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## Safe Water for Better health....Better life

18/VIII/A/0

I/A		2/IIA		3/IIIB		4/IVB		5/VB		6/VIB		7/VIIB		8/VIII		9/VIII		10/VIII		11/IB		12/IIIB		13/IIIA		14/IVA		15/VA		16/VIA		17/VIIA		18/VIII/A/0								
+1	H	+2	He	+3	Li	+3	Be	+3	B	+3	C	+3	N	+3	O	+3	F	+3	Ne	+3	Na	+3	Mg	+3	Al	+3	Si	+3	P	+3	S	+3	Cl	+3	Ar							
1.00794	Hydrogen	9.012182	Beryllium	44.955910	Lithium	9.012182	Beryllium	44.955910	Boron	12.011	Carbon	14.00674	Nitrogen	15.9994	Oxygen	18.9984032	Fluorine	20.1797	Neon	22.989768	Sodium	24.3050	Magnesium	26.981539	Aluminum	28.0855	Silicon	30.973762	Phosphorus	32.066	Sulphur	35.4527	Chlorine	39.948	Argon							
89-103	Actinides	87-103	Actinides	89-103	Actinides	87-103	Actinides	89-103	Actinides	87-103	Actinides	89-103	Actinides	87-103	Actinides	89-103	Actinides	87-103	Actinides	89-103	Actinides	87-103	Actinides	89-103	Actinides	87-103	Actinides	89-103	Actinides	87-103	Actinides	89-103	Actinides	87-103	Actinides	89-103	Actinides					
137.327	Francium	138.9055	Radium	137.327	Cesium	138.9055	Barium	137.327	Francium	138.9055	Radium	137.327	Actinides	138.9055	Actinides	137.327	Actinides	138.9055	Actinides	137.327	Actinides	138.9055	Actinides	137.327	Actinides	138.9055	Actinides	137.327	Actinides	138.9055	Actinides	137.327	Actinides	138.9055	Actinides	137.327	Actinides	138.9055	Actinides			
178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium	178.49	178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium	178.49	Rutherfordium		
223.0197	Actinides	223.0197	Actinides	223.0197	Actinides	223.0197	Actinides	223.0197	Actinides	223.0197	Actinides	223.0197	Actinides	223.0197	Actinides	223.0197	Actinides	223.0197	Actinides	223.0197	223.0197	Actinides	223.0197	Actinides	223.0197	Actinides	223.0197	Actinides	223.0197	Actinides	223.0197	Actinides	223.0197	Actinides	223.0197	Actinides	223.0197	Actinides	223.0197	Actinides		
226.0254	Actinides	226.0254	Actinides	226.0254	Actinides	226.0254	Actinides	226.0254	Actinides	226.0254	Actinides	226.0254	Actinides	226.0254	Actinides	226.0254	Actinides	226.0254	Actinides	226.0254	226.0254	Actinides	226.0254	Actinides	226.0254	Actinides	226.0254	Actinides	226.0254	Actinides	226.0254	Actinides	226.0254	Actinides	226.0254	Actinides	226.0254	Actinides	226.0254	Actinides		
261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium	261.11	261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium	261.11	Rutherfordium		
263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium	263.118	Seaborgium
262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium	262.12	Bohrium
269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium	269.00	Ununennium
272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	Ununium	272.00	Ununium
277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	Ununium	277.00	Ununium
285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium	285.00	Ununquadium
288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium	288.10	Ununhexium
293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium	293.00	Ununoctium

**Key**

Common Oxidation States → **19** → Atomic Number

Electron Configuration of Outer Shells → **K** → Atomic Symbol

















→ **39.0983** → Atomic Weight

→ **8-8-1**

Elements 104-118 : Relatively recent elements. Based on 1987 IUPAC Table of standard atomic weights of the elements updated for the information available till 1997.  
 \*Relative atomic mass of the isotope of that elements of longest known half-life. • IUPAC recommendations 1997

+3	57	La	138.9055	-18-9-2	Lanthanum	+3	89	Ac	(227.0278)	-18-9-2	Actinium	+3	67	Ho	164.93032	-29-8-2	Holmium	+3	99	Es	(252.083)	-29-8-2	Einsteinium	+3	66	Dy	162.50	-28-8-2	Dysprosium	+3	98	Cf	(251.0796)	-28-8-2	Californium	+3	65	Tb	158.92534	-27-8-2	Terbium	+3	97	Bk	(247.0703)	-27-8-2	Berkelium	+3	64	Gd	157.25	-25-9-2	Gadolinium	+3	96	Cm	(247.0703)	-25-9-2	Curium	+3	63	Eu	151.965	-25-8-2	Europium	+3	95	Am	(243.0614)	-25-8-2	Americium	+3	62	Sm	150.36	-24-8-2	Samarium	+3	94	Pu	(244.0642)	-24-8-2	Plutonium	+3	61	Pm	(144.9127)	-23-8-2	Promethium	+3	93	Np	(237.0482)	-22-9-2	Neptunium	+3	60	Nd	144.24	-22-8-2	Neodymium	+3	92	U	+238.0289	-21-9-2	Uranium	+3	59	Pr	140.90765	-21-8-2	Praseodymium	+3	91	Pa	(231.0388)	-20-9-2	Protactinium	+3	58	Ce	140.115	-20-8-2	Cerium	+3	90	Th	232.0381	-18-10-2	Thorium	+3	87	Fr	(223.0197)	-18-8-1	Francium	+3	86	Ra	(226.0254)	-18-8-2	Radium	+3	85	At	(209.9871)	-32-18-7	Astatine	+3	84	Po	(208.9824)	-32-18-6	Polonium	+3	83	Bi	208.98037	-32-18-5	Bismuth	+3	82	Pb	207.2	-32-18-4	Lead	+3	81	Tl	204.3833	-32-18-3	Thallium	+3	80	Hg	200.59	-32-18-2	Mercury	+3	79	Au	196.96654	-32-18-1	Gold	+3	78	Pt	195.08	-32-16-2	Platinum	+3	77	Ir	192.217	-32-15-2	Iridium	+3	76	Os	190.2	-32-14-2	Osmium	+3	75	Re	186.207	-32-13-2	Rhenium	+3	74	W	183.84	-32-12-2	Tungsten	+3	73	Ta	180.9479	-32-11-2	Tantalum	+3	72	Hf	178.49	-32-10-2	Hafnium	+3	71	Y	88.90585	-18-9-2	Yttrium	+3	70	Zr	91.224	-18-10-2	Zirconium	+3	69	Sc	44.955910	-8-9-2	Scandium	+3	68	Yb	173.0547	-32-18-7	Ytterbium	+3	67	Lu	174.967	-32-9-2	Lutetium	+3	66	Er	167.26	-30-8-2	Erbium	+3	65	Tm	168.93421	-31-8-2	Thulium	+3	64	Md	(258.10)	-31-8-2	Mendelevium	+3	63	No	(259.1009)	-32-8-2	Nobelium	+3	62	Lr	(262.11)	-32-9-2	Lawrencium	+3	61	Lu	174.967	-32-9-2	Lutetium	+3	60	Uuo	293.00	-	Ununoctium	+3	59	Uuh	289.00	-	Ununhexium	+3	58	Uup	285.00	-	Ununquadium	+3	57	Uuq	285.00	-	Ununquadium	+3	56	Uut	285.00	-	Ununquadium	+3	55	Uuq	285.00	-	Ununquadium	+3	54	Uuq	285.00	-	Ununquadium	+3	53	Uuq	285.00	-	Ununquadium	+3	52	Uuq	285.00	-	Ununquadium	+3	51	Uuq	285.00	-	Ununquadium	+3	50	Uuq	285.00	-	Ununquadium	+3	49	Uuq	285.00	-	Ununquadium	+3	48	Uuq	285.00	-	Ununquadium	+3	47	Uuq	285.00	-	Ununquadium	+3	46	Uuq	285.00	-	Ununquadium	+3	45	Uuq	285.00	-	Ununquadium	+3	44	Uuq	285.00	-	Ununquadium	+3	43	Uuq	285.00	-	Ununquadium	+3	42	Uuq	285.00	-	Ununquadium	+3	41	Uuq	285.00	-	Ununquadium	+3	40	Uuq	285.00	-	Ununquadium	+3	39	Uuq	285.00	-	Ununquadium	+3	38	Uuq	285.00	-	Ununquadium	+3	37	Uuq	285.00	-	Ununquadium	+3	36	Uuq	285.00	-	Ununquadium	+3	35	Uuq	285.00	-	Ununquadium	+3	34	Uuq	285.00	-	Ununquadium	+3	33	Uuq	285.00	-	Ununquadium	+3	32	Uuq	285.00	-	Ununquadium	+3	31	Uuq	285.00	-	Ununquadium	+3	30	Uuq	285.00
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# Indian's leader Brand available in Africa

<p><b>MICRO SWITCH</b></p>  <p>V /Z15 /D4 MC</p>	<p><b>LIMIT SWITCH</b></p>  <p>SE ME/XCKM/P/P J/S/WL/HL/K244/3SE</p>	<p><b>MONO LEVER SWITCH</b></p>  <p>22.5&amp;30.5mm dia 2&amp;4 WAY</p>	<p><b>TOWER LIGHT LED DETACHABLE</b></p>  <p>50&amp;70MM 12,24,220V AC/DC</p>
<p><b>DIGITAL TIMER 220V/24V DC</b></p>  <p>SE101,619,805,DH48</p>	<p><b>ANALOG TIMER 220V/24V DC</b></p>  <p>SUL,ST3P,H3CR,H3Y2/3</p>	<p><b>PG&amp; MG CABLES GLAND</b></p>  <p>PG &amp; MG 7 to 63 White,Black,Grey</p>	
<p><b>RELAY</b></p>  <p>SE MY2/3,LY2/4,MK2P,3P RX</p>	<p><b>SOLID STATE RELAY</b></p>  <p>10 to 120 A DC-AC,AC-AC &amp; DC-DC Single &amp; 3 phase</p>		<p><b>WARNING/REVOLVING LIGHT</b></p>  <p>6/12/24/110/220v in AC&amp; DC LED &amp; Bulb Model with &amp; without Buzzer</p>
<p><b>HEAVY DUTY HARTING TYPE BCONNECTORS</b></p>  <p>4 to 56 pins Open / Close Side &amp; Top Entry      6-12 pins 35 Amps      16 pins 10 Amps Slim Body</p>			
<p><b>CABLE DRUM</b></p>  <p>1.5x2, 3 core &amp; 2.5x34 Core 16A 2, 3pins, 32A 3, 4 pins with ELCBs &amp; without ELCBs</p>			
<p><b>HRC FUSES DIN</b></p>  <p>2 to 630 A</p>	<p><b>BS FUSE LINK</b></p>  <p>SE NS /TIS /TSD /TSF/TSMS/TSL</p>	<p><b>FUSES 7 FUSE HOLDER</b></p>  <p>10X38/14X51 Single &amp; Triple Pole</p>	
<p><b>SOLID STATE RELAY</b></p>  <p>Inductive proximity Capacitive Type Connector Type Fork type</p> <p>4 to 30mm ( Flus &amp; Non Flus)PNP/NPN/AC/NO-NC plug in Type</p> <p>Photo Electric Sensor Diffused type Through beam type With retro Reflector Type Colour mark Sensor</p> <p>8-30 mm in plastics &amp; Metal PNP/NPN/AC/NO-NC</p>			



**INDCARE AFRICA LTD.**  
 BUTERE ROAD Industrial Area Nairobi Kenya Phone 0733 895312  
 Email: indcare4u@gmail.com www.indcarefrica.com

the water. Hence it must be used to treat only water with TDS lower than 120ppm.

**T**he water bottling business has gained fame in the country since people started having doubts with the tap water. Most people have preferred to drink bottled water rather than directly from the tap.

This has seen the falling frequencies of people suffering from water related diseases.

The business is very simple to start as long as one has a reliable source of potable water. The water quality is first determined by carrying out full analysis. The analysis report helps the technician to advise the investor on the most appropriate machine that will bring his/her water to the required standard laid by KEBS.

There are majorly two types of machine, each specific to the water quality. The main parameter we look at during decision making is the TDS of the potable water. TDS indicates the amount of dissolved salt in the water. A good bottled water should have a TDS of >120ppm in order to achieve the standard acceptable taste by customers.

#### The two major machines are:

1. **A REVERSE OSMOSIS PLANT:** - this machine is used when the TDS of the potable water exceeds 200ppm. It treats the water by removing the excess salt. The treated water from the RO is usually <90ppm and is usually of good taste. Places like Mombasa or Rift Valley require this type of machine in order to remove excess sodium and fluoride ions in the water.
2. **A SIMPLE WATER PURIFICATION PLANT:** - this plant is meant for potable water with TDS lower than 120ppm. Its main objective is to remove majorly suspended particles like silt and any other organics in the water. It also removes chlorine and sterilizes the water before bottling. It does not in any way alter the TDS of



#### FACTORS TO CONSIDER WHEN PLANNING TO INVEST IN WATER BOTTLING:

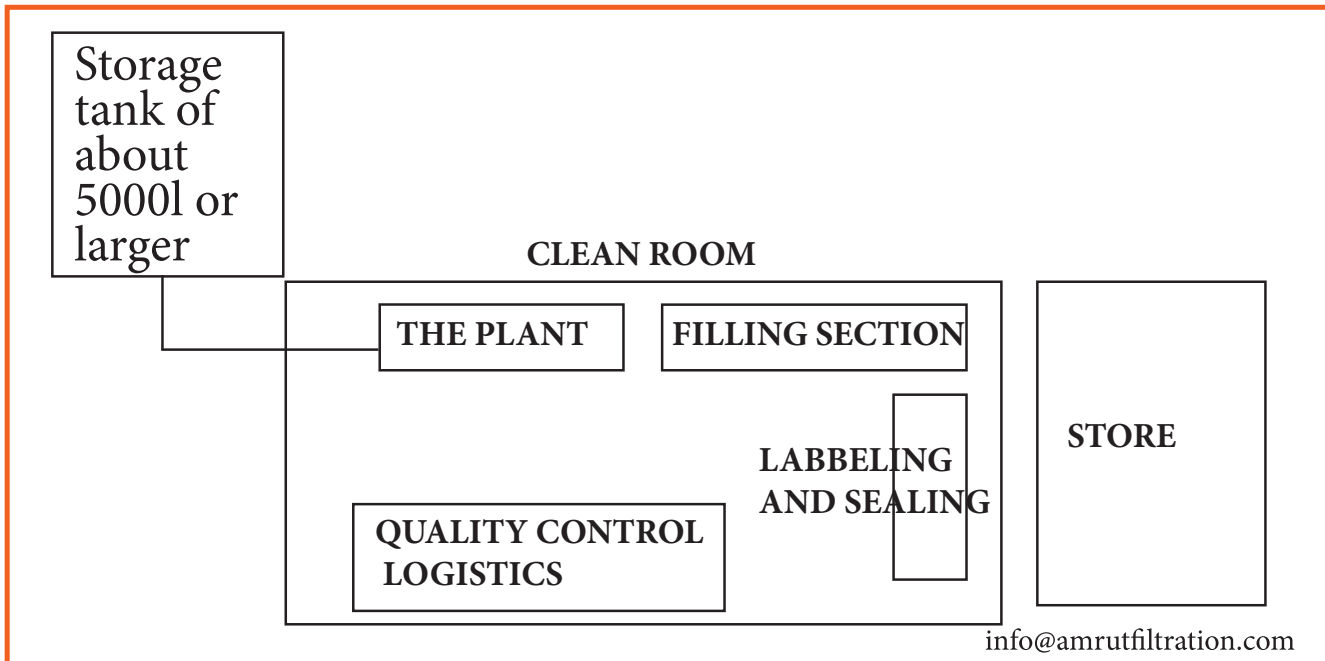
1. **SALES STRATEGY:** there is always market for bottled water. The investor must do a complete market research on how he/she will push the product in the market. There are several strategies but the most common one are:
  - a) Involving sales people and paying them commission
  - b) Taking contracts with hotels or bus companies to customized make branded water
  - c) Involving hawkers at bus stops to sell your water to travelers
  - d) Re-filling the 20Litre cans for cooperates, offices and households.
2. **CLEAN ROOM:** this is where all the production will take place. You must have a permanent building with tiled floors and walls and away from public place. Entry into this room must be restricted and it must not have many openings. The room is light with fluorescent bulbs and not natural light. Only authorized staff can enter this room
3. **STORE:** this is where the empty bottles waiting filling are stored. The store should be big enough to accommodate the bottles form the supplier.
4. **QUALIFIED STAFF:** these are the people who will do the manual filling of the bottles on target basis. One will be assigned to oversee and operate the plant on a daily basis to avoid the quality of the water being compromised. The staff is trained thoroughly before any production.
5. **CERTIFICATION BY KEBS:** KEBS is the body authorized to ensure that the quality of the water fits the standards. They carry out inspection of the site, sample and analyze the water. If they are satisfied with the set-up, they issue a certification mark that you will put on the label to indicate that your product has passed the test. This is usually done after the machine installation.
6. **PRODUCT NAME, BARCODE, and LABELS AND SEALS:** your product must have a unique yet appealing name that clients will go for. You

must also get a barcode from SG1 which will help you to sell your products to supermarkets. The seals and the labels must be well done to make the final product appealing to those who you want to buy your water.

7. **MEANS OF TRANSPORTATION:** it is important to have a means of transporting your product to the target market. This will help you to compete effectively with your rivals by reaching your customers faster and in time. If you don't have a pick-up, you will have to hire services of the existing ones until you get one, however, this will reduce your profit margin.

For more information contact [info@amrutfiltration.com](mailto:info@amrutfiltration.com)

## FLOW DIAGRAM FOR WATER TREATMENT DURING BOTTLING



## AMRUT WATER KIOSK



Photo shows affordable water kiosk in Kenyan rural area. It shows the front view of the kiosk and the filtration plant. (Installed By Indcare Africa)

### *Safe Water for Better health... Better life*

As per UN water organization, one in nine people worldwide doesn't have access to improved sources of drinking water. Through our experience in Africa, we developed water kiosks that offer perfect healthy water solutions in rural and urban areas.

The water kiosk is available in different sizes and for different kind of water.

#### *It has the following features :*

- ✓ Integrated and compact solution
- ✓ Easy to operate and maintain
- ✓ Less maintenance and running cost
- ✓ Improves urban livelihood
- ✓ Environment friendly and energy efficient



**AMRUT WATER KIOSK** is ideal and useful for individual small entrepreneurs, Community, and NGOs as a solution to improve drinking water.

### **Indcare Africa Ltd.**

Industrial Area, Nairobi, Kenya (E.A.)

Ph.: +254 733 895312 E-mail : [indcare4u@gmail.com](mailto:indcare4u@gmail.com)

<b>Fault</b>	<b>Probable Cause</b>	<b>Suggested Remedy</b>
Rough surface, melt fracture or chatter marks in parison	<ul style="list-style-type: none"> <li>● Low melt temperature, melt fracture of material, die causing fracture of material.</li> <li>● Extrusion rate too high</li> <li>● Melt fracture or in stability</li> </ul>	<ul style="list-style-type: none"> <li>● Increase melt temperature, raise parison bushing temperature, reduce extrusion rate, streamline die approach.</li> <li>● Decrease the extrusion rate.</li> <li>● Use higher flow resin if possible</li> </ul>
Uneven wall thickness and thinning of side wall near the base of product	<ul style="list-style-type: none"> <li>● Pin not centered in the die bushing, die design wrong, uneven melt &amp; thinning of sidewall parison necking away from the die due to low melt strength of the Polmer, too high melt temperature, the bottle design requiring too great a length for the thickness of parison employed</li> </ul>	<ul style="list-style-type: none"> <li>● Center the die pin, check design, melt to be made uniform, use material of better melt strength (usually of lower melt flow index), reduce the melt temperature, employ mechanical means to maintain uniformity of parison wall</li> </ul>
Poor surface finish	<ul style="list-style-type: none"> <li>● Mould finish rough, blow pressure low, vents not provided, die temperature low Mould temperature low</li> </ul>	<ul style="list-style-type: none"> <li>● Polish the mould, increase Blow pressure, provide vents, increase melt temperature, increase die temperature, increase mould temperature</li> </ul>
Product surface shows Pits, fish scales, rough grain surface, etc.	<ul style="list-style-type: none"> <li>● Trapped air in the mould, water on mould (Condensation)</li> </ul>	<ul style="list-style-type: none"> <li>● Provide vents, raise mould temperatuure to reduce condensation, check for air leak, have mould cavities with roughened surface (Sand blasting), particularly polyethylenes.</li> <li>● Reduce the melt tempearture, reduce the mould temperature, &amp; correct blowing pressure &amp; rate of blow</li> </ul>
Warpage	<ul style="list-style-type: none"> <li>● Insufficient cooling, non uniform cooling</li> </ul>	<ul style="list-style-type: none"> <li>● Decrease mould temperature, increase cooling time, provide better water circulation, use internal cooling</li> </ul>
Breakage of seams	<ul style="list-style-type: none"> <li>● Inadequate weld, melt flow low</li> </ul>	<ul style="list-style-type: none"> <li>● Increase melt temperature.</li> </ul>
Part blow out	<ul style="list-style-type: none"> <li>● Large blow ratio, parison blow out, mould separation, part too hot, pinch off very sharp, pinch off too sharp</li> </ul>	<ul style="list-style-type: none"> <li>● Use larger parison die, higher melt strength material to be used, use higher clamping force, longer cooling time to be given, provide wader land in pinch off, cool mould, use larger die</li> </ul>
Insufficient blowing	<ul style="list-style-type: none"> <li>● Air supply restricted, pinch off Too hot, pinch too sharp.</li> </ul>	<ul style="list-style-type: none"> <li>● Provide enough air, cool mould at pinch off area, provide enough land in pinch off area.</li> </ul>
Distortion warping	<ul style="list-style-type: none"> <li>● Shrinkage difference in axially asymmetrical parts, shrinkage difference due to variation in wall thickness, in oval parts, warping</li> </ul>	<ul style="list-style-type: none"> <li>● Design mould properly, compensate a mould shrinkage allowance that increases with wall thickness, give the article a spherical design</li> </ul>

## Automation... Productivity Through Technology...



» PLC for Blow & Injection Molding Machine

» PLC for Pet Stretch Blow Molding M/c

» PLC for Bag / Pouch Making M/c.

» PLC for Labelling Machine

» AC Servo Motor Drive

» DC Stepper Motor Drive

» Controller For Hopper Loader

» Controller For Dozing Application

Ahmedabad – 380052, Gujarat , India.

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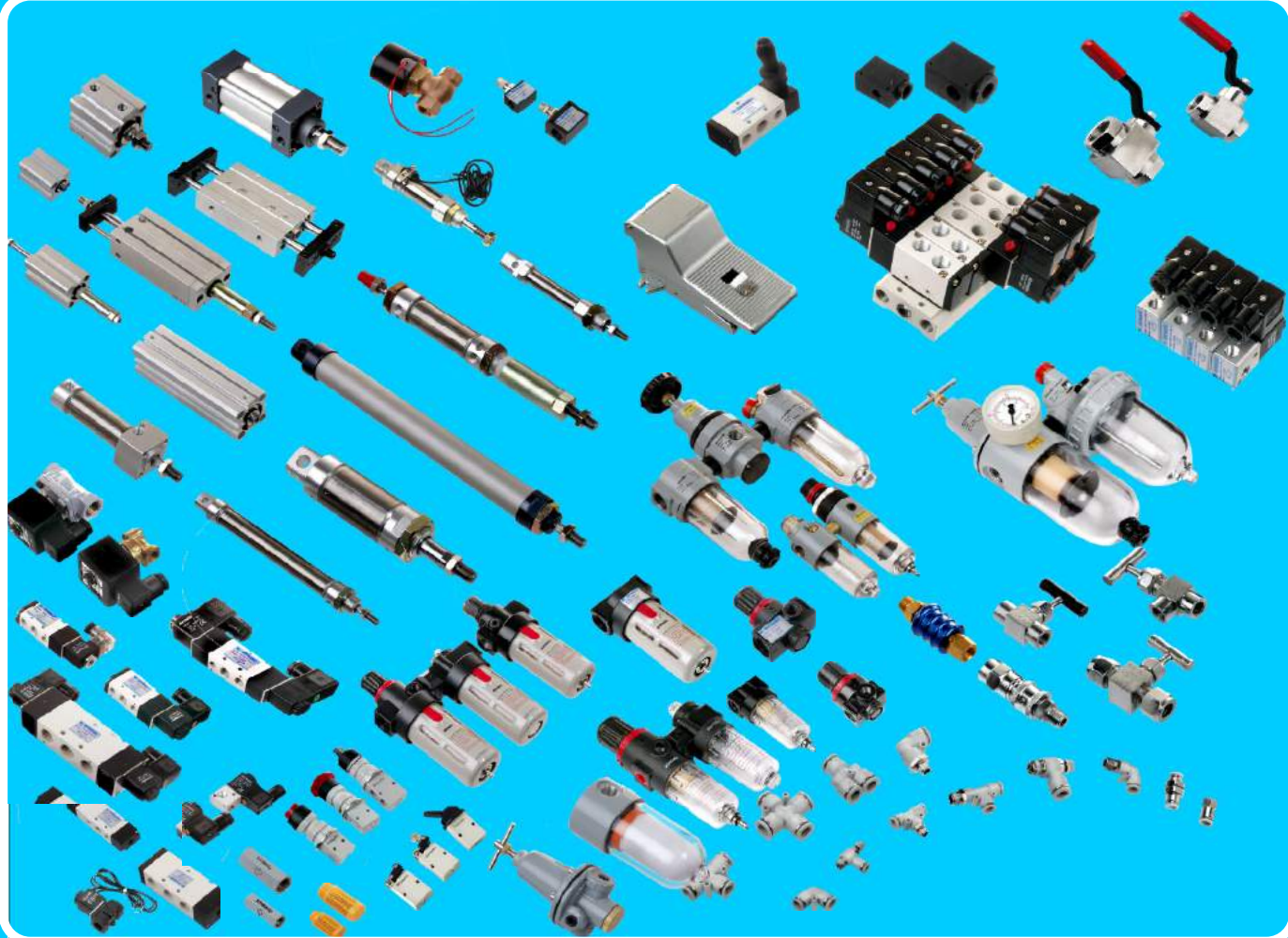
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Africa Office

P.O Box 18632-00500, Butere Road,

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# Your pneumatic Automation partner



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- ◆ Valve & Cylinders



# GO GREEN WITH GREEN TECHNOLOGY

## Water Scale Guard



AMRUT SCALEGUARD is tried and tested electronic water conditioner guaranteed to control hard water scale reduce existing scale, reduce maintenance costs and save you energy and money. Just one unit fitted to the incoming main will de-scale and protect the whole house. Say good-bye to limescale, scaled up water systems under performing boilers and clogged pipes. AMRUT Scaleguard fits most pipe sizes. Fitting is simple and strength forward in less than half an hour

### The Problems of Lime scale...

- If you live in a hard water area, you will see signs of the problems daily. The most obvious are scaled kettles, white marks around taps and basins blocked showers, deposits on shower screens, ceramics and baths - the list is endless.



- However, some of the hidden effects cause greater concern: blocked pipes and scaled heating elements in hot water cylinders, dishwashers and washing machines, which rapidly become less efficient and require greater maintenance.
- Lime scale builds up on heat exchangers, pumps, boilers and appliances connected to the system. This results in reduced flow rates, loss of efficiency and early failure of components.
- After fitting Scale Guard lime scale will gradually reduce due to the audio wave applied to the water flow, in simple terms, the electronic changes the structure of the calcium crystals which now lose their ability to stick together or bond to other surfaces. Existing scale is gradually removed with the normal flow.

### How can I tell if it's working?

In around 4 to 6 weeks, you should notice:

- Scale flaking away from the kettle element and shower rose
- Water often feels silkier
- Water feeling hotter and the ability to turn down the thermostat
- Improved performance of washing machines and dishwashers.
- The ability to reduce the amount of soap, shampoo, detergents and cleaners.
- Easier cleaning of surfaces, especially baths, basins

### The simple solution to hard water problems - controls hard water scale and saves energy

Just one unit fitted to the incoming main will de-scale and protect the whole house for a running cost of £5 per year. Say good-bye to limescale, scaled up water systems under performing boilers and clogged pipes. Scale Guard fits most pipe sizes; fitting is simple and straight forward in less than half an hour



NO SALT! NO WASTED WATER! NO SCALE! NO CHLORINE!

### AMRUT SCALE GUARD FOR

- Industrial
- Agriculture
- Household application

### Electromagnetic for industrial use

With the use of this device in industries, chemical process expenses reduce up to 50%.



### How does AMRUT Scale Guard work?

The electronic unit works by sending out a computerized modulated signal which can change the physical properties of lime scale and control further build up of hard scale.

Scale Guard works on all types of pipe work up to 28mm in diameter and once fitted requires no maintenance.

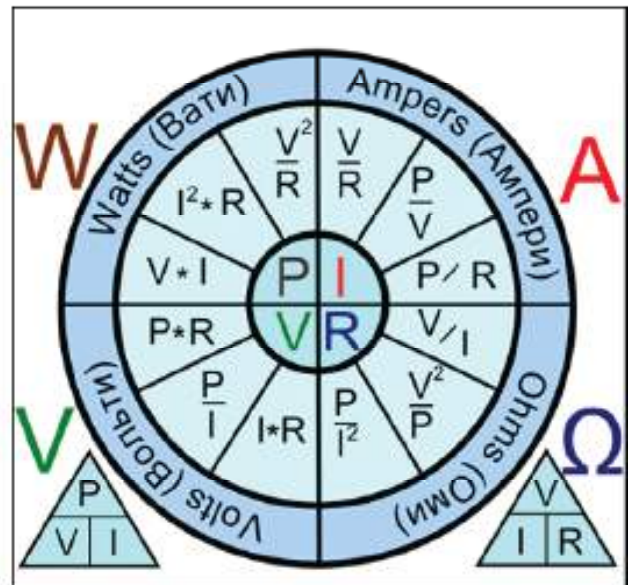
### The Benefits of Scale guard

- Protects the whole house-Fitted to the rising main, a Scale guard will protect your whole house.
- Controls scale build-up -Boilers, cylinders and appliances last longer.
- Fuel Savings -Reducing scale formation results in energy savings - Scale guard saves energy, saves money.
- Suitable for all types of pipe work -Copper, Steel, Lead or Plastic pipes can all be easily treated.
- Easy Installation



Determine	Single- Phase	Three- Phase	Direct - Current
KVA	$\frac{I \times E}{1000}$		
kilowatts	$\frac{I \times E \times PF}{1000}$	$\frac{I \times E \times 1.73 \times PF}{1000}$	$\frac{I \times E}{1000}$
Horsepower	$\frac{I \times E \times \%EFF \times PF}{746}$	$\frac{I \times E \times 1.732 \times \%EFF \times PF}{746}$	$\frac{I \times E \times EFF}{746}$
Amperes (with HP)	$\frac{HP \times 746}{E \times \%EFF \times PF}$	$\frac{HP \times 746}{1.73 \times E \times \%EFF \times PF}$	$\frac{HP \times 746}{E \times \%EFF}$
Amperes (with KW)	$\frac{KW \times 1000}{E \times PF}$	$\frac{KW \times 1000}{1.73 \times E \times PF}$	$\frac{KW \times 1000}{E}$
Amperes (with KVA)	$\frac{KVA \times 1000}{E}$	$\frac{KVA \times 1000}{1.73 \times E}$	

Cable Cross sectional Area(mm <sup>2</sup> )	Typical Current rating (Amps)	Recommended Circuit Breaker rating(amps)
1.5 mm <sup>2</sup>	7.5 - 15.8A	8A
2.5 mm <sup>2</sup>	15.9 - 22A	15A
4 mm <sup>2</sup>	22 - 30A	20A
6 mm <sup>2</sup>	30 - 38A	30A
10 mm <sup>2</sup>	39 - 54A	40A
16 mm <sup>2</sup>	54 - 72A	60A
25 mm <sup>2</sup>	71 - 93A	80A
50 mm <sup>2</sup>	117 - 147A	125A
70 mm <sup>2</sup>	147 - 180A	150A
95 mm <sup>2</sup>	180 - 216A	200A
120 mm <sup>2</sup>	216 - 250A	225A
150 mm <sup>2</sup>	250 - 287A	275A
185 mm <sup>2</sup>	287 - 334A	300A
240 mm <sup>2</sup>	334 - 400A	350A



## INDCARE AFRICA LTD.

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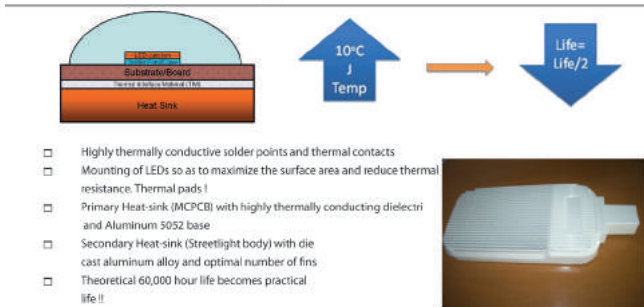
# Green Energy (Power) Solutions

Usage of conventional source of lights like CFL and other energy sources has led to heavy costs of energy across Africa. LED lights consume very less energy as compared to conventional source of lights and are more efficient and are the solution for energy conservation in Africa.

In the current market trends, there are a lot of sub-standard LED products due to the increase in competition from the manufacturers and suppliers. Therefore, it is important for customers to understand the right technological aspects for quality LED products. Which include ;

**A proper thermal management** –An area where we have focused to make the product much more reliable and differentiated. We choose the right size, area, orientation and

## Thermal Management of LEDs

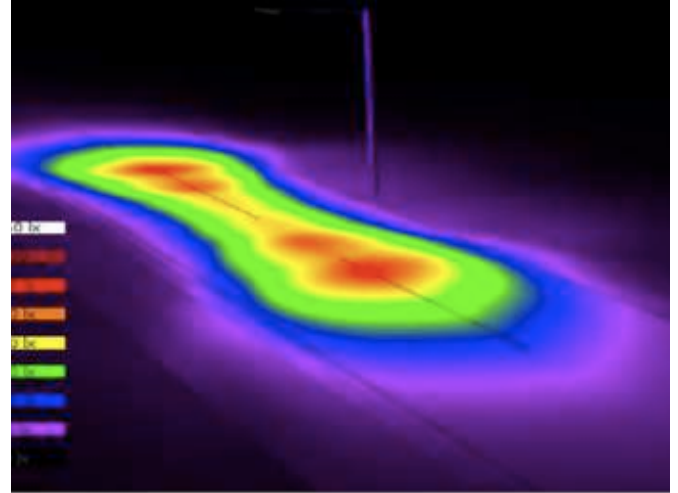


material for heat sinks as well as design the fixture to ensure proper heat dissipation and consequently high durability of the system. Thermal management is important for if the temperatures exceed 80°C it reduces the life expectancy of the LED lighting.

**LED Driver/controller with a built-in surge protection-** most off-the-shelf controller/drivers fail not because of faults in solar panel or LEDs, but because of faults in the driver. If the right driver is not put, the life expectancy of the LED lighting is reduced.

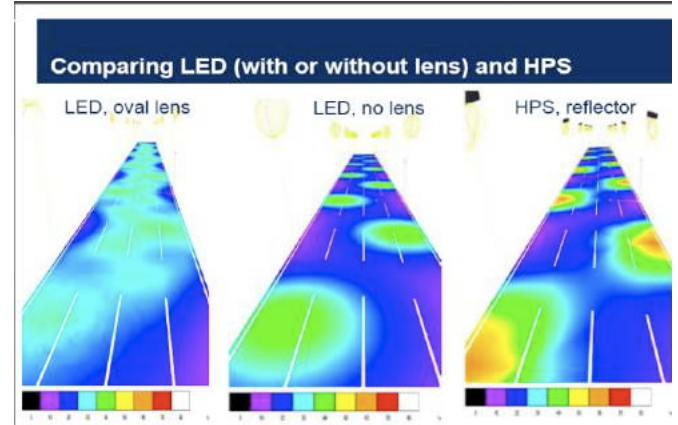
**Optics-**optimal use of asymmetrical optics is very important to make lights suitable for road-way applications. Our software based design-

ing and use of optics make sure that the light falls in a rectangular fashion (and not circular) to ensure only the road is lit and not areas outside the road.



## Simulation Results

**Aesthetics** - The look and feel of street light fitting and the overall aesthetical value is strength of our product design.



## BENEFITS OF LED/SOLAR LIGHTING

- High durability of Solar and LEDs last ing for more than 10 years. In com parison, the conventional sodium and CFL lamps typically require replace ment once every year
- Environment friendly and easy disposal due to absence of harmful substances like mercury and lead
- No laying down of cable wires and digging for Solar based lights

- Low heat emission
- Cleaner and Greener environment to breathe!
- Payback period of less than 1.5 years for LEDs due to 1/3 power consumption. Zero electricity consumption for solar based lights.
- Very affordable
- No noise, no flicker
- Built-in power surge Protection
- Saves up to 90% energy
- Reduced maintenance costs
- Lasts up to 50,000 hours
- Instant full bright
- No more bugs around lights (LEDs don't attract light)
- Reduce light pollutions

## Gandhi Bridge - Ahmedabad

Date 1<sup>st</sup> March 2013

*Before*



*After*



**80%  
ENERGY  
SAVINGS**



### Benefits of LED lights

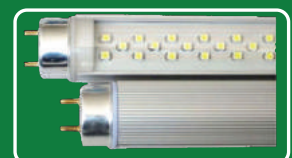
- ✓ Save upto 90% energy!
- ✓ Lasts upto 50,000 hours!
- ✓ Built-in power Surge protection
- ✓ Low Heat emission
- ✓ Instant Full Brightness
- ✓ Environmentally Friendly
- ✓ No Noise, No Flicker
- ✓ Very Affordable
- ✓ 2 years local Warranty!



LED Street Light



LED Flood Light



LED Tube Light

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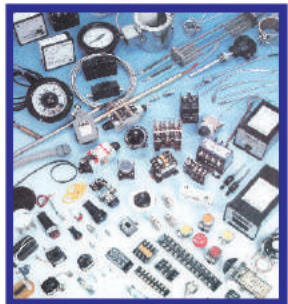
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Control Panel Accessories

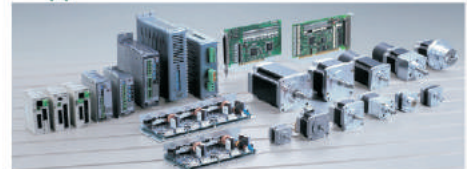


Hydraulic Products



**Controllers** Counters, Timers, Temperature Controllers, Power Controllers, Tacho/Speed/Pulse/Rate Meters, Digital Panel Meters, SMPS, Display Units, Sensor Controllers, Serial Converter RS232/RS485, Device Net, HMI, Signal Converters, Recorders, Thyristors, Transmitters, Indicators.

**Stepper Motors / Drive Motion Controller**



**Sensors** Proximity Sensors, Through Beam / Diffuse / Retro Reflective Photo Sensors, Light Curtain, Auto door Sensors, Fiber Optic Sensors, Incremental / Absolute Rotary Encoders, Digital Pressure Sensors, Temperature / Humidity Transmitters.

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