

**Technology for Child Rescue**  
**At the Forefront Since 2003**  
**Karupa Foundation, Mettupalayam**



### குறள் 613:

தாளாண்மை என்னும் தகைமைக்கண் தங்கிற்றே

வேளாண்மை என்னுஞ் செருக்கு

(In strenuous effort doth reside

The power of helping others: noble pride!)

Karupa foundation Mettupalayam was started as an organization to support children in distress by harnessing the strength of technology. Started off with the objective to use science and technology to help support children in distress. Lt. Dr. K.P. Sridhar believes strongly that scientific knowledge should truly benefit mankind and he was first drawn to the incidents reported on children falling to borewells.



### **Research on device to rescue**

In 2003-we initiated research to develop a device to rescue children from borewells- visited ONGC to know the temperature and humidity present in the deep wells and the other gaseous substrates in deep wells. Based on the input from

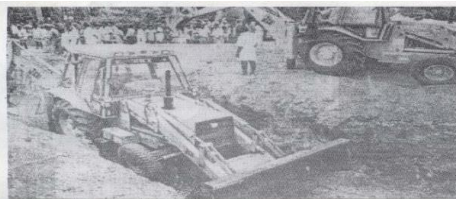
Fire Officer our team visited Dhevarajan family (Victim of Borewell Trap) started collecting data about the rescue operation and the actual efforts carried out for rescue operation.

### **Survey of the borewell mishap incidents:**

A Survey on Borewell Incidents was undertaken with Fire Officer Mr Chandrakumar, Dindugal who was involved in rescue operation at the papampatti Borewell Incident.



Based on the data collected and the findings from the survey, in 2003, we have developed a device to rescue infants from borewells and it is tested with prototype models and the deep well sensors developed to assist the rescue team and the paramedical team. After various tests and demonstrations the device is launched officially on 04/08/2004. The Launch of device is widely published in news papers and media



Lack of visualization and graspers have led to digging parallel pits next to the bore which have not succeeded till date.



Infrared camera to visualize in the dark being lowered  
\* with monitor next to the bore.



The team of student guides,  
students with Dr.V.Anand



### The child model after recovery



A Dedicated vehicle was created which could reach the accident spot within 6 hours and there seemed to be a ray of hope for the children who fell into the borewells. A sparkling light at the end of the tunnel.

The design team worked methodically to perfect the model and improvised the model for a few years and again in 2010 started the journey of popularising the model. The device was subjected to rigorous testing processes as it would be used for children and it was then the Founding trustee decided that it was time to spread the word so that many would benefit from the invention. The device was patented.



## Developed Sensor fusion technique to detect Air Pollution



The invention provides an air pollution detection system based on a sensor fusion technique. The system comprises a wireless sensor network, an air pollution monitoring platform and a remote control terminal, wherein the wireless sensor network is used to monitor air pollution, acquire air pollution monitoring data, and process and forward the data; the air pollution monitoring platform is used to perform two-way communication with the wireless sensor network, can receive and analyze the air pollution monitoring data sent by the wireless sensor network, and can send an alarm signal when the air pollution monitoring data exceeds a set normal threshold; and the remote control terminal is used to remotely access the air pollution monitoring platform and receive the alarm signal sent by the air pollution monitoring platform. According to the scheme of the invention, the detection of air pollution can be achieved by adopting a sensor fusion technique.



2010 03 10 question and answer session after demonstration and cleared all the doubts about deepwell operations by K P Sridhar

**Demonstration to Fire and Rescue Services Department: Extending the innovation to reach the needy:**

In october, 2010, a emonstration to the Fire and Rescue Service Department district heads at TNFRS Head Quarters Egmore Chennai in the presence of Mr Natarajan I.P.S Director TNFRS.



**Question and Answer session with Fire officers on the working of the device:**

A question and answer session after demonstration was arranged where the technology behind the device and how it was to be operated were discussed and K P Sridhar cleared all the doubts about deepwell operations.



## “ Maru janmam” – Rebirth for a rescue operation incident in 2010

Magazine clipping about the device developed by us after involving in a incident



## Awards and accolades:

At the National Noble Science Conclave held in December 2011, in IIIT Allahabad, Lt. Dr. K.P. Sridhar received the Best Project Award for Borewell Rescue Operations. Several Noble laureates and scientists participated in the event and in that august gathering, our managing trustee received the award from Director IIIT Allahabad.

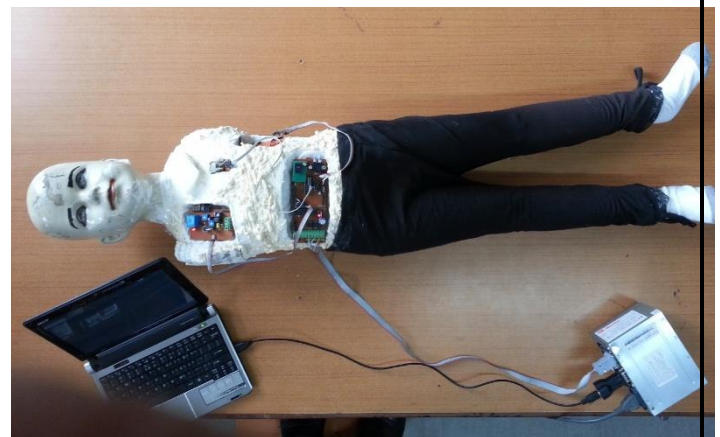




In his award oration, he spoke how his device is meant to help and save the lives of children who fall into a deep uncovered borewell and the use of technology to build this device for the help of a common man during distress. He highlighted that this device can become a supportive device for fire service men. He said that he would be willing to train fire service officials for them to use it whenever there is such an accident. He also mentioned that it could be a great arsenal for the fire service men.

### **Improvising the device -sensors to support paramedical staff.**

It was often seen that during rescue operations due to oxygen starvation and due to the temperature being low, children would become dehydrated and oxygen saturation would drop. So the founder worked with prototype of a child to bring a new modification.



In 2012 a prototype of a child model with sensor unit to analyse the gaseous substrate and the deep well analysis was developed and tested to help the

paramedical team after rescue operation. The same can be used for any type of gas leakage, industrial purpose and for disaster management purpose to help the para medical team, the same was demonstrated at the Tamil Nadu Fire and Rescue Service Department, Government of Tamil Nadu at Chennai



### International Acclaim

The team from Karpagam University where the founder works presented the Device for a competition in the international conference and won an award in 2014.

THE SUNDAY NEW

INDIAN EXPRESS

CITY EXPRESS

Coimbatore, Monday, 6 May, 2013

**CITY COLLEGE EXCELS IN INTL EXPO**

A press release issued from Karpagam University said that a six-member researcher from the institution had participated in the fourth international engineering invention and innovation expo held at Malaysia recently. The expo witnessed a display of around 200 products from 27 countries across the world. The release said that the team from the institution displayed

products such as 'child rescue system for bore well disaster', 'electromyography recognition system for human-robot interaction' and 'E-learning tool for children with autism disorders'. According to the release, the team bagged three medals – Korean Asia Invention Association Special Award, bronze medal and silver medal for all the three projects respectively.

The research team of Karpagam University which participated in the international expo held at Malaysia recently pose for a photo



International gold medal for the project borewell rescue device at university of malasiya perlis, malasiya

## Korean special award for the project rescue tools in 2013



## Rescue operations at different places – Aravankurichi, Karur district.

2013 04 29 Karur Aravakuruchi rescue.



## Training Fire and Rescue service officers



In 2013 December, Demonstration and training for Tamilnadu Fire and Rescue Department Government of Tami Nadu took place at Coimbatore District Headquarters in the presence of Joint Director Fire and rescue Mr Shahul Hammeed.

10/1/13 திருவண்ணாமலை ஆயுத்கள கிணற்றில் இருந்து மீட்கப்பட்ட சிறுமி உயிரிழப்பு - தி இந்து

**திருவண்ணாமலை**

**தமிழகம்**

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திருவண்ணாமலை: ஆயுத்கள கிணற்றில் இருந்து மீட்கப்பட்ட சிறுமி உயிரிழப்பு

சிறுமி தேவியை மீட்கும் பணி

ஆரணி அருகே ஆயுத்கள கிணற்றில் விழுந்த சிறுமி, 10 மணி ரேப் போராட்டத்துக்குப் பின் மீட்கப்பட்டாள். எனினும், அவள் சிகிச்சைப் பலனின்றி உயிரிழந்தாள்.

திருவண்ணாமலை மாவட்டம் ஆரணி தாலுகாவில் உள்ளது முல்லைப்பாடி கிராமம். அந்த ஊரைச் சேர்ந்த பழனி - மலர் தம்பதியின் 4 வயது குழந்தை தேவி பெரியவர்கள் வயலில் வேலை செய்துக்கொண்டிருந்தபோது, சிறுமி தேவி விளையாடிக் கொண்டிருந்தாள். அப்போது, சங்கர எய்வாறு நிலத்தில் ஏதே படாமல் இருந்த 100 அடி ஆயுத்கள கிணற்றில் மீது போடப்பட்டிருந்த பிளாஸ்டிக் சாக்கு மீது கால்களைத் தேவி உள்ளே விழுந்தாள்.

அதிகாலை 7 மணியளவில் நடந்த இந்தச் சம்பவத்தைக் கண்ட உறவினர்கள் கூச்சலிட்டு, கிணற்றில் கயிறு போட்டு மீட்க முயற்சி செய்தனர். அவர்களால் எதுவும் முடிவாத நிலையில், உடனடியாக காவல்துறை மற்றும் திருவண்ணாமலை துறைக்கு தகவல் தெரிவிக்கப்பட்டது. மீட்புக்குழுவுடன் மருத்துவ குழுவும் வந்தது. 108 ஆம்புலன்ஸ் தயார் நிலையில் வைக்கப்பட்டது.

உடனடியாக மீட்புப் பணிகள் தொடங்கின. சிறுமிக்கு மூச்சு திணறல் ஏற்படாமல் இருக்க ஆக்சிஜன் கொடுத்தபடி, 3 மெக்ஸான் இயந்திரங்கள் மற்றும் 1 வரிட்டாக்சி இயந்திரம் வரவழைக்கப்பட்டு ஆயுத்கள கிணறு அருகே பள்ளம் தோண்டும் பணி நடந்தது. ஆயுத்கள கிணறு இருக்கும் பகுதிக்கு அடியில் ஸ்ரேக்கர் உள்ளதால், பள்ளம் தோண்டும் பணி மெதுவாக நடந்தது. மாலை 4 மணி வரை சிறுமியின் குரல் கேட்டது.

இதற்கிடையே கோயமுத்தூர் மெட்டுப்பாளையம் கர்பகம் பல்கலைக்கழகத்தைச் சேர்ந்த உதவிப் பேராசிரியா கே.பி.ஸ்ரீதர் தலைமையிலான குழுவினர் மாலை 5:30 மணிக்கு சம்பவ இடத்தை வந்தடைந்தனர். மாலை 6 மணிக்கு, மீட்புப் பணிசைத் தொடங்கிய அக்குழுவின், போர்டெல் மீட்புக்குறி தொழில்நுட்பத்தை பயன்படுத்தி, 15 நிமிடங்களில் சிறுமியை ஆயுத்கள கிணற்றில் இருந்து மீட்டனர்.

கூடா 10 மணி ரேப் போராட்டத்துக்குப் பின், ஆயுத்கள கிணற்றில் இருந்து சிறுமி தேவி மீட்கப்பட்டாள். மயக்க நிலையில் இருந்த அவர், ஆம்புலன்ஸ் மூலம் உடனடியாக மருத்துவமனைக்குக் கொண்டுசெல்லப்பட்டாள்.

www.thindia.com/thiruvannamalaiதிருவண்ணாமலை ஆயுத்கள கிணற்றில் இருந்து மீட்கப்பட்ட சிறுமி உயிரிழப்புwww.thindia.com

10/1/13 திருவண்ணாமலை ஆயுத்கள கிணற்றில் இருந்து மீட்கப்பட்ட சிறுமி உயிரிழப்பு - தி இந்து

ஆயுத்களையில் இருந்து மீட்கப்பட்ட சிறுமி தேவிக் வேலூர் அருகே மருத்துவக் கல்லூரி மருத்துவமனையில் சீவிய சிகிச்சை அளிக்கப்பட்டது. ஆனால், சிகிச்சைப் பலனின்றி அவள் உயிரிழந்தாள். இந்த மருத்துவிகள் உறுதி செய்தனர்.

சிறுமி தேவியின் உடல் உறுப்புகள் செயலிழந்ததால், சிகிச்சைப் பலனளிக்கவில்லை என்றும், நீண்ட நேரம் ஒயிலிங் இருந்ததால், சேவைகள் ஆக்சிஜன் கிடைக்கவில்லை என்றும் வேலூர் மருத்துவக் கல்லூரி மருத்துவமனையின் முதலவர் சிவசுமாரா தெரிவித்தாள்.

சிறுமி தேவியின் இழப்பு, அவரது பெற்றோர், உறவினர் மட்டுமின்றி திருவண்ணாமலையைச் சேர்ந்ததில் ஆழத்தியுள்ளது.

இதனிடையே இந்த விபத்து நடுத்த தகவல் அறிந்தும் தலைமையற்றவரான ஆயுத்கள கிணறு தோண்டப்பட்ட நிலத்தின் உரிமையாளர் சங்கரன் போலீஸார் கைது செய்தனர்.

Keywords: ஆயுத்கள கிணறு, ஆயுத்கள விபத்து, திருவண்ணாமலை, ஆரணி

Topic: தமிழகம், திருவண்ணாமலை

Media picks up the rescue and device





2013 09 28 rescue operation heald at Thiruvannamalai District , we have rescued an infant in 15 minutes.



2014 04 04 Thyagadhurgam rescue operation Arani





7/4/2014

Deccan Chronicle ePaper

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## Prof's effort to help with gadget goes in vain

PRAMILIA KRISHNAN  
| DC  
CHENNAI, APRIL 5

Assistant professor  
Sridhar Palanisamy of  
Kumaraguru engineering college in  
Coimbatore has designed a gadget capable  
of rescuing children from deep borewells  
and even demonstrated its efficacy by  
pulling out a child in such distress in north  
India sometime back. But he is unable to  
impress the state government about his revolutionary machine.

As soon as he heard about the three-year-old girl falling into the 50-ft open borewell in Palakkad village near Kallikurichi, the professor rushed to the place with his gadget, hoping he would be able to assist the police and fire service personnel in

pulling out the child. "I managed to take out two gunny bags that were suffocating the girl. Then the fire service officers told me they have reached the child and I could withdraw, so I had no option but to stay away from the rescue operation," Mr. Sridhar told DC. It turned out that two hours after his phone interview, when this paper contacted the rescue team, Revenue Divisional Officer Gnanasankaran said they had dug down to about 20 feet and there was still about 10 inches to go. "We will be able to reach the child in about 30 minutes," the RDO said. Asked if the child was all right, he pleaded inability to confirm her status.

Explaining his machine, Prof. Sridhar told DC it was a handheld equipment capable of delivering fresh air into the borewell so as to supply oxygen to the trapped child and also cool down the hot pit. The gadget also has an infrared waterproof CCD camera, suspended by a 200-ft cable, which is capable of feeding images to a portable high-resolution TV monitor. The equipment can operate by a 12-volt battery of the rescue vehicle. "The child can be pulled out by special grippers that can lock on the shoulder area, the wrist or the ankle," he said, adding, "I have been approaching the government since 200 to try out my equipment since such mishaps are happening repeatedly and there have been avoidable deaths," said Prof. Sridhar.

Dr. K.R. Ram Mohan, head of emergency and critical care, Global Health City, points out that if there is no oxygen, it might also lead to cardiac arrest so the first thing that is generally done is to supply oxygen into the pit. "Dehydration is another issue that bothers us. Due to low oxygen supply, the girl can lose consciousness," says Dr. Prasad. Generally, if somebody falls from a height, stabilisation of the spinal cord is first checked. "If a person suffers from a spine injury, there's a way to lift that person. If they are lifted without knowing about the injury, there are chances of aggravating the person's injury," adds Dr. Prasad.

With humid temperature, nobody around and struggling in the narrow space, the girl needs counselling, say specialists. "We need a modern device that has both video and audio attached to it so that interaction with the person who fell down is possible," suggests Dr. Mohan.

### Trauma for life: Docs

UMA KANNAN | DC  
CHENNAI, APRIL 5

Madhumitha may get out of the pit she has fallen into within the next few hours but the trauma of being locked inside a borewell is sure to haunt the little girl for a lifetime. Trauma specialists say that once rescued, the three-year-old girl from Villupuram district who is stuck at 30 feet in the well, should be administered intravenous fluid first and later, will need psychological counselling.

"If an adult fell into a pit, s/he tries to keep safe and fights to climb up. But children don't know what is happening. There's a clearly higher risk of hypoxia, deprived of adequate oxygen supply. Also, we don't know in which position the child fell down, if there's an injury to the spine, then it has to be taken care of," says Dr. Ravi Prasad, consultant emergency and trauma specialist, Fortis Malar Hospital.

### TECHNOLOGY FAILS AT CRUCIAL TIME

JACKSON JOSE | DC  
CHENNAI, APRIL 5

In spite of there being dangerous precedents of children falling into borewells and dying, the fire and rescue services department is yet to be properly equipped. Also, people's awareness about the issue is abysmally low. The latest victim is a three-year-old in Villupuram.

Mr. R.C. Kuduwa, DGP, fire and rescue services, says, "We have been using indigenous methods, though there is need to bring in technology and create awareness on the issue. We will be approaching the ITI and Anna University for enhanced technology."

In the past three years, there have been four incidents of children falling into borewells, three of which ended in tragedy with the child dying. A divisional officer with the services says, "The usual method we use is that of making a tunnel parallel to the borewell, but the rescue gets tougher when rocks come in between. Rocks pose a threat both to the child and the operation."

Mr. Manikandan, state president of the TN farmers' association, says, "We depend on borewells but we are very careful in handling them. It is made 6 to 8 feet wide and not left uncovered. Such incidents occur frequently. Greater care on the builder's side would do a lot of good."

"Making rings, embankments around the well or pit and keeping it closed with sign boards need to be done," adds an officer.



Earthmovers in operation to rescue the three-year-old girl. — DC



2014 04 15 Thiruvannamalai rescue operation

### **Peer Review and technical accreditation**

In 2014 April, a demonstration was given in IIT Madras and a technical evaluation of the device was done by the expert committee





## **Device manufacture authorisation**

The year 2014 also saw that the founder trustee received an order for manufacture of the device for the fire services and the devices were manufactured for use.



In 2014, we received an order to manufacture two borewell rescue tools and to implement in Tamilnadu Fire and Rescue Department, Government of Tamilnadu and also to provide basic training about the machine to handle in emergency situation. Based on that we have supplied the same in 2015 and implemented the device at coimbatore and Ambattur chennai station.



In 2014 April, a Device demonstration and training was given to chennai Ambattur Fire and Rescue Department, Government of Tamil Nadu in their presence of Mr Syed Mohammed Shah, District Officer Ambattur District.





In July, 7<sup>th</sup> 2015, an MOU was Signed with NDRF-National Disaster Response Force, Government of India, Chennai for joint operation in disaster management



On 12<sup>th</sup> April 2015, we conducted the Arcot rescue- we have successfully rescued the child in 15 minutes after reaching the spot with the support of our borewell rescue device



In 2015, there was also a Demonstration to NDRF team lead by Assistant Commandant Mr Sandrew, 04 Battalion, NDRF, Arakonam Chennai, demonstration held at TNFRS Headquarters Coimbatore

## spotlight

Coimbatore Chronicle **23**  
TUESDAY 9 AUGUST 2016

**LIEUTENANT AT YOUR SERVICE!**

**DC chats with the man behind the invention of a special device to rescue children trapped in abandoned borewells**

Images of the device (above and below).

**F**rom time to time, some children fall into shallow baredolls in the countryside resulting in several fatalities. In

Karnes. He says that getting down to the spot is the vital problem in the whole process.

"Even in the Ancient Sargassum, I was only informed how



use the device themselves. Though I increased it, at the end of the day, the point is to give lives—and many souls can do that."

When I was performing engineering, a child in Dordrecht got trapped in an abduction tunnel between and continually drove. The child was in a car with a device that could help the child escape these terrible situations. I made it as my final year project and came out with a working product.

In the following years, Striffler kept improving the efficiency of the device, continuing to provide life to many small emergency victims. Striffler worked with Version 1 of the device.

[illegible]

Moreover, without the government's approval he was not able to deploy his device, and was even chased away in many instances.

"I then presented a lecture to the Tamil Nadu Fire Service Department, and they accepted my proposal. My expertise was officially put to use for the first time in 2016, in Tirunelveli," says Mithunakumar's boss Sridhar, who is also a Lieutenant in NCC.

He has so far used his device in eight instances, in various districts including Arcot and

again myself. But then, I'd like to train people in every district to open their own business. I'm taking his job, being an NGO executive, and doing this make-shift, he said. "It's just the worst! It's so good, I'm waiting 75 hours to get something to be brought."

**Our primary goal is to create awareness and responsibility in people who live close to such dry bore wells.**

**SRIDHAR**



**GOD'S MESSENGER** >>>



Trinitarians have been journeying in from all quarters for the heavy festivity of Asian New Year's Eve. In the case of the monks, who made the "ultimate sacrifice" and saved 300 passengers and crew on board the *Enslinger*. Right from Trinitarianism that crash-landed at Dubai airport five days back. Now, city's popular artist Ali Hossain has come up with a portrait to pay homage to Hossain. He has portrayed jasin as "God's Messenger," with robes and part of a halo on his halo. "This is my way of paying the tribute to him," says Shreeharsh.

-A3

Grisham demonstrating

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In June 2016, Borewell Rescue device training was provided to NDRF -National Disaster Response Force, Government of India at Arakkonam Chennai

### **Conclusion:**

This is a story of a device and the foundation from 2003 to 2016 that is dedicated to the rescue of children who fell into borewells. The founder during various interactions realized that work with science and technology needs to extend to social innovations and inventions that would extend to other areas. The foundation since then diversified its activities and even formed the social wing with the Karupa Institute of Development Initiatives to support other rural convergent activities.