

IPT ROUND TABLE DISCUSSION



India's Growing Construction Industry - Is Plumbing Neglected?

IPT continually seeks views from a wide cross section of professionals on plumbing related matters. IPT Round Table is one such endeavour where a panel of experts respond to a series of questions on a variety of topics pertinent to the profession. The purpose is to obtain different perspectives relating to matters of topical interest. The views expressed by the respondents are their own and IPT assumes no responsibilities for them. The contributors may be contacted at their respective mail ids' furnished at the end of the article.

THE PANELISTS



M. K. Gupta¹
(MKG)



C. S. Gupta²
(CSG)



Sharat Rao³
(SR)



Pawan Kumar Roy⁴
(PKR)



S. K. Duggal⁵
(SKD)



Vinay Gupta⁶
(VG)



B. S. A. Narayan⁷
(BSAN)



Megan Lehtonen⁸
(ML)



The 'Green Building' and 'Green Plumbing' initiatives in India are largely limited only to the urban centres where no more than 30% of our population live. The rural India where nearly 800 million Indians live hardly has any infrastructure by the government for drinking water and sanitation and are mostly self-dependant. How can the plumbing industry reach out to and assist India's vast rural population?

MKG: Implementation of Green Plumbing initiatives are certainly required in rural India as the rural population is the most affected in terms of non-availability of facilities for sanitation.

As a matter of fact, techniques were already there in the past and our ancestors used to follow these. Now, it is high time that the plumbing industry makes efforts to revive these techniques in conformity with the latest developments & products available.

CSG: Early civilization in India followed GREEN norms. For example, at a drinking water well, activities pertaining to personal hygiene or washing clothes were in clearly demarcated areas to ensure that the well water was not contaminated. But as time passed, all these systems seem to have vanished and the advice of our forefathers completely ignored. Hopefully, with the formation of Drinking Water and Sanitation Ministry and with growing awareness on health and hygiene, rural India will readopt green norms for better living and better society.

Like all other industries, if the Plumbing Industry also enters the rural market, then they will find a huge market potential for their product, and now with the India Plumbing Skill Council coming into shape, these industries can also train the manpower for proper installation and maintenance of the products.

SR: It is true that Green Plumbing as of now is restricted to the major urban areas alone. However, in the recent past, the B-tier cities are also experiencing a healthy growth pattern, thus inviting plumbing consultants and contractors from big cities to take part in the growth. Green ideas are also being implemented in the process. Unfortunately, this has not infiltrated into the rural sector because of lack of infrastructure and efforts from the Government. I think that a public-private partnership venture can take things forward. The plumbing industry can reach out to this segment by bringing out simple codes for implementation of the basics, followed up by imparting training to the villagers.

PKR: A number of projects and programmes are being run in rural areas for sanitation and water under the aegis of various Central/State Govt. agencies, as also the World Health Organisation (WHO). There is a necessity to expand the reach of such programmes to cover all. Plumbing industry can try and reach out to rural masses by employing various techniques including: - the IPA-IAPMO partnership taking lead to propagate its activities in all states as a short term goal (1-2 years), setting its target to reach up to the district levels as its long term goal (4-5 years) and help float and promote NGOs to reach out to rural areas to cover sanitation and drinking water issues. Strategic planning, policy formulation and detailed planning for implementation of projects should be undertaken by the plumbing fraternity at IPA Chapters. Emphasis should be laid on mass coverage and low cost implementation. IPA should encourage the industry to adopt villages as part of CSR. IPA/ IAPMO should represent cases of NGOs to the appropriate Ministry at Central, State or WHO level for grant of funds to expand reach of rural sanitation and water supply.

VG: Efforts should be made at all levels by Manufacturers, Plumbing Contractors, Consultants and Architects. IPSC (Indian Plumbing Skill Council) has had interactions with the Rural Development Minister, Shri Jairam Ramesh and he has assured huge help. In fact, Plumbing has been approved under the "Aajeevika." Once plumbers are skilled and taught green plumbing at lower level societies, rural regions can be served better.

CSR has been made mandatory and all large companies will invest money and take initiative for serving rural regions, which in turn, would help them grow their product sale in that region .

BSAN: I recall my childhood years in the village, where we were not allowed to go near the drinking water well because that was the only source of drinking water and the surroundings had to be kept clean. Most of the houses used to have a privy pit i.e. a stone lined pit, functioning as a toilet. After its use in the morning, the whole pit would be sprinkled with a thin layer of sawdust or paddy husk to keep it clean and to avoid any flies.

I would like to say that unknowingly, we were following green norms. But as years passed by, the rural population tried adapting to the urban practices and in doing so, they missed the concept of ancient methods of keeping the surroundings clean. Plumbing Industry also has to cater to the rural population in adopting the 'best' practices.

ML: The plumbing industry can reach out to and assist India's vast rural population with improved and acceptable drinking water and sanitation facilities by:

- a. Working with each rural area's government to collaborate and build drinking water centers that filter ground water by conventional means of UV, reverse osmosis, as well as build contemporary sanitation facilities for each residence.
- b. Working with each rural area's government to jointly educate the rural communities on the basics of installing and maintaining the upkeep for safe drinking water and clean sanitation facilities.

Usage of water conserving/low flow plumbing fixtures is the current norm in developed nations whereas in India, there are no government regulations or guidelines on the domestic manufacturers. Can our building promoters, plumbing consultants and contractors influence a self-regulatory mechanism within the plumbing industry?

MKG: Yes, our real estate developers, plumbing design consultants and contractors should join hands together to put their full efforts in providing a self-regulating mechanism where proper govt. regulations and guidelines can be developed and are followed by Indian manufacturers for fixtures and fittings.

CSG: A clear mandatory regulation from government and semi-government departments would definitely help in Water Conservation. However, at present, all real estate promoters' primary concern is the usage and conservation of water in new constructions only.

SR: Usage of water conserving measures and low flow fixture have almost become an industry norm and most of the municipal bodies are making it mandatory for grant of approvals. The basic issue is that we do not have a uniform code or specification and therefore, different practices are followed in different states and regions, depending upon the local expertise and influence. This is very evident in the case of Rain Water Harvesting techniques. So the most important part is that we must have a uniform plumbing code for the entire nation so that, the quality of plumbing is at par like in developed countries.

PKR: Importance of conserving water is being increasingly realized by all and use of low flow plumbing fixtures and faucets is becoming a core necessity. Ideally, IPA and IAPMO should lay down the specifications of low flow plumbing fixtures. Specifications so formulated should be disseminated to all stake holders and they should be advised to follow them as part of a self-regulatory mechanism. At the same time, IPA/ IAPMO should lobby the formalization of these specifications as Codes/Standards with ISI or other statutory bodies. Likewise, the training programmes conducted by IPA/ IAPMO should



include the specifications of low flow fixtures. Certifying laboratories should be set-up under the aegis of IPA/IAPMO to test and approve fixtures, meeting specifications as stated above.

VG: It should be taken as a mandate from Government as in other developed countries. Most of the countries have law enforcing bodies to check the specifications and water saving labels on each packaging, and go for surprise checks at retail outlets for such labels. If in case they find any product without the label, the dealer is fined heavily.

BSAN: In India, there are no mandatory regulations unlike in developed countries. In this respect, IPA's technical team formulated guidelines for Water Efficient Products (WEP-I) hoping that the same will be implemented. However, consultants, developers and builders are concerned about the conservation of water and are accordingly promoting/ and propagating the use of water conservation techniques, and adopting the appropriate water saving plumbing fixtures in the design and execution of plumbing installations.

ML: Yes, India's building promoters, plumbing consultants and contractors can influence a self-regulatory mechanism within the plumbing industry by:

- a. Specifying that project designs and construction practices be based and made in accordance and compliance to the Installation Standards within the Uniform Plumbing Code - India (UPC-I).
- b. Requiring the installation of third party certified products that are made to the Uniform Plumbing Code - India (UPC-I), and to the product's respective performance standard cited within the UPC-I, along with the efficiency rating system of Water Efficient Products-India.

There is a concern that international brands of faucets, showers etc from developed countries exported to India include several products prohibited for use in those countries as they do not conform to the prevailing stringent regulations on flow rates. Is India becoming a dumping ground for products rejected in the developed nations? Can a collective effort from all stake holders from the plumbing industry prevent this?

MKG: We should try to prevent the use of such kind of faucets & fixtures which are imposed by developed countries on us, luring the buyer with attractive advertisements, etc.

As a matter of fact, the designers should also educate the end users that it is not the international name but the actual design of the fittings and its suitability as per the green norms that matter.

CSG: From a futuristic point and 'Save Water-Save Planet Earth' ideology, all members of the society at large should come forward to conserve and save water, but still a section of the society may not agree with this ideology at all. There are no issues like dumping of the foreign products in India since, there are customers who prefer these products.

An awareness campaign to 'Save and Conserve Water' will have its effect on the consumer and help in changing the mentality of the customer to avoid uses of high water consumption fittings and faucets.

SR: The only way to prevent the blatant use of imported products is to have every fixture carry a certified label from an approved accredited laboratory. By doing this, the quality of the fixture and its flow rate can be ascertained. A Uniform Plumbing Code and strict adherence to it will solve a major part of this issue. Uniform Plumbing Code-India is available but unfortunately, it does not have the mandate and hence, it is only recommendatory.

PKR: Yes, collective effort from all stake holders can avoid the situation. There is a need to create an intelligence set-up at IPA/IAPMO chapter level and an internal mechanism to evolve wherein such issues are brought to the notice of the concerned Central and State Ministry and chambers of commerce and industry and also to the notice of all stake holders. Advisory can be issued to all stakeholders from IPA and IAPMO.

VG: No, this is not really true because most of the faucets and showers can be converted to low flow water saving faucets. To prevent such activity, government should make a policy under Import Custom Duty and Policy to keep a check of water saving labels at the packages being imported or a declaration by the Importer for the same.

As stated above, if determined, we can change any fixture to low flow fixture and with green building norms. IGBC (Indian Green Building Council) has made great effort for every state to agree on additional FSI, which generates additional revenue for builders resulting in most promoters opting for the same. Similarly, a law should come in where no occupational certificate should be granted without water saving products. Also, IPA and IPSC should closely work with the government for the betterment of the industry.

BSAN: We repeatedly hear in seminars and presentations about the next world war, which will be for 'water'. In the absence of stringent laws on water efficient products, a segment of our society still gets tempted to use the plumbing fixtures with high flow characteristics.

It has become a pre-requisite that the Plumbing Industry along with all stakeholders collectively, should have awareness campaigns to avoid usage of high water consumption plumbing faucets and showers.

ML: Regarding the concern that India is becoming a 'dumping ground' for nonconforming water efficient plumbing product imports we've not heard of this happening on a massive scale. However wherever there is a lack of standardization and enforcement of products that do not conform to an international standard there is a better likelihood that this may occur. If this is occurring, it could be somewhat of a beneficial start to help people to appreciate and to understand the value of installing and using water conserving products that have been tested and certified to the appropriate standards to build confidence in the products used for installation. Collective efforts from all stakeholders within the plumbing industry may help to a certain extent in preventing this from happening. India's government is perhaps the top entity that needs to join these efforts to truly have a strong chance at preventing sub-standard products from entering, and being utilized, within the market.

The current trend by international manufacturers of high end 'front of the wall' plumbing products such as sanitary fixtures, faucets and showers is to promote their products direct through architects and interior designers, completely ignoring and bypassing the plumbing consultants and contractors who are responsible for design and installation of plumbing systems incorporating these very products. As the architects and interior designers are aware of only the aesthetical aspects of these products, does this approach not negate the efforts of the plumbing industry to improve standards of plumbing installations?

MKG: This is a very serious problem as lately noticed that the fixtures & fittings of the international brands are mainly selected by Architects & Interior designers for various projects without any consultation from plumbing consultants, either on the basis of very attractive brochures or through very strong PR.



Ultimately, the client suffers. I have seen the designer opting for a towel rail or a soap tray of an international brand costing an enormous amount, while a better item is available from the local manufacturer giving better results at a comparatively lower cost. I strongly feel that the plumbing fraternity should join hands together to raise this issue that architects & interior designers are not the only competent people to select the fixtures & fittings, the Plumbing designer must be consulted as well.

CSG: A Bathroom has already been termed as DREAM ROOM or CHARGE ROOM etc; and with the rapid change it has turned from a simple Bath/ WC/ Basin area to an area catering to a variety of products and gadgets related to body cleansing, body comfort and body wellness.

It is very important that a qualified Plumbing Consultant and Contractor are engaged to provide details on the requirement of water and energy for the efficient utilisation of the bathroom keeping in view conservation of water and energy.

The latest emerging demand is a professional for BATHROOM DESIGN who will technically and aesthetically work on the bathroom including the comforts requirements.

SR: This is a very dangerous trend being followed. The interior designers will go according to the aesthetic appeal of the sanitary ware or fixture without any knowledge of the technicalities. Today, there are so many alternative solutions available for a given situation which makes it imperative for the plumbing professional to have his say. A proper coordination between the architect, consultant and contractor will ensure that an aesthetically appealing and a technically sound product is used.

PKR: Aesthetics and architectural beauty cannot be overlooked. Plumbing Consultant cannot assume himself to be dictating to architects on such matters. The need is to educate and apprise the architects and interior decorators regarding pit falls or danger in incorporating products which are not vetted by the plumbing consultant beforehand. All plumbing consultants should include a note to this effect in their design and drawings.

SKD: It is a ground reality that a Plumbing Consultant many a times comes into picture after the drawings are finalized by architects. The architect simply marks the area as toilets with logo of wash basins, water closets without going into the sanitary engineering angle. I have encountered at some projects, wherein the architect has not frozen the water closet model and make, without realizing that whether it is a floor or wall mounted water closet for different models/ makes have varying requirements for setting out inlet and outlet pipe work. Focusing only on aesthetics without going into the sanitary engineering point of view and site requirements can lead to disastrous outcomes.

VG: The only way out is to have a joint effort and decision to be taken while approving any design or product in any project wherein the designer, architect and plumbing contractor should unanimously give their consent.

BSAN: It is true that the sanitary ware and water faucet manufacturers give more emphasis on aesthetics than the engineering angle, which is equally or more important for an efficient functioning of their products. For an efficient bathroom, a technically sound plumbing design is as important as the plumbing fixtures and accessories. The behind the scenes work force is as important as the ones highlighted in the forefront.

ML: There may be a rumour that international manufacturers of high end conspicuous plumbing products are promoting their products directly through architects and interior designers (thus bypassing plumbing consultants and contractors), which should not be. But even if it does occur, we believe this does not negate the efforts of the plumbing industry to improve the standards of plumbing installations if architects and/or interior designers rely only on the installation of tested and certified products, and those products are installed by trained plumbing contractors.

The 'fixture units' method from UPC-I adopted for determination of pipe sizes for water distribution and drainage assumes that the plumbing fixtures used on the installation will have flow rates not exceeding the stipulations in the code. As the consultant designing the plumbing systems has no control on the fixtures selected, will the designs be rendered inefficient?

MKG: Yes, the design will be definitely affected as the plumbing fixtures used for installation may not have the required flow rates as considered in 'fixture units' method from UPC-I.

CSG: It is purely a matter of proper co-ordination, efficient products uses and awareness. When the basis of the input has been well established then the output has to be in accordance for an efficient use.

SR: If all the right parameters are in place at the time of design, a more efficient pumping and piping system both in terms of output and cost will be in place, otherwise the system will tend to be over designed. Minor changes will not affect the system much but a major change such as changing to flush valves instead of flush tanks, envisaged in the design, will have a detrimental effect.

PKR: Plumbing consultants must make it very clear in the design and drawings that fixture and faucets selected for installation conform to specifications laid down in UPC-1 failing which, design may be rendered inefficient and consultant shall not be held responsible on this account.

VG: Yes, it should be made mandatory that the Plumbing Consultant does an audit for the building before granting approvals. All the plans submitted for approval to the government should have the signatures of the Plumbing Consultant. It might look difficult but not impossible.

BSAN: The fixture units adopted from UPC-I to determine pipe sizes, normally hold good for fixtures with full flow.

ML: Although a plumbing consultant may not have control on the fixtures selected within his designed pipe sizes based on the 'fixture units' method in the UPC-I, his designed plumbing systems may not be rendered inefficient if the flow rates of products used do not exceed the code's stipulations.

The number of personnel to be deployed on plumbing installation contracts are now often dictated by the project management consultants who are usually not qualified or experienced in plumbing engineering. Is this the correct practice and if not, who should determine the work force to be deployed for plumbing installations?

MKG: This is not the correct practice. In my opinion, this should be determined jointly by the contractor & the plumbing consultant.

CSG: The plumbing installation is purely an activity connected with the installer. Since no data related to time consumption on various installation is available, let the installer be the decision-maker in consultation with the PMC.

SR: Deployment of number and type of personnel should be a joint effort of the PMC and the respective consultant. This will also depend on the quantum of work at a particular stage and so this should also be linked to the detailed bar chart. The present trend is to award a turnkey contract including all MEP



services and plumbing happens to be the biggest sufferer as this is sub-contracted. Rather than leaving the choice of the sub-contractor to the discretion of Project Management Consultants, it will be more prudent for the design consultant to shortlist at least five competent contractors in the tender itself. The bidder can then choose any one of them.

PKR: Project management consultancy is increasingly becoming popular in India and its role in timely completion of a project cannot be under-estimated. The need of the hour is to execute projects both within estimated time and cost. Project management consultant is expected to include in its team the plumbing specialist who can be relied on in determining the work force to be deployed on plumbing installations.

IPA/IAPMO on their part can prepare a 'Grey Book' (Plumbing Hand Book or a Reference manual) wherein recommended data required by PMC is included and Project management consultants are advised and persuaded to use them for planning and execution of the plumbing projects.

SKD: The work force required for plumbing installation can be determined by plumbing foreman/engineer of the contracting agency. It is the usual practice to award the plumbing contract in most of the cases after a short duration of civil contract. Many times, it is the brickwork not completed or plaster not done, shafts not constructed etc. wherein the plumbing team is unable to perform its work and incurs idle labour at site. The PMC is not aware of the correct sequence and stages of plumbing work and co-ordination with the civil agency.

VG: Today the major workforce is not skilled and the output is not determined. We must have certified workforce on site and the plumbing consultants should work in close coordination with the PMC.

The IPSC (Indian Plumbing Skill Council) came into being this year and will churn out Certified Plumbers of the Entry Level 1. The large construction companies and builders should make it mandatory to have certified workforce at sites. CPWD and L&T are already making an effort to have 30% of Certified Plumbers on site.

BSAN: The number of persons needed for efficient installation of piping, plumbing fixtures is solely derived by the plumbing engineer from the company, since he is the best judge to decide the amount of material and time required for efficient installation.

ML: The work force to be deployed for plumbing installations can be determined by project management consultants provided they confer and receive professional guidance from plumbing consultants and/or contractors experienced in the design and installation of plumbing systems.

It is a known fact that in India, we do not have 'Plumbing Engineers' produced by our current educational programmes. How do the plumbing contractors cope with the demands stipulated under contracts on deployment of personnel on projects?

MKG: Considering the present scenario, a contractor has to do his best by selecting the right personnel who are exposed to the practical experiences and have a good knowledge of plumbing system.

CSG: This is really a matter of concern that as a nation we are moving very fast in the construction and infrastructure activities but availability of the trained and competent manpower is really a matter of concern. Indian Plumbing Skill Council for sure will support the industry with the proper skilled manpower in the times to come.

SR: It is high time that the institutions and universities make Plumbing engineering a compulsory subject in the final year. I believe the College Of Engineering, Pune is doing something in this direction

and others should follow suit. Besides this, initiatives such as Sector Skill Councils will also help in getting more trained personnel.

PKR: IPA/IAPMO should take initiatives in this matter. Plumbing engineers can be trained by holding degree/ diploma courses in engineering. IPA/ IAPMO should prepare syllabi that can be taught in engineering colleges/ polytechnics as an elective subject and persuade the College Management to introduce the course as part of Civil/Mechanical/ Environmental engineering course. IPA/ IAPMO should use current technology to impart the online courses of different levels and duration. Endeavours should be made to have such courses accredited from reputed universities. IPA/IAPMO should publish and upload on its web, reference materials which can come in handy to practicing plumbing engineers.

SKD: It is true that we do not have “Plumbing Engineer” in our educational programme - but civil engineers (diploma or degree holders) with experience are deployed. It is desired to have “Plumbing Engineers at the earliest.”

VG: Huge efforts are being made with the government agencies to implement the vocational courses in line with the degree courses. Now, with the Plumbing Industry getting its due recognition in the form of IPSC (Indian Plumbing Skill Council), there would be a remarkable change in times to come.

BSAN: This is a prime concern of the Plumbing Industry. To address this issue, few years back IPA & IAPMO jointly brought out the UPC-I code and Plumbing Education to Employment Programme (PEEP) as the first step, and now, the Indian Plumbing Skill Council will support the industry with proper skilled manpower in its endeavours.

ML: In an effort to help plumbing contractors cope with deployment of ‘Plumbing Engineers’ on projects, IAPMO India and IPA have developed the Plumbing Education to Employment Program (PEEP) as a curriculum to all institutions throughout India. PEEP is a well-structured education and training program that helps to create not only Plumbing and Design Engineers, but also Construction Managers, Master Plumbers and Apprentice Plumbers with skill levels comparable to their counterparts in developed countries all around the world. As is a globally accepted practice, India should work towards only allowing certified Plumbing Engineers and Apprentices be tasked with the jobs, from the bottom to the top of the spectrum to ensure uniformity and proper installation and use of products listed to the appropriate standard.

Construction projects suffer due to non-availability of plumbers (even the existing ones without formal education or training) in adequate numbers to cater to the large demand. Are such ground realities taken into account by project managers while preparing construction schedules?

MKG : No, not at the moment. We have to do our best & live with the situation unless India will be in a position to produce qualified, trained & certified plumbers for which all of us have to make joint efforts through various programmes.

CSG: It is really a matter of pity that as a nation we do not have any skill based education system and thus, we face problems. In future, this problem will be taken care of by Indian Plumbing Skill Council by providing trained plumbers for the variety of jobs.

SR: This is like the proverbial question “Chicken or egg first”. If there are projects, there will be more work, and hence, more demand. There is no choice but to produce more skilled personnel for which, education and training will play the pivotal role.



PKR: This is a hard fact not only for the plumbing industry, but all other trades required in construction industry. While the Govt of India has made a road map to Skill development of various tradesmen, there is an urgent need to address the problem of skill shortage in the plumbing field. IPA/IAPMO must take lead in this regard and design and run programmes suited for plumbers or freshers to be run free of cost or at a highly subsidized basis by participation from industry. One method of training the individual can be deploying them at site and training them on the job. IPA/IAPMO should also take lead to interact with Industrial Training Institutes or other such institutions imparting training to tradesmen and advise the changes in their syllabi to keep up with modern day plumbing needs. Best people can be graded and certified to be appointed as teaching faculty.

SKD: I do not think PMC takes into account, while preparing schedules, the non-availability of trained plumbers. Plumbing is kept as the backburner, as all the limelight is on the civil project. The plumbing team is supposed to follow in tandem with the civil team. As the PMC is not fully aware of the correct sequence and stages of the plumbing system and sanitary engineering coupled with the fact of certified plumbers' non-availability, schedules are prepared far from realistic terms.

VG: IPSC (Indian Plumbing Skill Council) is making enormous efforts to make things mandatory during Certified Plumbing Programmes. This is a demand vs supply situation and can be met with, once we have sufficient number of certified plumbers. Huge efforts and money are being put in by the government. NSDC and IPSC are closely involved in making it a reality but this calls for huge commitment from the Plumbing Consultants, Contractors and Promoters at each level. An earnest effort is required to make this a reality!

BSAN: Project Managers have to work out the schedule of implementing the plumbing work along with the Plumbing Contractor, considering the staff strength required and the number of persons that can be deployed for a particular project.

ML: Yes, the shortage of plumbers properly educated, skilled, and experienced is a reality that many construction projects suffer from. If these challenges are to be overcome by project managers they should look to sourcing their man power requirement from the various educational institutions throughout India which have internationally benchmarked plumbing courses (such as the IAPMO India and IPA's PEEP program) for students. ■■

1. **Mr. M. K. Gupta** is the Managing Director of MKG Consultants and Chairman, IPA Delhi Chapter. He can be contacted - mahender@mkgconsultants.com
2. **Mr. Chandra Shekhar Gupta** is the Managing Director at Gem Sanitary Appliances Pvt. Ltd. and Hon. Gen Secretary, IPA. He can be contacted - csg@gmgrindia.in
3. **Mr. Sharat Rao** is the Managing Director of Engineering Creations Public Health Cons. Pvt. Ltd. He can be contacted - svr@ecphc.com
4. **Col (Retd.) Pawan Kumar Roy**, Additional General Manager (MEP) is working with M/s Jaiprakash Associates Ltd in Jaypee Greens, Greater Noida. He can be contacted - pawan.roy@jaypeegreens.com
5. **Mr. Sunil Kumar Duggal** is Director - Projects, at Northern Sanitation Pvt. Ltd. He can be contacted - skduggal59@yahoo.co.in
6. **Mr. Vinay Gupta** is the Managing Director, M/s. Aqua Baths (P) Ltd. and Hon. Treasurer, IPA. He can be contacted - vinayg@aquaplusindia.com
7. **Mr. B.S.A Narayan** is the Principal Consultant at Maple Hydraulic Consultants, Bengaluru. He can be contacted on - bsanarayan@mapleconsultants.co.in
8. **Megan Lehtonen** is the Director of International Business Development for the IAPMO Group. She can be contacted - megan.lehtonen@iapmo.org

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