

## Preface

The 6th Edition of the International Conference on **Energy and City of the Future" EVF2019"** took place from Dec 18th to Dec 20th, 2019, at MIT-ADT University, Pune City in India. **The EVF Series "Energy and City of the Future" EVF' is created by ECAM-EPMI, Cergy-Pontoise (France), University of Lorraine (France), and Queens University (Canada).** EVF Series Chairpersons are Prof. Moumen DARCHERIF, Director-General ECAM-EPMI, (France), Prof. Mohammed EL GANAOU, University de Loraine (France), and Prof. Jean-Michel NUNZI, Queen's University (Canada).

The 6<sup>th</sup> International Conference on Energy and City of the Future, EVF2019 was co-organized under the leadership of Dr. Vishwananth KARAD, Founder of MIT group of Institution, Dr. Mangesh KARAD, Executive President, MITADT University, Prof. Sunita KARAD (Director, MITCOM), Dr. Sunil RAI, Vice-Chancellor of MITADT University, Dr. Kishore RAVANDE, Principal, MITSOE, and Dr. Sudarshan SANAP, HOD, Mechanical, MITSOE the Convenor for the conference. The conference had seven different themes/tracks in various domains ranging from, 1. Factories of the future, 2. Energy and Management, 3. Waste management, 4. Cultural infrastructure, 5. Transportation, 6. E-Health and 7. City and Building of the Future.

The EVF aims to bring together academic researchers, industry, scientists, and city political actors to exchange their experiences and research results about all aspects (historical, societal, environmental, conceptual, methodological, practices.) dealing with the Energy and the City of the Future. The previous editions were organized in Cergy-Pontoise, France (2014), Tetouan Morocco (2015), Queens, Canada (2016), Longwy, France, (2017) and Fès, Morocco (2018)"

It was a great honor and privilege for MIT-ADT University to have the Nobel Prize Winner and Emeritus Professor of the Built Environment, University of Manchester, Hon'ble. Dr. Geoffrey LEVERMORE as Chief Guest, who graced the occasion with this august presence. He is amongst the prominent keynote speakers for the conference who talked about climate change and the urban heat island effect.

Mr. Rajendra SHENDE, Former Director United Nations Environment Programme (UNEP) and Chairman, TERRE Policy Centre, enlighten the audience with 17 different Sustainable development goals (SDGs) and the Road to The Future; Making University SDGs Ready.". Dr. K. G. NARAYANKHEDKAR who is Chancellor MGM CET, Panvel, Navi Mumbai, and Dr. D. N. MALKHEDE who is Adviser to AICTE. Other prominent persons from Industry who chaired various sessions were Dr. Dadasaheb SHENDAGE, Senior General Manager H2e Power, and Dr. HITENDRA Patel, Mechanical Architect, Philip's Health care.

The theme of the conference was to debate and present ideas required for cities of the future in line with the 17 Sustainable Development Goals set by the United Nations for the whole world.

The major goal and feature of the conference are to bring academic scientists, engineers, and industry researchers together to exchange and share their experiences and research results, and discuss the practical challenges encountered and the solutions adopted.

**We are honored by EVF Series Chairperson for opting MIT ADT University as the organizer for the 6th Edition of the International Conference on Energy and City of the Future" EVF2019.**

### Desk of EVF Series

Cities emerge from the organization of life and communications, which constructs their unique signature. This also applies to any form of science, like mechanics, energy, and knowledge in general that builds up to understand, formalize, unify, master, use, predict and anticipate the notion of tomorrow.

Indeed, prediction of the future responds to the implicit obsession that humans develop as an alternative to the impossibility of reversing the axis of time, which forces them to predict the future quickly and far away.

In this move, points of view have been at the origin of ruptures in intellectual practices that have enabled humanity to take giant steps forward in its march towards progress and therefore towards risk.

Thermodynamics, through the notions of work and energy, has made it possible to evidence a common currency (the joule) that has always been implicitly used by humanity in its exchanges since the beginning. Progress towards abstraction led to the capitalization of the written text towards variables relevant to the economy of mind that they have fostered (enthalpy, entropy, training, etc.). Institution that would not have delivered its certainties without mathematical progress (number theory, group theory, statistics, geometry, infinitesimal calculation, differentials, implicit functions, etc.).

In fluid mechanics, Euler and Lagrange are associated in their vision of the evolution of the particle in its movement between an immediate future and a recomposed past. Two fertile points of view for a progress in terrestrial mobility achieved today without comparison and without the use of advanced theories of physics. This largely suggests what the future could look like if the potential of physics was more fully exploited.

It is therefore not strange that we find a common vocabulary between science and the city through words like Energy, Entropy, Economy, Turbulence, Light, Life, etc. this is the real link if we look at it.

Between energy, work, and their manifestations, the contours of tomorrow's city will continue to be sketched out in the movement of prediction and correction on the path of the advancement of knowledge. Boundary conditions shape the solution and confront it with reality. The challenges of tomorrow are therefore facing these borders require trade-offs and choices. The choice includes in its definition an elimination and therefore a responsibility in the writing of the city's energy history. The role of our community will remain through the exchange and confrontation of points of view that will generate new orientations allowing a gain on the future and an acceleration of the trajectory towards the unknown.

In its present, the city contains possible insights into its future, since here and elsewhere metropolises do not take shape in the same way, citizens do not react in the same way, constraints are managed differently, sometimes bypassed, sometimes reversed in favor of the hoped-for development. The apparent contradiction invites innovation; innovation shapes lifestyles and relationships to space and time. The speed of change cannot remain a random parameter in the

design of the city of the future, the human being is forced to understand and anticipate, and learned encounters are the ideal place for such an exchange.

A conference dedicated to the city of the future with the advantage of opening up a participatory reflection to all communities who, through their scientific, technical and artistic approaches, will propose points of view and participate in choices that will inspire the continuous mutation of the city of tomorrow between the freedom of dreams and the pragmatism of the laws of physics.

The city has also to ensure strong and quick adaptation to new threats affecting the continuity and the quality of life.

The singular health situation experienced by the world in 2020 has shown more than ever the eyes of a city been turned towards scientists to provide explanations, visions, recommendations and then immediate solutions, for short time followed by permanent solutions to ensure the survival of our species and then the environment for a better life. This belief in science, reason, and proof is more than ever the hope that every city of tomorrow cultivates guaranteeing life and continuity.

**By**

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