

FUTURISTIC SAFE INJECTION SYSTEM

International Patent Application (PCT/IB2016/051060) [WO/2016/142799](#) entitled
“A FLUID INJECTING SYSTEM WITH NEEDLE RETRACTION BY VACUUM”

A brief video available on YouTube: <https://youtu.be/Fr51vWzLGMA>

For more details, please visit: <https://rescitehvision.com/>

Problem addressed:

While the entire humanity is cursed to severely fight with horrible global pandemic of COVID-19 and is putting *herculean efforts* in developing effective vaccine to curb the deadly menace, there still exists a huge logistical challenge for manufacturing, packaging, storage, distribution of billions of dosage of such vaccine to cater the genuine need of entire global population and finally put it for mass vaccination within shortest period to cope with the pandemic. Under these circumstances, we can't afford to ignore the fact that mass vaccination essentially requires at least equal or greater number of safe, user-friendly, non-reusable, ergonomic syringes *vis-a-vis* the number of vaccine dosage in order to completely avoid the reuses of *dirty syringes* at all costs.

Safety in relation to injections and the hazardous bio-medical waste is a major global healthcare concern being directly responsible for spreading various dreadful diseases. WHO is waging a crusade against alarming menace of unsafe injections since long. In 2002, WHO reported upto 70% injections being given by reused syringes in developing world, causing 1.3 million deaths, loss of 26 million years of life worldwide and estimated increased medical costs \$1 billion alone in USA annually. There is spike in new cases, particularly by Needle Stick Injury (NSI) upto 30% of hepatitis B, 41% of hepatitis C and 9% of HIV/AIDS. Increasing lifestyle diseases like diabetes, hormonal problems etc. have promoted steep growth of injections creating ever-growing piles of hazardous medical-waste posing serious health concerns. It has increased global disease-cum-healthcare burden. Besides, the alarming drawbacks associated with the conventional syringes such as reuse, Needle-Stick Injuries (NSI), the aspiration/injection of correct dosage, disposal of huge amount of medical waste thereby generated etc. etc. are also the matter of concerns which need be addressed effectively. The syringe industry including all major R&D institutions is seriously putting all efforts to design safe retractable syringe.

The state of art as well as cutting edge technology for packaging vaccines in prefilled syringes is practically non-affordable to general masses being very costly affair and also doesn't effectively prevent NSI and reuse of dirty syringes, which is primary concern of threat. Using retractable syringes for mass vaccination poses significant logistic challenges due to their exorbitant costs. The unprecedented situation of COVID-19 pandemic strictly demands affordable, safe, green, fast, ergonomic, sustainable and inclusive *breakthrough packaging technology* to overcome all such logistical challenges associated to administration of mass vaccination of huge global population.

Invention:



'Futuristic Safe Injection System' provides **two variants** of *reusable injectors*, multiple variants of *safely disposable drug-cartridges* and a *fluid-collector*, each one functioning distinctly depending upon various operational situations and requirements.

Drug-Cartridge provides a '*smart packaging technology*' to pharmaceutical industry. It consists of an inbuilt piston and a retractable needle along with a fixed dose of medicament being used as the barrel of syringe, wherein needle retracts automatically within the empty cartridge after the completion of injection procedure, which is safely disposable without any risk of needle stick injury. It replaces the need of vials, ampoules etc. used for conventional packaging of injectable drugs.

Reusable injector is equipped with an efficient retraction mechanism which can be frequently reused for multiple injection procedures. Its cost goes on decreasing with each and every next injection procedure to become almost negligible in due course. The LED provided in injector regulates and keeps vigil on the entire injection procedure. It also facilitates the injection procedure by illuminating the injection site during the dark hours.

Neither of the two parts *per se* is syringe but constitutes an efficient, simple and user-friendly **self-retractable safety syringe**, when coupled together.

Fluid Collector is designed to prevent needle reuse and needle stick injury during the safe collection of the fluids when coupled with injector.

The **European Patent Office**, while examining the International Patent Application (PCT/IB2016/051060) **WO/2016/142799 A FLUID INJECTING SYSTEM WITH NEEDLE RETRACTION BY VACUUM** has opined in following terms:

*“The technical effect of these features is that the injector is reusable while the only parts to be discarded are the needle hub and the medicament cartridge. As a result a **cheaper and friendlier to the environment system** is achieved **without an increased risk of needle injuries.**”*

The invention provides a cheapest, greener, more efficient, faster, ergonomic, versatile, sustainable and inclusive technology to effectively curb syringe-related problems. It is compatible with WHO's guidelines. It prevents needle-reuse, counterfeit drugs, illicit drug abuse, anti- microbial resistance, contamination and wastage of expensive drugs; reduces 70-75% hazardous medical waste affirming prospectus *to save millions of lives & to earn billions of dollars without creating any technological divide.*

It will effectively reduce NSI almost to zero, which is a root-cause of all major dreadful diseases i.e. AIDS/HIV, Hepatitis B & C etc. It will ensure to curb global disease & healthcare burden; democratize healthcare system making it equally affordable and accessible to all; in fullest achievement of WHO's initiatives to completely replace conventional syringes with safety syringes by 2020; in meeting Sustainable Development Goals (SDGs) by multi-fold benefits to healthcare system along with significant reduction in Global Disease as well as Healthcare Burden and fighting grave challenges of healthcare sector's contribution to Climate-Change negating carbon footprint of entire syringe industry to achieve the highest goal of securing a safe, healthy and dignified 'Right to Life' for all.



Distinguishing features of proposed invention: Comparison with conventional syringes

Sl. No.	FEATURES	CONVENTIONAL SYRINGES				PROPOSED METHOD & DEVICE
		Sterilisable Syringes	Disposable syringes	Auto-disable AD syringes	AD/Retractable safe syringes	
1.	Risk of Needle Stick Injury	Yes	Yes	Yes	Yes	No
2.	Risk of failure of AD/RM features	---	----	Yes	Yes	No
3.	Risk of under/over dosage	Yes	Yes	Yes	Yes	No
4.	Unnecessary Wastage of medicine	Yes	Yes	Yes	Yes	No
5.	Risk of contamination of Medicine	Yes	Yes	Yes	Yes	No
6.	Ease of injection process	Very low	Very low	Very low	Very low	High
7.	Frequency of Injection process	Very low	Very low	Very low	Very low	High
8.	Indicator to monitor injection process	No	No	No	No	Yes
9.	Illumination of injection area in dark	No	No	No	No	Yes
10.	Generation of Biomedical waste	100% by volume	100% by volume	100% by volume	100% by volume	25-30% by volume
11.	Economic burden on end-user	Low	High	Higher	Maximum	Minimum
12.	Manufacturing, storage, transport, care costs etc.	High	low	Higher	Highest	Very low
13.	Care, carriage etc. Burden on healthcare worker	High	low	Higher	Highest	Very low
14.	Risk of Air-embolism	Yes	Yes	Yes	Yes	No

Advantages of invention:

Advantages in general:

1. Reusability of injector and usage of drug-cartridge as syringe barrel significantly curtails the need and overall expenses incurred on their packaging, storage, transport, distribution, waste collection and management etc.
2. It makes our system *the cheapest substitute* of conventional safe syringe system. It ultimately decreases the cost of overall injection process at least by 80- 85% making it equally affordable and accessible to all without creating any technological divide.
3. Our injection system embodies all essential features of an efficient passive retractable syringe, which completely eliminates user intervention to activate/trigger the retraction mechanism. It also prevents the risks of *premature* retraction or *failure* of retraction mechanism etc.
4. The system provides safety assurance to avoid all probabilities of needle stick injury before, during and after the injection procedure. Its design of drug-cartridge eliminates all probabilities of its reuse being far costlier than the original product.
5. The technology is ergonomic, user friendly and easy in handling/operation without any requirement of formal training to the medical practitioners, healthcare workers, users etc.
6. The invention is more effective, efficient and frequent in comparison to the conventional drug injecting systems as the time required to transfer the drug into the syringe is curtailed by reducing the number of operational steps in injection procedure, which increases the frequency of administration of injection procedure by several-folds ultimately resulting in huge saving of the precious man-hours of medical practitioners, healthcare worker, end users etc.

7. The glowing LED of indicator throughout the injection process confirms the completion of injection procedure, creates awareness of handling of patients and also facilitates administration of drug during dark hours.
8. It will ensure reduction of handling the weight and volume of syringes per dose by healthcare workers in work-field and also reduce the burden of care and caution imposed upon them as they shall be required carrying only the desired quantity of drug-cartridges bearing desired volumes of dosage and couple of pen-type injectors in the field.
9. It offers green and ecofriendly technology as it completely eliminates the requirement of conventional syringes for drug administration, saves entire raw material, particularly plastic by 70-75% from being converted into hazardous medical waste and all the inputs including cost, labor, skill, transport, waste management etc. involved in manufacturing of syringes, thereby negating the carbon footprint of whole syringe industry to a significant extent. It will directly curtail the generation of at least 70-75% of hazardous bio-medical waste and create merely 25-30% volume of safe and non-hazardous biomedical-waste in the form of safely disposable empty drug-cartridge preventing exposure of any remnants of drug to the environment, which is the *breeding ground for superbug* i.e. antimicrobial resistance among microbes.
10. The system ultimately provides a versatile, sustainable and inclusive technological solution to reduce needle stick injuries as well as needle/syringe reuse to zero (the root cause of spreading of deadly diseases like HIV/AIDS, Hepatitis B, C etc.); dreadful menace of counterfeit drugs and drug abuse; reduce the increasing incidence of '*genesis of superbug*' (antimicrobial resistance); significantly reduces ever-growing hazardous medical waste and carbon footprint of healthcare sector to ultimately decrease Global Disease Burden (GDB) as well as Global Healthcare Burden (GHB) to a maximum extent to save the lives of millions.
11. The system is fully compliant to guidelines laid down by WHO, FDA and NIOSH.

Advantages to pharmaceutical industry:

The smart packaging of pre-fixed dosages of Injectable medicines in Drug-cartridge ensures:

1. Direct transfer of drug from manufacturing unit into the patient's body

- i. *Saving of 5-15% extra 'overflow quantity' of drugs*

The smart packaging will ensure huge direct input savings of pharma industry compensating/negating any increase in cost of smart packaging of injectable drugs (packaging of pre-fixed volume of dosage in our drug-cartridges) due to prevention of unnecessary wastage of significant amount of precious drugs and by escalating its reachability directly to the end-users.

- ii. *Frequency of injection procedure*

The smart packaging will enhance the frequency of entire injection procedure to maximum extent by reducing number of steps and save the invaluable time of injection procedure because the user has only to attach the fixed-dose drug-cartridge with injector to initiate the injection procedure.

- iii. *No probability of under/over-dosage*

The smart packaging ensures the transfer of required, exact and correct volume of drugs into the patients without any user-intervention, which eliminates all probabilities of under dosage or over-dosage of drugs administration.

- iv. *Ensures 'Single-dose single needle'*

The smart packaging will ensure single dose of medicine with single needle. It rules out every possibility of reuse of needle/syringe.

v. *No contamination of drugs at any stage*

The smart packaging technology completely eliminates all the probabilities of contamination of medicine occurring in conventional system during the transfer of drug-contents from the drug-container to the syringe and then from syringe to patient.

It also prevents all kinds of contaminations caused by the chemical interaction of long staying entrapped air bubble along with the drug contents in conventional drug-containers i.e. vials, ampoules etc. Such entrapped volume of air generally contains nitrogen, oxygen, carbon-dioxide, and other gases etc. along with air-borne pollutants/ contaminants, which are bound to chemically interact with biomolecules of drug contents to deteriorate or adversely affect its overall quality as well as efficacy right from the stage of packaging of drug to its final use.

As per essential conventional practice, a current of atmospheric air is forced into the medicine through the hypodermic needle of empty syringe to extract the drug contents from the drug container into the empty syringe. This phenomenon adversely affects the quality as well as efficacy of drug due to the dissolution of some extent of atmospheric air containing undesirable gases, which are bound to chemically interact with the drug contents. It also microbubbles, which ultimately find passage in blood stream during the injection procedure. This smart packaging technology completely rules out any of such probability during the injection procedure.

The smart packaging of drug in drug-cartridge completely rules out all probabilities of contamination of drug contents during the entire course of journey - from the moment of packaging to the administration into the patient's body and ensures preserving its original efficacy of drug contents for a longer period of time.

vi. *No wastage of drug*

It prevents unnecessary wastage of precious drugs which occur in conventional system in two different ways:

- a. Drug contents are wasted during its transfer from drug container to the syringe during injection procedure and a significant amount of drug remains retained in drug-container i.e. vials, ampoules etc. which ultimately goes waste.
- b. Generally, the drug container contains 5-10 dosage of drugs but only few dosages are utilized and the rest are discarded as waste.

The smart packaging in pre-fixed dosages shall completely prevent any such wastage of precious drugs.

vii. *Safe disposal of once used needle encapsulated in empty drug-cartridges*

The smart packaging ensures safe disposal of used needle encapsulated in empty drug-cartridge by making it far safer and non-hazardous medical waste, which further prevents exposure of any remnants of drug to the environment (*breeding ground for superbugs*), finally making the waste far safer, harmless and far easier to manage.

viii. *Smart packaging will prevent the menace of counterfeit drugs*

The packaging of drugs in drug-cartridges needs automation, which is only affordable to big pharma industries. It will indirectly keep a strict vigil on the counterfeit injectable drugs costing heavily on the revenues, goodwill, reputation and brand value of the genuine pharma companies.

ix. *Smart and aesthetic packaging adds value to the finished product*

The smart packaging of injectable drugs in Drug-Cartridge provides a technologically advanced, smart, safer, ergonomic and aesthetic packaging of the drugs, which ultimately adds *value* as well as *virtues* to the finished product. Such an enhanced *value* as well as *virtues* addition of latest technology will impart *enhanced commercial competitive edge* as well as better *export prospects* to the injectable pharma products worldwide.

2. Reusable injector for drug administration strengthen the dependence of pharmaceutical industry upon the syringe industry

Presently, the syringe is the only basic tool to inject the medicine into patients. Our technology

provides reusable retraction mechanism for injection procedure.

3. An effective solution to prevent needle-stick injuries, counterfeit-drugs and hazardous medical waste

The use of this disruptive technology provides an effective solution to the pharma industry to strongly stand against the growing menace of needle-stick injuries, counterfeit-drugs and hazardous medical waste persistently posing a serious threat to the lives of millions.

4. Contributions to Sustainable Development Goals

The technology provides pharma industry an exceptional opportunity to finally make their most significant contribution towards Sustainable Development Goals (SDGs) by making healthcare system greener, safer, affordable and accessible to all. It will effectively reduce NSI almost to zero, which is a root cause and primary source of all major dreadful diseases i.e. AID/HIV, Hepatitis B & C etc., to curb such diseases & healthcare burden; democratize healthcare system, making it equally affordable and accessible to all; prevent abuse of injectable drugs; ensure fullest achievement of WHO's initiatives to completely replace conventional syringes with safety syringes by 2020.

5. Greener and Safer Healthcare System to fight Climate-Change

It provides pharma industry a significant opportunity of participation in a battle against grave challenges of healthcare sector's contribution to Climate-Change by negating carbon footprint of entire syringe industry and introducing a green, sustainable method as well as product and in excessively reducing the ever growing piles of hazardous bio-medical waste to achieve the highest goal of securing a safe, healthy and dignified 'Right to Life' for all.

Thus, the technology *holistically* offers a brilliant opportunity to pharmaceutical industry of an extremely profitable business and discharging its pious social obligation to *save the lives of millions* along with golden opportunity to make fortune of *dollars in billions* without creating any technological divide between rich and poor.

Advantages to beneficiaries:

1. The affordability and accessibility of system will result in huge saving on out-of-pocket expenditure of the end-user along with safety assurance among medical practitioners as well as the end-users. The end-user only needs to buy pre-fixed volume of medicine packed in the smart drug-cartridges without any requirement of separate syringe for each and every dosage.
2. The decrease in Global Disease Burden (GDB) will save the lives of millions and also promote healthier as well as productive life, thereby improving and enriching the human resource qualitatively as well as quantitatively.
3. The decrease in Global Healthcare Burden (GHB) will result in huge savings of capital resources, which may be utilized and engaged in holistic development of mankind.

Impacts of Invention:

on Economy:

- The technology provides an affordable, safer, faster and ergonomic method and device for sustainable drug delivery system to make the healthcare equally as well as easily affordable and accessible to all.
- It results in huge saving of all the input invested in manufacturing and waste management of syringes including labour, skill, time, energy and other management costs.
- The design of 'drug-cartridge' provides a '*smart packaging technology*' to pharmaceutical industry to pack required volume dosage of injectable drugs which adds value to the finished product, enhance commercial competitive edge as well as export prospectus of the product worldwide and also increases

the shelf-life, efficacy by preventing contamination/ wastage of precious drugs.

- No need of 5-15% of overfill quantity of precious drug will result in huge direct input savings of pharmaceutical industries compensating/negating increase in cost due to smart packaging.
- Automation of the technology will strictly prevent prevalence of counterfeit-drugs saving huge revenues, reputation and goodwill of pharmaceutical industry.
- Smart Packaging of injectable drugs will remove the huge dependence of pharmaceutical industry on the syringe industry
- The entire process will thus dramatically decrease the *overall cost* of injection process to maximum extent with multi-fold benefits to end-users and will also provide a brilliant *billion dollars business opportunity* to pharmaceutical industry.
- Decrease in Global Healthcare Burden (GHB) will result in huge saving of capital resources which may be utilized and engaged in holistic development of mankind.

on Public Health:

- The invention will rule out all probabilities of needle stick injuries and needle/syringe reuse, which is the primary source of all dreadful blood-borne diseases i.e. HIV/AIDS, Hepatitis B, Hepatitis C, gonorrhoea, typhus, herpes, malaria, Rocky Mountain spotted fever, syphilis, and tuberculosis and other communicable diseases, claiming more than 40 million lives every year.
- It will effectively address the menace of counterfeit drugs causing fraud or deceit to the end users in need by claiming their precious lives.
- No exposure of any remnants of drug to the environment from manufacturing unit till the safe disposal empty drug cartridge will result in containment of the increasing incidence of '*genesis of superbug*' i.e. *antimicrobial resistance*, the greatest public health disaster of 21st century.
- On extensive usage of our invention for drug administration and by complete elimination of conventional syringe system, there shall be no availability of syringes at all, which shall effectively prevent the prevalent abuse of drugs resulting in serious, irreversible physical health problems and mental health issues of this century.
- Reduction in ever-growing hazardous medical waste and carbon footprint of healthcare sector will prevent prevalence of diseases caused due to pollution, emissions, occupational hazards, accidents etc. threatening public health at large.
- The reduction in Global Disease Burden (GDB) due to unsafe injections and medical waste will improve overall quality of our life with a significant increase in our health quality and life-expectancy.
- It will ultimately help in achieving WHO's initiative of replacing the conventional syringes completely with proposed safety syringe system by 2020, to reduce the dreadful menace of NSI almost to zero.

on Environment:

- The technology prevents the process of conversion of raw plastic into hazardous sharp waste, thereby reducing the consumption of raw plastic material in healthcare sector to a large extent.
- The usage of our invention completely eliminates the hazardous sharp medical waste generated by disposal of conventional syringes. It negates all the hazardous consequences of syringes ranging from oceanic plastic pollution to climate change and reduces all the costs and resources incurred in waste management of used needles/syringes.
- It replaces hazardous drug-containers, vials, ampules etc. containing remnants of drugs disposed after injection procedure with safe and non-hazardous used empty drug-cartridges causing no threat to

surroundings.

- It effectively addresses the burning global issue of solid-waste management in rural/urban areas by reducing the medical waste generated by conventional syringes at least upto 70-75% by volume.
- It will zero-down the carbon footprint of whole syringe industry exponentially reducing the carbon emission contribution of healthcare sector. It promotes a green and inclusive healthcare technology with sustainable manufacturing process.
- It shall prove immensely helpful for the globe as a whole, particularly the developing and under-developed countries, in achieving their Intended Nationally Determined Contributions (INDCs) and in fighting the grave challenges of Climate-Change.

on society at large:

- The affordability and accessibility of our technology will *democratise* the healthcare sector ensuring its last mile availability without creating any technology divide between rich and poor, developed and developing/under-developed countries.
- Effective prevention of deadly diseases will result in exorbitant reduction of Global Disease Burden (GDB) preventing millions of early, untimely and unwarranted deaths, saving millions of years of precious human life along with ensuring health and productivity to improve and enrich the human resource qualitatively as well as quantitatively.
- It will also prevent physical, mental, emotional and psychological trauma especially among women and children by preventing NSI causing spread of HIV, Hepatitis B, C etc. popularly known STDs, which are social taboo especially in Third world countries.
- *It* will effectively prevent drug abuse which otherwise results in broken families, destroyed careers, unwarranted deaths, suicides etc. due to negligence or accidents, domestic violence, physical abuse, child abuse etc.
- The significant reduction in the global healthcare burden (GHB) will generate huge financial savings for the countries that can be utilized for the holistic development of humankind.
- The technology will definitely help the entire globe, especially the developing and under-developed countries in meeting requisite Sustainable development Goals (SDGs) by providing multi-fold benefits to healthcare system.
- Above all, it will effectively achieve the highest goal of securing a safe, healthy and dignified 'Right to Life' for all.

Status of Patent Application:

We had initially filed our Indian Patent Application (IN 645/DEL/2015) on 10.03.2015 and International Patent Application (PCT/IB2016/051060) on 26.02.2016, which was published by WIPO on 15.09.2016 as [WO/2016/142799](#). The Written Opinion of the European Patent Office, the International Search Authority (ISA) of World Intellectual Property Organisation (WIPO) has been found to contain two inventions:

Invention 1: A FLUID INJECTING SYSTEM WITH NEEDLE RETRACTION BY VACUUM

Invention 2: A FLUID COLLECTING SYSTEM WITH NEEDLE RETRACTION BY VACUUM

We have already filed patent applications in India, USA, China, Japan, UK and South Africa to secured Top 6 pharmaceutical markets with more than 70% of global market share. We shall be zealously prosecuting our interests in said jurisdictions for both the inventions. Since, the **European Patent Office**, has identified unity of invention, which has resulted in filing division applications for "Fluid collecting System" in all the jurisdictions. The patents have already been granted in **US, UK, Japan, China and South Africa and pending in India.**

Market Potential:

The statistics reveals that more than 2.5 billion syringes were used in 2010 worldwide which are forecasted to grow by 10% annually. Potential market of syringes is expected to increase from USD 10.56 billion in 2016 to USD 15.99 billion in 2021 at a growth rate of 8.7%. Several governments across the world have started adopting legislation that restricts the frequency of needle-stick injuries (NSIs). WHO's Global Health Initiative for Needle Safety is urging countries to transition by 2020 to the exclusive use of the new "smart" syringes. Increasing adoption of safety syringes, increasing demand for vaccines, high prevalence of chronic diseases and increased awareness as well as the requirements of safety syringes are bound to expand enormously the market of safety syringes worldwide. Despite all market constraints i.e. costs, procurement structure etc. will be negated by our technology to effectively meet the rising global demands.

Futuristic Safe Injection System is a versatile, sustainable, inclusive and strategic innovative solution. The low-cost smart innovative packaging technology will exponentially increase the domestic as well as export avenues due to its high reachability, affordability, sustainability and safety assurance. The smart packaging of injectable drugs in fixed dosage in our Drug-Cartridges will do a value addition to the finished products, which will strategically enhance the commercial as well as export prospectus of the product worldwide by enhancing huge revenues, reputation, goodwill, and ultimately the brand value.

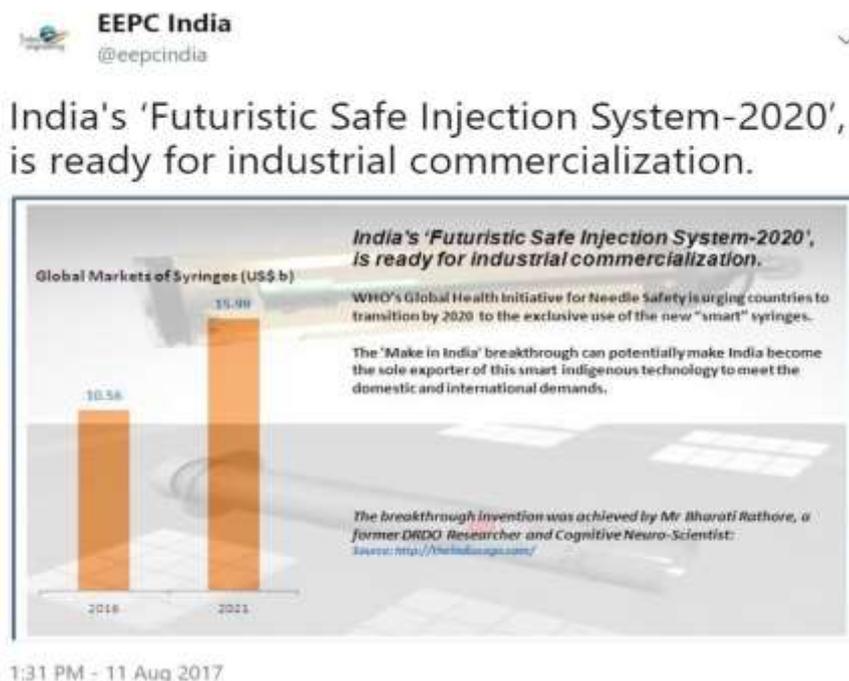
Our technology is a far smarter and the best fit innovative answer to \$500 million '[Pharma glass project](#)' President Donald Trump has just launched with eventual investment of \$4 billion for *product and brand differentiation*. Theirs entire focus is on just packaging material. On the contrary, Futuristic Safe Injection System is virtually a smart packaging technology for injectable drugs, which can change the '*packaging paradigm*' to create *visible product differentiation* to protect the turf for the *Brand*.

On August 11th, 2017, the Engineering Export Promotion Council of India ([EEPC India](#)) has [strongly endorsed](#) our technology in following words:

"India's 'Futuristic Safe Injection System-2020', is ready for industrial commercialization.

WHO's Global Health Initiative for Needle Safety is urging countries to transition by 2020 to the exclusive use of the new "smart" syringes.

The 'Make in India' breakthrough can potentially make India become sole exporter of this smart indigenous technology to meet the domestic and international demands."



On the occasion of *World Hepatitis Day-2017*, the Consortium for Affordable Medical Technologies ([CAMTech](#)) of Massachusetts General Hospital Global Health (MGH) has also *endorsed* our technology as

effective solution to reduce risk of needle stick Injuries.



Our invention is a game changer and a breakthrough solution to ensure access to democratic, sustainable and inclusive healthcare to meet the commitment of World Health Organisation's Global Health Initiative to phase out unsafe syringes; for timely, efficient and effective achievement of Sustainable Development Goals and effective achieving of Intended Nationally Determined Contributions (INDCs) to fight grave challenges of healthcare sector's contribution to Climate-Change.

Recognition for the invention:

- **Engineering Export Promotion Council of India** ([EEPC India](#)) has [strongly endorsed](#) our technology as the 'Make in India' breakthrough ready for commercialization which can potentially make India become sole exporter of this smart indigenous technology to meet the domestic and international demands.
- On the occasion of **World Hepatitis Day-2017**, the Consortium for Affordable Medical Technologies ([CAMTech](#)) of **Massachusetts General Hospital Global Health** (MGH) has also endorsed our technology as effective solution to reduce risk of needle stick Injuries.
- **TOP 2nd position in the world** by achieving more than **32000** global votes at [#youforG20: Project of an Interconnected World](#), an initiative by Deutschland on the occasion of **G-20 Summit-2017** at Hamburg.
- Featured in **The International Sharps Injury Prevention Society**, [ISIPS Newsletter](#) of USA (Issue: 7th July, 2017).
- **Top 100 Entries** in '[Create the Future Design Contest 2017](#)' organized by Tech Briefs Media Group, the publishers of NASA Tech Briefs magazine.
- **TOP 4** in '[Top Ten Future Medical Technologies in 2020](#)'
- [IMC Inclusive Innovation Awards 2017](#) worth Rs. 100,000 by Indian Merchants' Chamber of Commerce & Industry
- **Top 20** most promising **Social Enterprises of India** in Tata Social Enterprise Challenge 2017 by TATA group and the Indian Institute of Management Calcutta
- **Top 400 Start-up to transform India** in [Smart Fifty](#) – India's biggest start-up contest by Indian Institute of Management (IIM) Calcutta
- '**BIRAC-SRISTI Appreciation Award-2017**' worth Rs.100,000 by 'Society for Research and Initiatives for Sustainable Technologies and Institution' (SRISTI) and 'Biotechnology Industry Research Assistance Council' (BIRAC) under Ministry of Science and Technology, Govt. of India.
- Shortlisted among few inventions globally in the first stage of '[The First Mile Innovation Challenge](#)' by – **The Consortium for Affordable Medical Technologies** (CAMTech) of **Massachusetts General Hospital** in association with **GE Sustainable Healthcare Solutions**.

Publication

Journals/Magazines

- **“Made in India – The Syringe & Futuristic Safe Injection System-2020”**
Market Express, September 11, 2017 (<https://goo.gl/jJbTWa>)
- **“A futuristic safe and affordable injection system”**
Special Start-up Series of BioVoice Magazine, August 14 2017 (<https://goo.gl/RTqdXW>)

Newsletters

- **“Futuristic Safe Injection System-2020”**
International Sharps Injury Prevention Society (ISIPS) Newsletter, July 7, 2017
(<https://goo.gl/GK3Hdn>)
- **“Futuristic Safe Injection System: A Big Leap Towards Affordable Healthcare”**
Smart Green African Cities (<https://goo.gl/JwoLhs>)
- **“Futuristic Safe Injection System: A Big Leap Towards Affordable Healthcare”**
The India Saga, August 10, 2017 (<https://goo.gl/RSdcrL>)
- **“Invention titled 'Futuristic Safe Injection System 2020' selected for BIRAC-SRISTI Appreciation Award-2017”**
IP @connect, May 15th, 2017 (<https://goo.gl/Ag3var>)

Press features

- **“Futuristic Safe Injection System-2020 to save the lives of millions!”**
NYOOOZ (<https://goo.gl/BP4YQC>)
- **“STORY OF INVENTION: Futuristic Safe Injection System-2020 to save the lives of millions!”**
World Wisdom News, August 19, 2017 (<https://goo.gl/15u8Ls>)

Patent assets:

Sr. No.	Country	Status	Patent No.	Publication No.	Application No.	Google Patent Link
1.	US	GRANTED	US10729857	US20190117903 B2	US15552014	https://patents.google.com/patent/US20190117903A1
2.	US	Pending		US20200222641 A1	US16817835	https://patentscope.wipo.int/search/en/detail.jsf?docId=US299041231&cid=P21-KEHEQX-97478-1
3.	UK	GRANTED		GB2552289A	GB201716358.5A	https://patents.google.com/patent/GB2552289A
4.	South Africa	GRANTED		ZA201706803B		https://patents.google.com/patent/ZA201706803B
5.	China	GRANTED		CN107530500A	CN201680014496 .5	https://patents.google.com/patent/CN107530500A
6.	Japan	Pending		JP2018507732A	JP2017546239	https://patents.google.com/patent/JP2018507732A
7.	Japan	GRANTED			JP2020-132167	
8.	India	Pending		IN645/DEL/2015	IN645/DEL/2015	https://patents.google.com/patent/WO2016142799A2
9.	India	Pending		IN3624/DEL/2012	IN3624/DEL/2012	https://patents.google.com/patent/WO2014080421A2
10.	India	Pending		IN3625/DEL/2012	IN3625/DEL/2012	https://patents.google.com/patent/WO2014080420A2
11.	India	Pending		IN3601/DEL/2012	IN3601/DEL/2012	https://patents.google.com/patent/WO2014080417A2
12.	India	Pending		IN3475/DEL/2012	IN3475/DEL/2012	https://patents.google.com/patent/WO2014072993A3
13.	India	Pending		IN3476/DEL/2012	IN3476/DEL/2012	https://patents.google.com/patent/WO2014072994A2
14.	PCT	Published		WO2016142799	WOPCT/IB2016/051060	https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2016142799
15.	PCT	Published		WO2014080421 A2	WOPCT/IN2013/000658	https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2014080421

16.	PCT	Published		WO2014080420 A2	WOPCT/IN2013/ 000657	https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2014080420
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