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**From:** Chris Nash [mailto:C.Nash@bac.bm]  
**Sent:** Tuesday, July 04, 2006 9:57 PM  
**To:** mpi@bluewin.ch  
**Cc:** Gary Hines; Chris Schuler; Dennis Hayes; John Plested  
**Subject:** RE: Ultrasonic Antifouling of Heat Exchangers - Russian Transducers

Miodrag,

A year ago we paid the Russian supplier 1,400 Euro total for two generators with 4 transducers and they work (see attached). Whilst we can appreciate that things are more expensive in Switzerland, we cannot rationalize why your solution would be 14 to 21 times the price. You are talking about the price of a very good car for a relatively few pounds of electronics and hardware. We have a contact in Canada who assures us that they can clone the technology. Can you re-think your pricing or we will have to go elsewhere.

Regards,

Chris Nash, P. Eng.  
Engineering Manager & Acting Service Manager

**BAC**

Tel. (441) 278 6225  
Cel. (441) 537 0824  
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**From:** Roustam Baltakhanov [mailto:rustam@zevs.ru]  
**Sent:** Wednesday, August 24, 2005 2:42 AM  
**To:** Chris Nash  
**Cc:** CEO  
**Subject:** Possibly SpamRe: Zevsonic units for plate and frame heat exchangers

Dear Chris,

The prices are valid still. We can ship 2 of ZS-2 within one week.

Best regards,  
Roustam

ZEVS-Technologies Co.  
2, ul. Zavodskaja, Istra-2 Moscow region, 143500 Russia  
tel/fax +7 095 901 99 57  
Website: [www.zevs.ru](http://www.zevs.ru)

----- Original Message -----

**From:** [Chris Nash](#)  
**To:** '[Roustam](#)'  
**Sent:** Tuesday, August 23, 2005 11:10 PM

Subject: RE:

## Zevsonic units for plate and frame heat exchangers

Roustan,

Are the prices you quoted back in January for the ZS-2 still valid and how soon could you ship 2 of them?

Regards,

Chris Nash, P. Eng.  
Engineering Manager  
*BAC Engineering*  
Tel. (441) 278 6225  
Cel. (441) 537 0824  
Fax. (441) 292 6887

-----Original Message-----

**From:** Roustan [mailto:rustam@zevs.ru]  
**Sent:** Monday, January 24, 2005 6:06 AM  
**To:** C.Nash@bac.bm  
**Cc:** CEO  
**Subject:** Fw: Zevsonic units for plate and frame heat exchangers

Dear Chris,

We do not have experience in protecting from bacteria but I guess it should work because ZEVS-SONIC assures removal of anything from heating surface. Standard ZEVS-SONIC is 200 - 220V, 50-60 Hz arrangement. The price of ZEVS-SONIC-2 (ZS-2) is 700 euro. Waterproof model ZS-2-IP65 costs 900 euro. We shall give you 10% discount for export. One unit is enough for about 150 sq. meters of heating surface. Unit has two emitters, each heat exchanger should be protected by one emitter at least. We deliver via DHL. The manual is clearly describing installation procedure. Also we'll sure help you, just send us the photos or shemes of heat exchangers and let us know its dimensions.

Best regards,  
Roustan Baltakhanov

ZEVS-Technologies Co.  
VNIT's VEI Istra Moscow region 143500 Russia  
tel/fax +7 096 3145522 or +7 096 3146786  
e-mail: [rustam@zevs.ru](mailto:rustam@zevs.ru)  
WEB: [www.zevs.ru](http://www.zevs.ru)

----- Original Message -----

**From:** [ZEVS-Tech. Co.](http://www.zevs.ru)

**To:** [rustam@zevs.ru](mailto:rustam@zevs.ru)  
**Sent:** Friday, January 21, 2005 10:10 AM  
**Subject:** FW: Zevsonic units for plate and frame heat exchangers

-----Original Message-----

**From:** Chris Nash [mailto:C.Nash@bac.bm]  
**Sent:** Thursday, January 20, 2005 9:47 PM  
**To:** '[info@zevs.ru](mailto:info@zevs.ru)'  
**Cc:** John Plested; Chris Chiappa  
**Subject:** Zevsonic units for plate and frame heat exchangers

Dear Sirs,

We have two clients in Bermuda each with two titanium plate and frame heat exchangers for cooling air conditioning condenser water with salt (sea) water obtained from wells. At these two client's sites, the sea water side of the heat exchangers are becoming fouled with iron eating bacteria which form an orange sludge on the plates. Would your Zevsonic unit help to prevent that bacterial growth and do you have any experience with this type of application. Our electrical systems here are 60 Hz, with either 120, 208, 277 or 460 volts available. Can you please give of some indication of cost for these units. We can send you details on the heat exchangers if required for pricing.

Do you have any distributors in North America or Europe?

Regards,

Chris Nash, P. Eng.

Miodrag,

See initial answers in red below, more to follow.

Chris Nash, P. Eng.  
Engineering Manager & Acting Service Manager  
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**From:** Miodrag Prokic [mailto:[mpi@bluwin.ch](mailto:mpi@bluwin.ch)]  
**Sent:** Monday, July 03, 2006 4:13 PM  
**To:** Chris Nash  
**Subject:** RE: Ultrasonic Antifouling of Heat Exchangers - Russian Transducers

Hi Chris,

Please see the comments and answers below:

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**From:** Chris Nash [mailto:C.Nash@bac.bm]  
**Sent:** Monday, July 03, 2006 9:22 PM  
**To:** mpi@bluewin.ch  
**Cc:** Gary Hines; Chris Schuler  
**Subject:** Ultrasonic Antifouling of Heat Exchangers - Russian Transducers

Miodrag,

Attached are 2 photos of the Russian transducers attached to the heat exchanger and one photo of the two controllers.

**Are you satisfied with results when using Russian transducers?**

They have definitely shown a major improvement since we put them into operation. We have one heat exchanger with transducers and one without in a parallel installation. The unit without has fouled badly twice since then and required disassembly and manual cleaning, but we have not had to clean the unit with transducers yet in about 3 months.

**Are you operating Russian transducers continuously (7/24), or from time to time?**

Continuously.

**Did you notice significant (increased) heating on Russian transducers?**

If you mean increased thermal performance of the heat exchanger over a clean unit, we do not know as the load on the units change continuously throughout the day. It may be possible the vibrations have increased performance. If you mean do the transducers get hot, they are warm but not too hot to touch.

**What is the operating power of Russian transducers? Is this a high-amplitude operation, or just moderate, low amplitude ultrasonic agitation?**

We will have to get our electronics guru to check out the power consumption and maybe frequency when he returns from vacation. I doubt that it is what you would call high amplitude as I do not feel any vibration when holding an active transducers in my hand. There is a noticeable noise with 4 transducers on one heat exchanger.

**How many transducers are connected to the same Russian ultrasonic generator? Is this the case that each transducer is driven by its own generator (one generator to one transducer)?**

We bought the Russian model that has 2 transducers on one generator. They also made a 1 & 1 model.

**Russians are probably applying magnetostrictive transducers?**

Do not know what technology they employ but can tell you that the head of each transducer is very heavy, so it must contain a lot of steel.

The header plate on the heat exchanger is 31.75 mm thick steel plate to which we welded nuts and then screwed the transducers into the nuts.

**If the screwing is an acceptable fixating method for you, we can realize something similar with my transducers. There are other methods how I can fix my transducers.... We will analyze what would be the best.**

There seems to be a lot of weight cantilevered on the end of the transducer, but the fixing nut and weld is relatively small. I am a little concerned about whether there will be a cyclic stress in the weld which may eventually cause it to fail. A bigger nut outer diameter may help relieve this, but we would consider other attachment methods if you recommend any.

We have some jobs that will require units in 208V 60 Hz and other that are 460V 60 Hz, where these are phase to phase voltages and the phase to ground/neutral voltages are 120V and 277V respectively.

**MPI generators are operating from 208 until 230 VAC 50/60 Hz, between two phases in US. Until present we did not make ultrasonic generators that are operating on 460 VAC.**

We can use step down transformers to convert the 460 to 208 V..

Can you give me an indication of your price to treat one heat exchanger, bearing in mind that we will have at least 5 more to do.

**I am not sure if I could give lower prices compared to Russian products (since MPI is operating in Switzerland... where everything is more expensive to produce...). Anyway, I will do my best. Please first send answers on my questions from this email, and later I will have a better picture regarding what to propose.**

Regards,

**Miodrag**

Regards,

Chris Nash, P. Eng.  
Engineering Manager & Acting Service Manager

**BAC**

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**From:** Miodrag Prokic [mailto:mpi@bluwin.ch]  
**Sent:** Saturday, July 01, 2006 3:50 AM  
**To:** Chris Nash  
**Subject:** RE: Ultrasonic Antifouling of Heat Exchangers

Chris,

Could you send me photos after you installed Russian transducers?  
We can make simpler installation of MPI transducers.

Regards,

Miodrag

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**From:** Chris Nash [mailto:C.Nash@bac.bm]  
**Sent:** Friday, June 30, 2006 10:33 PM  
**To:** mpi@bluewin.ch  
**Subject:** RE: Ultrasonic Antifouling of Heat Exchangers

Sorry,

Photos attached now. These were taken before we fitted the four transducers to one heat exchanger.

Chris Nash, P. Eng.  
Engineering Manager & Acting Service Manager  
**BAC**  
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**From:** Miodrag Prokic [mailto:mpi@bluwin.ch]  
**Sent:** Friday, June 30, 2006 4:24 PM  
**To:** Chris Nash  
**Subject:** RE: Ultrasonic Antifouling of Heat Exchangers

**Please attach again the photo of the plate and frame heat exchanger (attachment not received).**

**We can very successfully vibrate ultrasonically your heat exchangers. We already have good experience...**

**We also applied ultrasonic vibrations on cleaning water pipelines in nuclear power plant for removing buildups...**

**I am sure that we will be able to help you.**

**Regards,**

**M. Prokic**

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**From:** Chris Nash [mailto:C.Nash@bac.bm]  
**Sent:** Friday, June 30, 2006 10:08 PM  
**To:** sales@mpi-ultrasonics.com  
**Cc:** Chris Schuler; John Plested; Gary Hines  
**Subject:** Ultrasonic Antifouling of Heat Exchangers

Dear Sirs,

We have several applications where we need to prevent the growth of iron related bacteria in plate and frame heat exchangers that use salty well water to cool fresh water in air conditioning applications. We have already successfully applied this technology from a company in Russia whose web link is as follows?- [http://www.zevs.ru/eng\\_zevsonic.phtml](http://www.zevs.ru/eng_zevsonic.phtml) I have also attached a photo of the plate and frame heat exchanger that we successfully fitted these units to.

Unfortunately we are no longer able to contact the Russian company, so we believe they may have gone out of business. Do you have any experience in this type of ultrasonic application, and if so are you able to provide a quote on the system we need for more heat exchangers if we send you their dimensions etc.?

Regards,

Chris Nash, P. Eng.  
Engineering Manager & Acting Service Manager

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