

# YOU CAN STOP LEAKAGE WITHOUT BREAKAGE

MAHESH GAJWANI

[WWW.LEAKPROOF.IN](http://WWW.LEAKPROOF.IN)



Mahesh  
Gajwani

## **Introduction:**

Mahesh Gajwani is an Architect, with 30 years of field experience, works on design ideation for companies and private homes and offices. With the passion and understanding of built form and strong desire for sparkling buildings the concept of Leakproof.in was conceived.

The process involves:

1. Diagnosing the root cause of leakage
2. Assisting in redesigning the entity/space/surface to keep Mr. Leak out.
3. Provide a dry and sparkingly finished surface.

## Acknowledgment

Writing a book is arduous than I thought and more rewarding than I could have ever imagined. None of this would have been possible without the valuable guidance of Mr. Arijit Basu an industry expert.

I am eternally grateful to Mr. Vaibhav Datar for believing in me and being patient and inspiring at every stage.

Thanks to all my customers and my staff who have trusted me in delivering the best. Finally, to my wife Barkha for providing the editorial help, keen insight and ongoing support. Sincere thanks to my family for all the support and time.

## Contents

Diagnosing Leakages.....	4
Joint Filling.....	6
Injection Grouting Positive Side.....	8
PU Injection Grouting Negative Side.....	10
Façade Restoration Works.....	12
Surface Treatment Liquid Membrane.....	14
Surface Treatment Roll On Membrane.....	16
Carbon Wrap and Strip.....	18
Conclusion.....	19

*Mr. Leak comes knocking My dream home, my sweet shelter*

*Here I live, I work, I dream*

*Reflecting my moods,*

*Occupying my senses*

*All are welcome, but not Mr. Leak, as when it comes,*

*It takes shine away from my dream.*

*It takes hope away from my aspirations,*

*It gives not, but a patch and I see my dream fade.*

*Mr. Leak knocks,*

*O'er my head, drop by drop*

*Through the wall,*

*Less in shine, more in rain*

*From the window, even when it's closed.*

*Near the floor, for no gravity can hold.*

*Alas all o'er my dreams*

*My home is shelter,*

*Else world but an island*

*Mg*



## Diagnosing Leakages

The expanse of urban sprawl creates a demand for personal spaces, be it our home, where we stay, or for places of work, learning and leisure.

One Sunday morning as I was sipping my morning cup of tea, on receiving a call from an exhausted voice, I understood that while it is pouring outside, the weather was leaving its mark on the walls and window panes and the dripping from the above floor had only intensified.

As a provider of Waterproofing Solutions, the distance I had to travel, prompted me to ask, why don't you call someone local, prompt came the reply. I called; few I tried; now I am tired. Trial and error must have proved expensive I thought I asked the caller to share his address and headed straight down town after a quick shower, only to see how water .....



### Thermal Scanner for Leakage Detection

..... the most precious thing on earth, has given sleepless nights to more people than insomnia. The earlier teams that had visited knew the solution but not the problem and here Mr. Leak was everywhere. I started with my Q&A session, used my tools and put all my experience to work, to diagnose the root cause of the different leakages in the nook and corners of the house. This is very important as missing on a single cause can give easy access to Mr. Leak all over again.



Institutional buildings are no different from homes. I am reminded of a cultural Trust, run in a century old structure wherein over the years Mr. Leak is a permanent resident.

← **Moisture Meter to check the Moisture Levels**



**Pipe Detector**

Humans came and went, but Mr. Leak along with all the microbial bacteria, pests and rodents were permanent residents. Not any longer, a simple matrix analysis and intense diagnosing has left the structure aesthetically beautiful and hygienic inside out.

Waterproofing is easy, diagnosis is the key, that helps to show Mr. Leak the way out.



## Joint Filling

Our childhood memories are fresh as we would see our mother in the kitchen use a sieve to separate solids from liquid (water) and we would wonder how it works.

In our home, office, and entire built form we leave such sieves at every nook and corner only to realize that Mr. Leak is finding its way through.

On visiting a posh residential complex in Mumbai, I was presented with a list of complaints received from members, some internal and some external.



**Open Joints**

We started from the terrace right down to the basement. The entire built form had sieves everywhere, being particularly prominent at the right angle junctions and corners, podium and even in horizontal projections, including two locations in the basement that have waterfall like situation in heavy downpour.



**Joint Filling Done**



One may wonder how most of these sieves went unnoticed even though there was a project management team in place. The reasons are debatable. The facts are not visible easily, on close inspection, tapping and testing with tools reveals these minor cracks and crevices, which become more active only in case of heavy downpour, or only when the wet areas in the built form are in use.



**Sealant being filled**

As for Terrace Waterproofing it is simple, rake it, clean it, fill it with the right set of chemicals and forget it. And say good bye to Mr. Leak.



## Injection Grouting - Positive Side

A visit to my family doctor on a rainy day revealed all the patches at the bottom portion of the walls in the clinic. I told the doctor I suddenly feel healthier than your clinic, wonder how safe the place was as it was an air- conditioned, closed environment. I told the doctor the place seemed better when I visited last, he said we paint it regularly and have planned the next session immediately after rains.

With due permission I asked him after my diagnosis, can I diagnose his clinic, he agreed and I went back home came with my tool kit and started examining the sources of water ingress. Trust me they were everywhere, entrance of building had cracks in tiles at floor level, plinth protection had given way, ground water table was high, and cracks in external wall were plenty and there was need for bathroom leakage solutions.



**Cement Grouting Machine**

I told the doctor to approach the society to which he said that he had tried several times, and they will wait until the next major repairs. On insistence, the doctor was told by the committee members to visit society office which was in worse condition. God alone knows how that helps.



### **Cement Grouting under pressure**

Having diagnosed the root cause at different locations, suggested the doctor to try injection grouting from positive ends as all locations were accessible. The doctor didn't need explanation for obvious reasons and the right spots were identified and chemicals injected for internal and external applications, filling up all the routes Mr. Leak was taking to come knocking. The doctor was impressed and now he need not paint every year.



## PU Injection Grouting -Negative Side

Our dream house often is set at a height for that breath taking view. Located on the 30<sup>th</sup> floor with the view of the surrounding hills, the dream was short- lived when along with the clouds came Mr. Leak not just knocking but dripping with that ‘pook’ sound. Diagnosing was not simple, somewhat imaginative as it was impossible to access the area from where Mr. Leak was coming.



**PU Injection Grouting Machine**

I was asked to give solution, eliminating all options that required accessing the location of the source of Mr. Leak, I suggested PU injection grouting from the negative side using PU and epoxy.

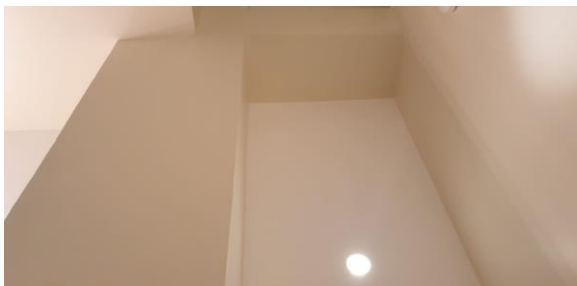


**Process flow**

This form of injection grouting needs expert waterproofing contractors, advance equipment, highly skilled technicians, more injections per sq meters than positive grouts and proper control of pressure.



**Work in Progress**



**Post Completion of the work**

I always over plan as we are hitting in the dark and Mr. Leak is a shade smarter. This is good for wall leakage solutions. My client took a sigh of relief in the next rains and wondered how long or at what cost would he have got the props up at the 30<sup>th</sup> floor to execute the job.

## **Façade Restoration Works**

The external walls of a building, along with all their architectural features—such as windows, cornices, bands, projections, and voids—form a complex network of joints and junctions. Over time, additional structural and aesthetic elements further complicate this system.



### **Before commencement of the work**

Effectively addressing and resolving leakages in external walls requires a strategic combination of advanced waterproofing techniques. This process involves the application of specialized waterproofing chemicals, expertly blended with cement, polyurethane (PU), and epoxy. To ensure long-term durability and aesthetic appeal, the surface is finally protected with an acrylic or polymer-based coating.



### **After Completion of the work**

A well-maintained and gleaming façade not only enhances the building's visual appeal but also safeguards its structural integrity, ensuring uninterrupted use of the spaces within.



## Surface Treatment- Liquid Membrane

(for Terrace Waterproofing and Tank Waterproofing)

‘Tring Tring’ rang the bell in early May, a loud voice across asked me if there was a solution for occasional tank leaks and incessant terrace leak with minimum breakage and execution time. On visiting the site in the heart of Thane, I could gauge why Mr. Leak prefers these flat terraces and water tanks to show up. Mosaic tiles roof laid casually with hollowness at every 5 meters took me back in time when the floor may have been laid, in record time, just like an Olympic race, just my imagination.



**Terrace Waterproofing with Liquid Applied Membrane**



After in depth analysis and understanding the budget and time restriction. I suggested liquid applied membrane with reinforcement, on the finished surface after filling all the minor cracks and grouting out the hollow portions of the roof. While carrying our liquid applied membrane application, priming plays an important role in keeping Mr. Leak out. The reflectance of the new surface reduces the heat absorbed as a complimentary benefit.



### **Water Tank Waterproofing**

Now, the tenants can have peaceful sleep and enjoy their cup of tea when the rain comes down. One of the tenants asked me, while this year is fair what about next year, I said relax ideally there would be no issue and there is a 3 years warranty in place, in case of any issue, do revert as these liquid membrane can be easily recoated and the bonding between old and new surface is good.



## Surface Treatment Roll On Membrane

In the last three decades with shortage of parking space, and space for children to play, podium parking and roof top play areas are becoming common place.

The abrasion (i.e.) wear and tear of these surfaces due to traffic and load is very high. The waterproofing solution to leakage arising from such horizontal large surface is roll on membranes, having a minimum of 3 mm thickness and load carrying capacity of heavy vehicles.



### Application of Surface Roll on Membrane

Roll on membranes can take virtually any finished surface on top of them, be it concrete blocks, lean concrete or just some form of tiling. Also, Mr. Leak finds its way easily through podium and large terraces due to expansion joints and need for adequate slopes

Surface preparation before laying the roll-on membrane is as important as the membrane itself. While dealing with one such terrace waterproofing case in Thane, we realized that the podium vibrates and the terrace is exposed to high wind pressure especially during heavy rains. A change in specification, use of 4 mm membrane and increased overlap was implemented.



### **Application in Process**

### **Finished Membrane Application**

Now, the leakage, or free flowing fountain into the basement below has stopped and the kids enjoy the roof top play area without the tenants below complaining that Mr. Leak has come knocking. One tenant of the top floor mentioned, I still remember that because the kids jump while playing the terrace has cracked, kids should be told not to jump while playing. Well finally, kids are enjoying and when kids enjoy, the entire society reflects the mood.



## Carbon Wrap and Strip

Carbon wrap and strip add the desired strength to concrete structural members in case of new buildings as well as in the process of restoration of old structures.

The process is quick, quantifiable in terms of desired strength to be achieved and improves the performance of the structural members beyond the capacity of the RCC member in certain cases.



**Application of the Carbon Wrap**



## **Increasing load bearing capacity of the structure**

Salient benefits of carbon wrap:

- Increased load carrying capacity of structural members
- Restoration of deteriorated structure due to fire, earthquake etc.

## Conclusion

We all have heard and used the proverb “Stitch in time saves Nine”. When we all know Mr. Leak comes knocking, through the gap a crack, surface absorption, it affects nine things:

1. It gives rise to MVOC(i.e.) Microbial Volatile Organic Compound which affects our health and leads to bad odor.
2. Dripping water collects and allows the water to move to various parts of the built form and also affects furniture.
3. Water ingress due to absorption can spoil the paint and ruin our furniture fixed to the wall.
4. The overall aesthetics is impacted due to patches and cracks visible on wall and ceilings.
5. Peeling of plaster due to de-bonding affected by prolonged leakage.
6. Weakening of structural members.
7. Increase in pests and rodents, as they prefer wet environments.
8. Short circuits are most dangerous and life- threatening impact of leakage.  
AND Last but not the least.
9. The psychological impact on our comfort, as leakage virtually pales our dreams.

So much with Mr. Leak and to remove Mr. Leak just follow a few simple steps:

- Call for diagnosis
- Selecting the best option based on budget and use of space.
- Implementing the treatment skillfully.

Thanks for being a patient reader. To know more about us do visit our website:  
[www.leakproof.in](http://www.leakproof.in)

