

TECNOPOLO

ReclaimER

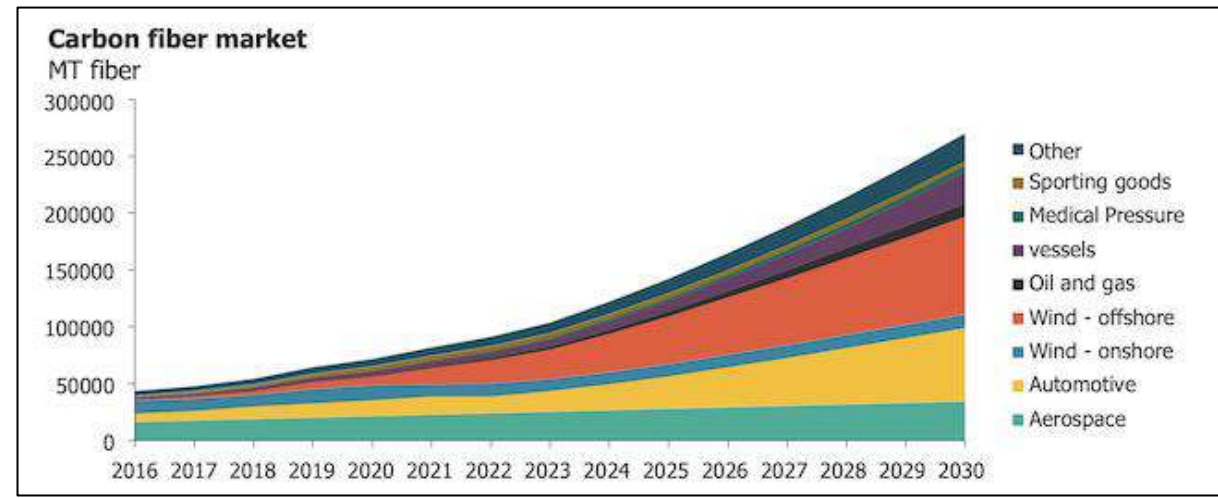
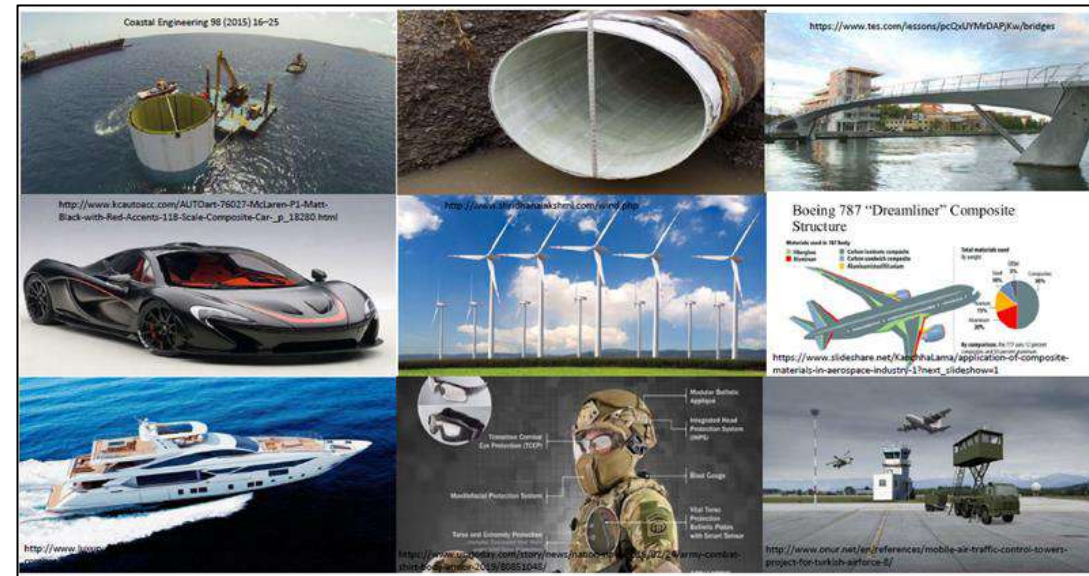
Project presentation

Analisi della domanda di mercato

Carbon fibre reinforced polymers (CFRP) materials are suitable for an increasing variety of industrial applications, including aerospace, automotive, construction, energy, and sport, due to their properties such as **strength-to-weight ratio** and **extended service life** (1).

For this very reason, this has led to an increase in the use of this composite material in Europe, which in turns is expected to lead to managing a large amount of this End-Of-Life material in the next years (2). The said trend, already growing in the last years, is expected to grow further by 2030.

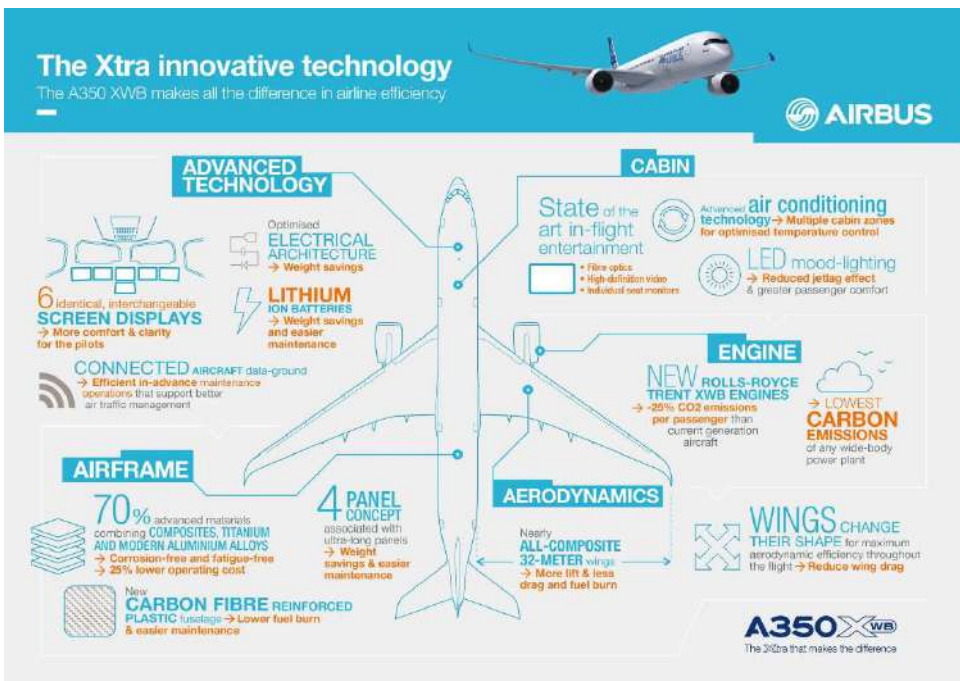
However, the growth in demand for composite material , is combined with the **problem of recycling and reusing of all the end-of-life composite material products** by 2025, a problem that will continue to be central if it is accompanied by the increasing use of composite material in the coming years.



(1) Chung, 2010; Rani et al., 2021; Witten & Mathes, 2020; Zhang et al., 2020; Zimmerli et al., 2010

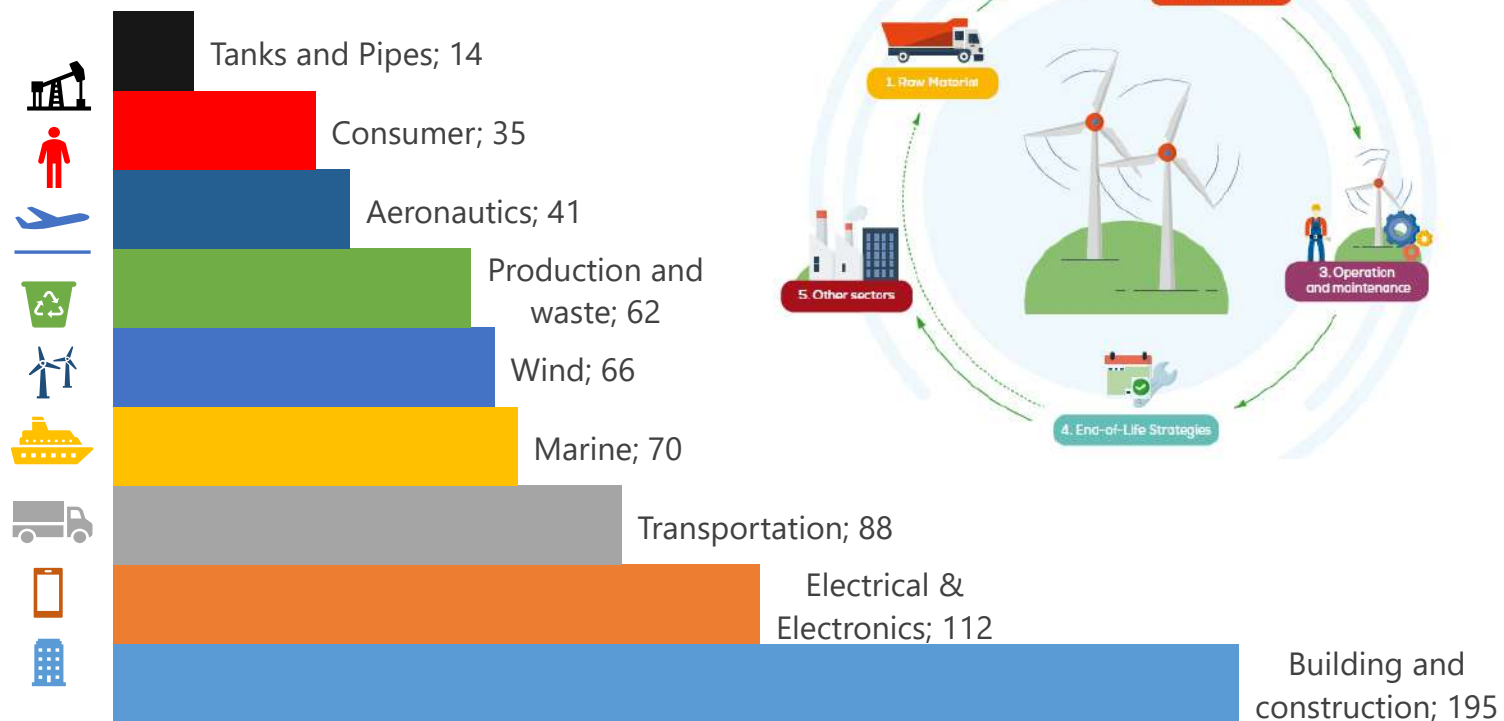
(2) Rajak et al., 2021; Witten & Mathes, 2020

Analisi della domanda di mercato



Il rapporto **resistenza/peso** e le proprietà di **lunga durata** dei materiali compositi li rendono adatti ad applicazioni industriali in diversi settori

volume elevato di materiali compositi a fine vita nel 2025

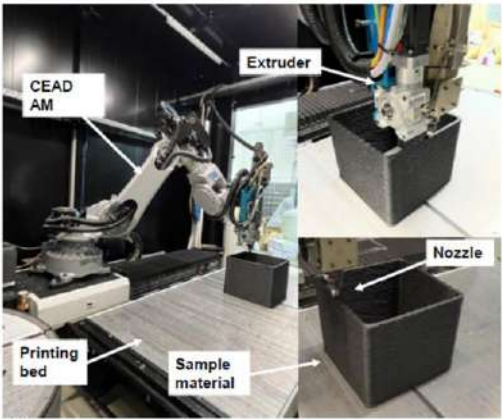


ReclaimER project



Scientific challenges

The large-scale AM process

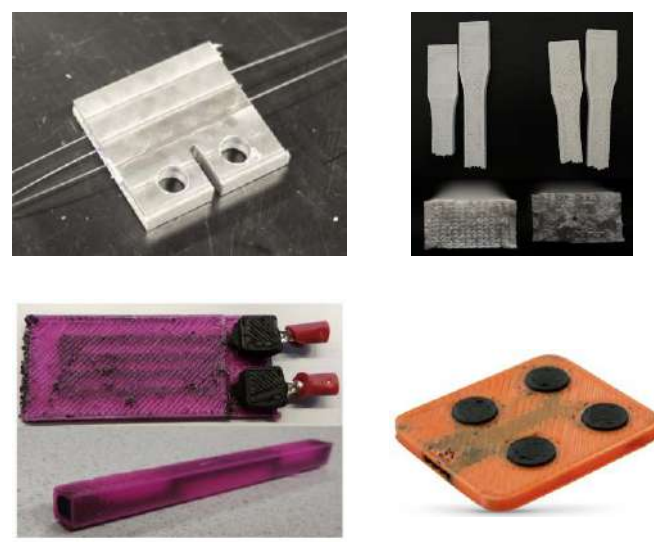


Process Challenges		
Automation System	Manufacturing Accuracy	Quality Assurance
<ul style="list-style-type: none"> • Path planning • Process control • Process monitoring • Automatic cooling • 	<ul style="list-style-type: none"> • Error build-up/mitigation • Thermal management • Process parameters • 	<ul style="list-style-type: none"> • Instability • Accuracy • Contamination • Surface profile •

Research theme

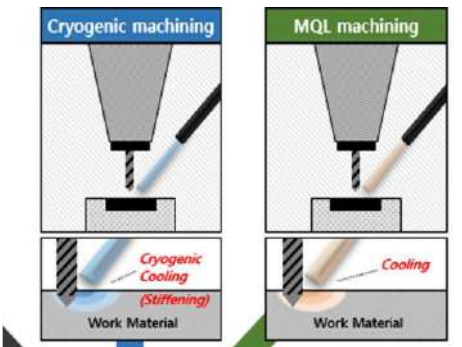
Embedded sensing

Structural health monitoring

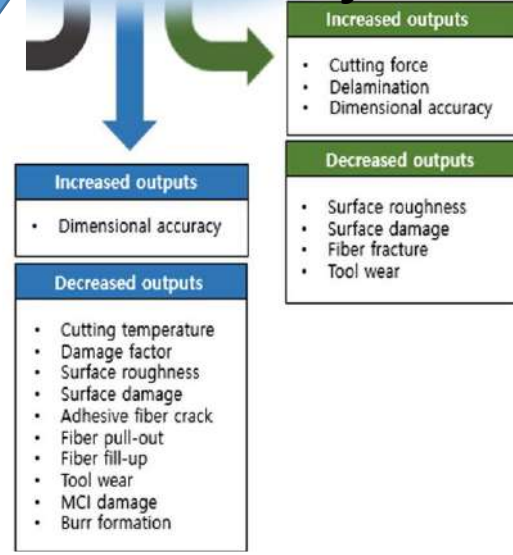


Sustainable machining

Process Challenges
Sustainability of the process
Defects
Robotic Machining



Influence on the machinability





Grazie per l'attenzione

