



Scuola Superiore
Sant'Anna



ICT COISP

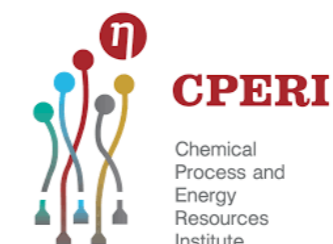
Information and Communication Technologies for
Complex Industrial Systems and Processes

SITE-LEVEL MODELS FOR SUPPORTING OPTIMAL DISPATCHING OF STEELWORKS OFF-GASES IN METHANE AND METHANOL SYNTHESIS REACTORS

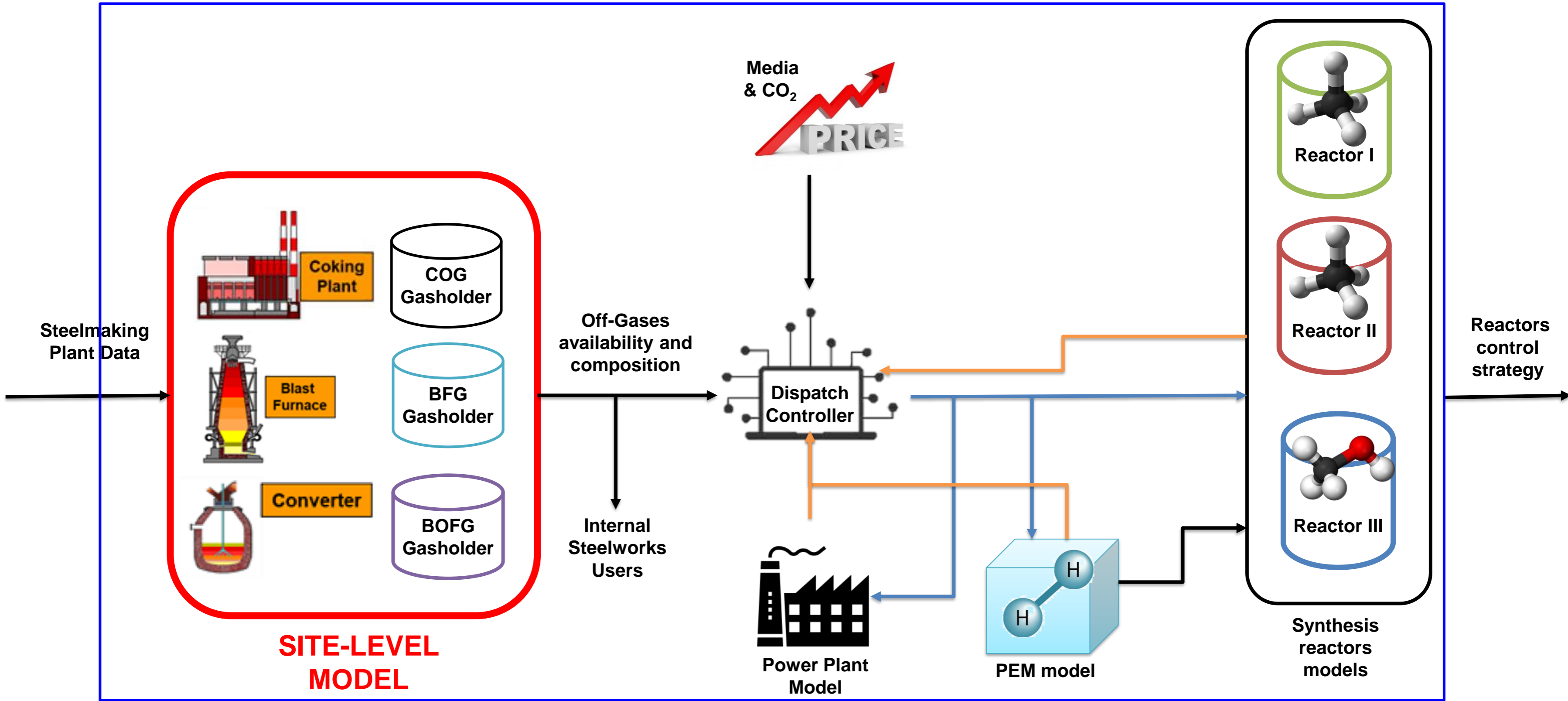
Ismael Matino, Stefano Dettori, Valentina Colla



Chair of Energy Process Engineering
Coordinating Partner

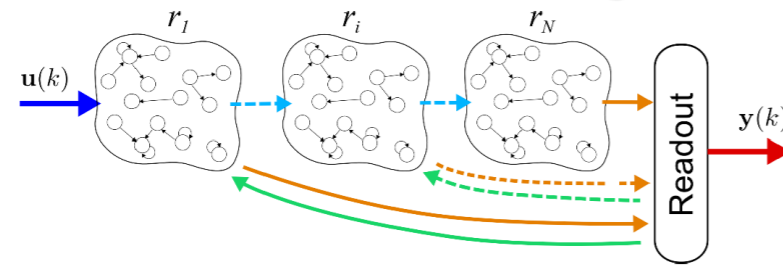


i³upgrade Control Architecture Scheme



Site-level Models

Echo State Neural Networks based Off-gases Producers Models



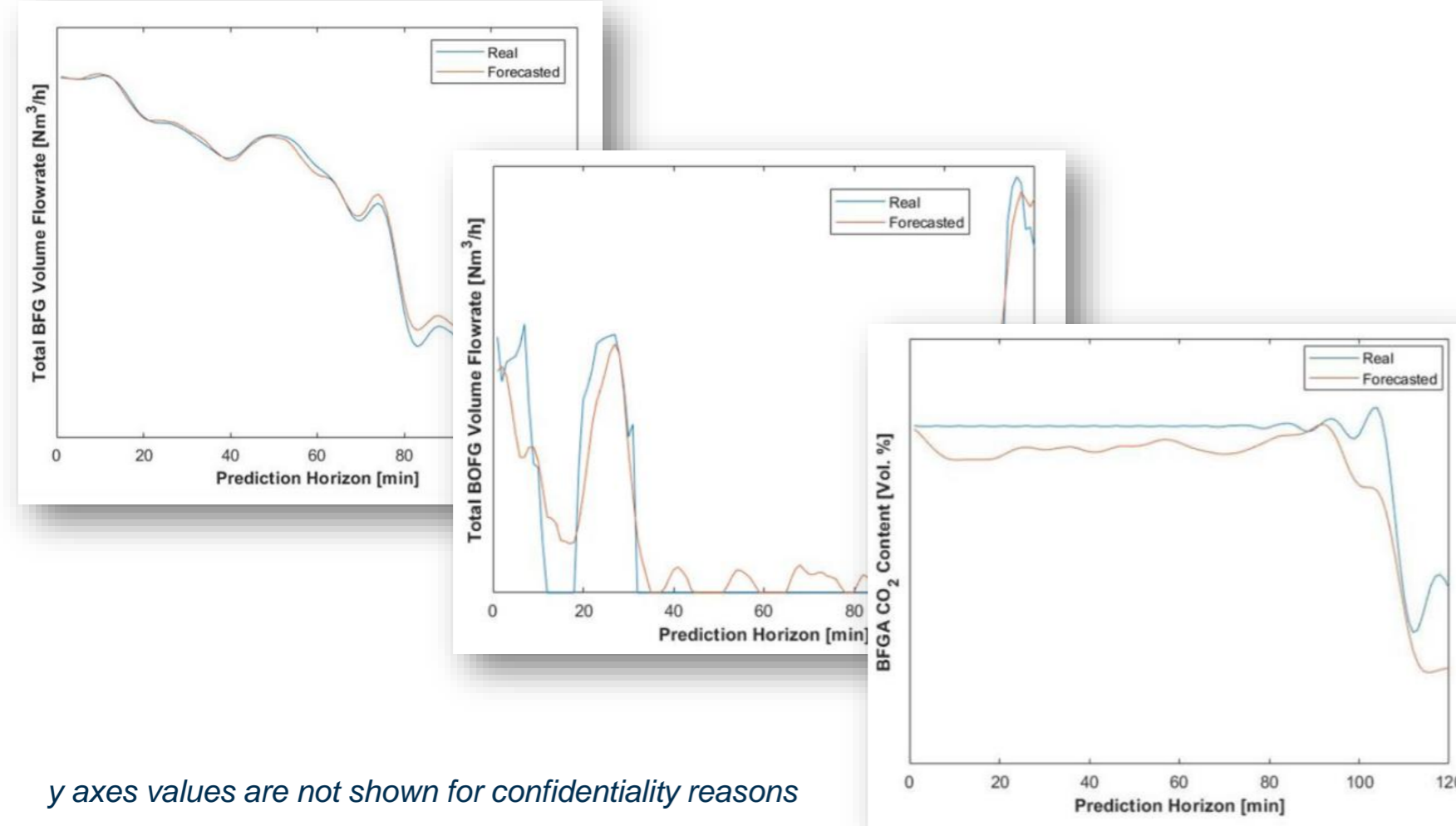
2-hours ahead predictions with NRMSEs between 0.1 ÷ 10.8%

(highest errors belong to more dynamic processes for the more ahead forecasted values
– only O₂ content prediction for BOFG has maximum NRMSE higher than 10.8%)

Hammerstein Wiener or State Space Linear based Gasholder Models



2-hours ahead predictions with absolute errors between 1.5 ÷ 7%



y axes values are not shown for confidentiality reasons

