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Enrico Malfa is Research and Development Director of the Metal Division of Tenova, a Techint Group company, worldwide partner for innovative, reliable and sustainable solution in the Metal and Mining industries. Before taking the current position in Tenova, he has responsibilities at Centro Sviluppo Materiali (CSM), now Rina Consulting, as Business Line Manager, Department Manager and Senior Scientist for environment solutions. In this position he worked developing solution for energy intensive industrial processes, including combustion systems with low environmental impact (flameless technology and regenerative system), solid materials gasification process, waste valorization, optimization of chemical energy utilization in Electrical Arc Furnaces (oxy fuel burners/injectors and control system based on off gas measurement, energy recovery). He is inventor or co-inventor in 17 patents and author/co-author of more than 60 publications. From 1996 to 2002, Enrico has held the position of Senior Scientist within the Energy System Technology area in ABB R&D Centre in Italy. Before he worked in the Cement Industry as process engineer within Combustion Department of Technology Division of Italcementi Group and in Aerospace Industry (Aermacchi) as CFD engineer. Enrico received a Master’s Degree in Aerospace Engineering from Politecnico of Milan, and currently he is the Chairman of European Steel Technology Platform Working Group Planet, Member of the Technical Group Steel – Steelmaking (TGS2) of the Research Fund for Steel and Coal (European Commission Directorate G – Industrial Technologies Research Fund for Coal and Steel), Member of the board of Associazione Lombarda Fabbrica Intelligente (AFIL), the cluster of intelligent manufacturing in Lombardy and Secretary of “Environmental and health committee” of AIM, the Italian Association of Metallurgy.

Title: Steel made in Europe: the backbone of sustainability

Abstract: Steel has historically been central to modern economies, synonymous with growth and progress. Modern society would be impossible without steel: Europe’s reconciliation after World War II was built on unified coal and steel industries. Today the steel sector in Europe has an annual turnover of EUR 166 billion and it is responsible for 1.3% of EU GDP. Moreover steel is the essential material for a circular economy, not only for its recyclability, but because it is a material that remains available to be reintroduced into a production process in order to give birth to products or materials (permanent material). Therefore the sector has been recognized as one of three areas, along with space and defense, where the European Commission proposes specific policy measures.

At the same time Europe’s steel industry has been under severe pressure, squeezed between brutal market conditions and the resolve to mitigate climate change with the associated shift to a carbon-limited world. To conquer these challenges, apart from creating and maintaining a level playing field, the European steel industry has to rely on its highly skilled workforce and on its ability to deliver technological breakthroughs.

Starting from the consideration that the sector finds itself very close to the physical limits of CO2 emissions reduction from conventional steelmaking technologies, the European steel industry is fully committed to the mitigation of greenhouse gas emissions and to helping meet the objectives of the Paris Agreement working on the following main pathways towards the smart, low carbon industry of the future:

• Carbon Direct Avoidance (CDA), which substitutes carbon for hydrogen and/or via the use of electricity.

• Low Carbon Without CO2 Emissions (LCWCE), which further optimises carbon-based Metallurgy and applies the circular use of waste carbon in synergy with other industrial sectors and the use of carbon storage methods to mitigate greenhouse gas emissions.

• Enhancing the recycling of steel and its by-products, helping to improve resource efficiency and reinforcing the circular economy.

The European steel industry’s development plans are ambitious, and this comes at a cost, potentially of several billion euros. Thus, it is important to note that large-scale projects must have the option to apply for additional EU and national funds on top of the funding by a single joint technology initiative. Only joint initiatives with other industrial sectors, the EU institutions and the member states to support the necessarily time-consuming and expensive R&D, will foster the emergence of such breakthrough solutions. The ‘Big Scale’ initiative – i.e. the work on a joint initiative on low carbon steel – is a key component which will be needed to accelerate carbon reduction over the entire steel value chain.

This should also contribute to the creation of the coveted circular economy in Europe, given the huge potential of steel.