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PREFACE

ESAFORM 25th Year Anniversary

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Preface

Looking back at the past 25 years of the ESAFORM Association was both exciting and fascinating. At the beginning of the nineteen nineties, the necessity to assess the importance of a scientific approach and consolidate the research effort in the field of material forming was clearly recognized. Several initiatives were instigated for this purpose among which, a collaborative project called NUPHYMAT: Numerical and Physical Study of Material Forming Processes. Launched in 1993 and coordinated by Elisabeth Massoni, it involved up to 18 European laboratories and research groups. Within the framework of the project activities, several fruitful exchanges between scientists were organized. At the conclusion of the project, an open workshop was organized during which Prof. Jean Loup Chenot proposed the creation of a new European Scientific Association for Material Forming. Finally, after consultations with several European research groups, the CEMEF organization took the leading role in the creation of the ESAFORM Association in 1997 with prof. J.L. Chenot as a President.

As clearly stated in the paper, "A Brief Historical Review of the ESAFORM Association," written for the tenth anniversary of the Association by J.L. Chenot and J.-M. Haudin, the main goals of ESAFORM since the beginning have been to:

- Reinforce the importance of Material Forming in Sciences and Industry,
- Enhance teaching and research activities in manufacturing processes,
- Improve collaborative exchanges between specialists in different fields: continuum mechanics, thermal analysis, rheology, tribology, physics of materials at different scales and numerical analysis,
- Increase interactions with industrial partners from which new research topics are extracted and to which analysis methods are transferred from academic groups.

The most relevant aspect of ESAFORM in comparison with other international scientific associations is that it was created as an open structure, with the aim of welcoming any scientist or engineer who contributes to the advance of knowledge in the wide field of Material Forming. This target was initiated by involving at first individuals from Europe and progressively from other continents, and it remains paramount to the Association.

The second objective has been to foster the multi-disciplinary approach needed to face and solve ever more complex problems occurring in real industrial practice. This has been achieved by encouraging the collaboration between scientists and engineers working on different materials to favor cross-fertilization.

A final aspiration of the ESAFORM Community has been the creation of a friendly atmosphere allowing the development of constructive and effective exchanges of ideas and experiences. This has been considered as a key aspect to establish lasting collaborations between different teams that specialize in different approaches and provide complementary skills.

These guidelines have been embraced by the Presidents and the Board of Directors over the past 25 years. The Board of Directors, elected by ESAFORM members, has been renewed every two years according to the statutes of the Association; after Professor Chenot, Prof. J.-M. Haudin was elected President in 2000, then Prof. A.M. Habraken in 2004, Prof. P. Boisse in 2008, Prof. D. Banabic in 2012, Prof. A.H. van den Boogard in 2016 and finally Prof. L. Fratini in 2020.

In the past 25 years, an ESAFORM Conference was held annually. This includes the virtual conferences of 2020 in Cottbus and 2021 in Liege during the covid pandemic crisis which affected the world in the past two years. This year

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the conference went back in person in Braga (Portugal) and it was a great success of participation; in addition the conference of 2023 and 2024 are already scheduled and in different stages of preparation. An important modification in the structure of the Conference was the introduction of mini-symposia in 2001: Such an innovation has contributed to the involvement of ever more scientists resulting in a detailed diffusion and promotion of the different activities. Furthermore, the mini-symposia gave ESAFORM members the opportunity to follow the scientific trends and pinpoint innovative topics introduced and discussed by the international scientific community.

Another relevant aspect of the ESAFORM life has been the foundation of its official journal, the International Journal of Material Forming (IJMF), which covers all the scientific and technical domains concerning the Association. The first issue with Prof. M. Touratier as the Editor-in-Chief was published by Hermès in March 1998 and by Hermès-Lavoisier from 2002. In the subsequent years, Prof. M. Touratier was replaced by Prof. F. Chinesta as Editor-in-Chief and Springer became the new publisher.

Since its creation, the Association had in mind to present awards to young scientists for the quality of their research work. During the 2nd ESAFORM Conference in 1999, the ESAFORM Scientific Prize was launched with the goal of recognizing a young but confirmed scientist, who has produced an outstanding contribution in the field of Material Forming. In 2004, the ESAFORM Industrial Prize was launched, substituted in 2012 by the ESAFORM PhD Prize for Industrial Research, and finally renamed in 2021 the ESAFORM Lionel Fourment – PhD Prize for Industrial Research in memory of Prof. Lionel Fourment. Since 2020, ESAFORM has established the "Best communication award" in recognition of the quality of papers presented at each annual conference. The aim of this award is to encourage young researchers engaged in a PhD program, to conduct research activities in material forming and help them to gain European/international recognition.

Recently, ESAFORM has offered a wide range of supporting grants to its members for the following purposes: for writing project proposals funded by the EU; for assisting with the mobility of young researchers (maximum 5 per year); for the organization of thematic workshops in the field of Material Forming (maximum 2 per year) and most recently; a grant per year to a multicountry team for the organization and the execution of a Benchmark study within the field of material forming. In fact, the First ESAFORM Benchmark, EXACT, has been successfully completed this year (2022), and a large set of experimental input data is available for download [1].

Today, the Association counts about 1200 affiliates as defined by the number of scientists who attended at least one conference in the last 5 years. As a mean of communication, a web server (http://www.esaform.org) reporting all the major information regarding ESAFORM activities has been created. It has progressively become the ideal discussion forum for established research team and laboratory members, and for young PhD students who attend their first conference and present their contribution. Today, this tool is considered as a premier reference for the whole international scientific community working on Material Forming. This trend will continue in the future with new ideas and initiatives generated by any ESAFORM member with the support and steering of the Board of Directors.

The purpose of the present Special Issue is to review the topics and overall trends discussed in the past 25 years in the ESAFORM community, both as consolidated understanding and as emerging arguments stimulated by the conference mini-symposia, and the contributions of the most recent ESAFORM prize winners. This is our collaborative effort with this special issue to project a fast motion movie describing the evolution of the knowledge in the field of Material Forming and the dynamic contribution of the ESAFORM community.

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President of ESAFORM

Reference

1. Vincze et al. (2022) Data of the first ESAFORM benchmark EXACT. https://doi.org/10.5281/zenodo.6874577