HyTecHeat	**HyTecHeat** **HYbrid TEChnologies for sustainable steel reheating**	Funded by the European Union

HyTecheat at a glance

The project is focused on utilization of hybrid heating in steelmaking downstream processes (reheating furnaces and refractory preheating). With hybrid heating is intended utilization of natural gas and hydrogen. Three *democases* are envisioned: (1) a hybrid by-design burner designed and tested in a combustion chamber, directly fed by Hydrogen produced by purposely installed electrolyser; (2) a burner currently fully-NG fed will be adapted to evaluate the limit up to which the current systems can be pushed to work in hybrid heating gas atmospheres; (3) ladle preheating burners will be fed by a blend NG/Hydrogen.

Moreover, lab oxidation and descaling tests will be carried out on a large variety of steel grades.

Consortium

Composed by multinational collaboration among research centers, industrial operators and technology providers:

- RINA CONSULTING - CENTRO SVILUPPO MATERIALI SPA
- TENOVA SPA
- ACCIAI SPECIALI TERNI SPA
- TATA STEEL NEDERLAND BV
- SWERIM AB
- SSAB EMEA AB
- LINDE SVERIGE AB (AGA)
- ARCELORMITTAL MAIZIERES RESEARCH SA
- SNAM S.P.A.
- INDUSTRIE DE NORA SPA-IDN

Activities

TENOVA will work on the multifuel burner development, realization of **DEMO case 1**, with RES installation (realized with own resources), 1 MW electrolyser installation and burner testing; modelling supported by CFD analysis; **TATA** and **NUNKI** will realize the **Demo case 2** and **Demo case 3**, to study the limit of current combustion systems used with blends of H2/NG (Tata Steel will tests the burners for reheating furnace, while Nunki Steel the ladle preheating burners). The quality assessment will be carried out by different partners following their expertise: **RINA-CSM** will perform thermogravimetric tests in different thermal conditions and oxidising atmosphere; **SWERIM** will perform pilot plant trials with hydrogen combustion and the effect on hydraulic descaling for the final surface quality and steel losses. **SSAB** will provide reference conditions for the reheating and descaling trials at **SWERIM** together will specimens of selected steel alloys of industrial importance and **LINDE** will provide expertise in the industrial supply and use of hydrogen and experience using oxyfuel technology. **AMMR** will test steel samples from as-cast steels (slabs, thin slabs) and plates for the measurements of the oxidation kinetic. Industrial samples will be heated in a furnace designed to reproduce the industrial heating curves. **Tenaris Dalmine** will provide the working condition of industrial furnaces and will collect steel samples with different composition. **SNAM** and **DENORA** will provide all the competencies for hydrogen management, electrolyser installation, and will be strongly involved in the specification of electrolyser unit and installation at Tenova premises.