freeze protection at all. We were independently advised that the addition of freeze protection valves would circumvent this problem."

As for the SABS test protocol, Weber concurred with my source that a freezer couldn't simulate real weather conditions.

"Those valves simply can't han-

dle the sudden temperature drop."

Dylan Tudor-Jones of Solar Heat Exchangers, which has operated in the industry for 23 years, said: "Many suppliers have tried to re-invent the wheel with what they see as new ways to prevent frost damage – all this to save a few rand on going the indirect heating route."

"The fact is, only indirect flat plate collector systems have stood the test of time in South Africa and weathered all of the weather extremes our country experiences."

I tried several times without success to contact the SABS's manager of "mechanical, fluid and pipes", Herman Strauss, whose team is responsible for testing the anti-freeze valves.

However, key industry sources told me that Strauss had responded to questions around the validity of the freezer test method by saying that the test was an international standard which the SABS was obliged to perform.

A working group has apparently been appointed to revise all current solar heating standards.

Since South Africans embraced solar water heating some three years ago, the number of companies installing these systems have grown from just 15 to about 500, many of which, I'm told, are installing direct systems.

I encountered a general reluctance on the part of the key stakeholders in the industry – Eskom, the SABS and the Sustainable Energy Society of Southern Africa (Sessa) – to comment on behalf of these organisations, such is the sensitivity of the issue.

For consumers the lesson in all of this is simple.

If you live in an area which experiences frost and temperatures below 5°C in winter (it could be a pocket within an area – a valley or the cold side of a hill, perhaps) and you want to install solar water heating, your safest bet is an indirect system.

We tried to make it work – all our anti-frost mechanisms failed

If you live in an area that has frost, your safest bet is an indirect system



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