

1. High Temperature Turbine Blade Alloy for Additive Manufacturing					
WG Name	Additive Manufacturing	Chair	Vladimir Navrotsky (Siemens Energy)	Co-chair	Ludo Bautmans (Oerlikon)
Project lead	Yogiraj Pardhi (Sulzer)				
Core team	Joy Sumner (Cranfield University); Steve Nardone (Engie Laborelec); John Scheibel (EPRI); Alex Bridges (EPRI); Boby Noble (EPRI); Alex Gontcharov (Liburdi); Paul Lowen (Liburdi); Robert Tollett (Liburdi); Scott Hastie (Liburdi); Siavash Pahlavanyali (RINA); Roberto Sorci (RINA); Oriana Tassa (RINA); Stefano Lionetti (RINA); Ulli Klenk (Siemens Energy); Vladimir Navrotsky (Siemens Energy);; Yogiraj Pardhi (Sulzer); Pascal Jacques (UCLouvain); Sarah Ogden (Uniper)				
ETN officer	Rene Vijgen, Nicolò Cairo				
Initiative description					
Scope definition The scope of this activity is to review the publicly available information and connect with alloy development companies, with the aim of searching developed alloys to low TRL (1-3). The process consists of selection of two to three alloys to evaluate printability and assess key mechanical properties (Fatigue, Creep, Oxidation, Etc.). Manufacturability of a select alloy will finally be demonstrated by using a representative stage 1 gas turbine blade geometry.					
Objective setting - Identify high temperature blade alloy (early TRL) and develop/validate it to TRL3/4 level. - Minimum 50°C above currently processable high temperature alloys by AM. - High-temperature alloy with 1000°C metal temperature capability for HP turbine blades.					
Expected outcome R&D leap to tackle additive Manufacturing of blade one, with the expected outcome of increasing efficiency and supporting decarbonisation.					
Implementation of the activities					
Project execution A core group has started to describe the project definition in more detail. The scope and costing is presented to the ETN community and interested parties are joining to form a consortium. This will require full industrial funding, agreed contractual obligations and project management. The project duration is 3 years. Co-operation is sought with a competent university, institutes and organisations that could execute the scope of work. The project management will be carried out by a dedicated project officer, reporting back to a steering group (the partners).					
Project finances The project is funded by the participating members of the consortiums.					
Meeting schedule and dissemination The steering group will meet on a monthly basis ensuring very close collaboration. Full dissemination of detailed results is guaranteed within the consortium. High level results will be reported in the various platform.					
Deliverables & Milestones					
Deliverable 1	Title			Timing	2025
Identification of at least 1 high temperature alloy capable of high temperature application in gas turbines with 1000°C capability.					
Deliverable 2	Report			Timing	March 2028
Demonstration of printability of identified alloy using a representative turbine blade geometry.					
Milestone 1	Project start			Date	March 2025
Downselection of candidate materials available and already developed by material development organisation					
Milestone 2	Project end			Date	March 2028

Demonstration materials high temperature capability using material property characterisation and printability using first article inspection using representative gas turbine blade geometry.