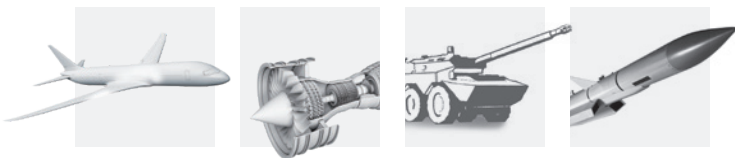


AUBERT&DUVAL



TITANIUM FOR DEMANDING MARKETS

FROM INGOTS TO FINISHED PARTS



www.aubertduval.com

Expertise at the heart of the entire titanium value chain

From sponge through to various conversion processes, surface treatment and testing: by integrating the technical competences and capabilities into one titanium industrial stream we offer to our customers a large array of metallurgical solutions with an enhanced level of expertise and service.

Advantages of our integrated industrial solution for titanium:

- A simplified and controlled supply chain from sponge to finished and tested forgings
- An offer conforming high quality standards
- Circular economy from raw material through melting ingots, processing titanium, recovering & recycling titanium scrap into new titanium ingots of aerospace quality
- A double raw material provision route: ingots from original ilmenite ore and sponge and from recycled titanium scrap

We comply with the most stringent requirements in terms of high-quality sponge production, melting and grade composition, cleanliness and microstructural integrity, fatigue resistance and dimensional tolerances.

EcoTitanium

Created by UKAD, ADEME and Credit Agricole Centre France to manufacture high quality titanium ingots using titanium scrap as feedstock

UKAD

Created by two world-class titanium specialists - Aubert & Duval and UKTMP - UKAD converts ingots coming from UKTMP and EcoTitanium into forged billets and bars.

AUBERT & DUVAL

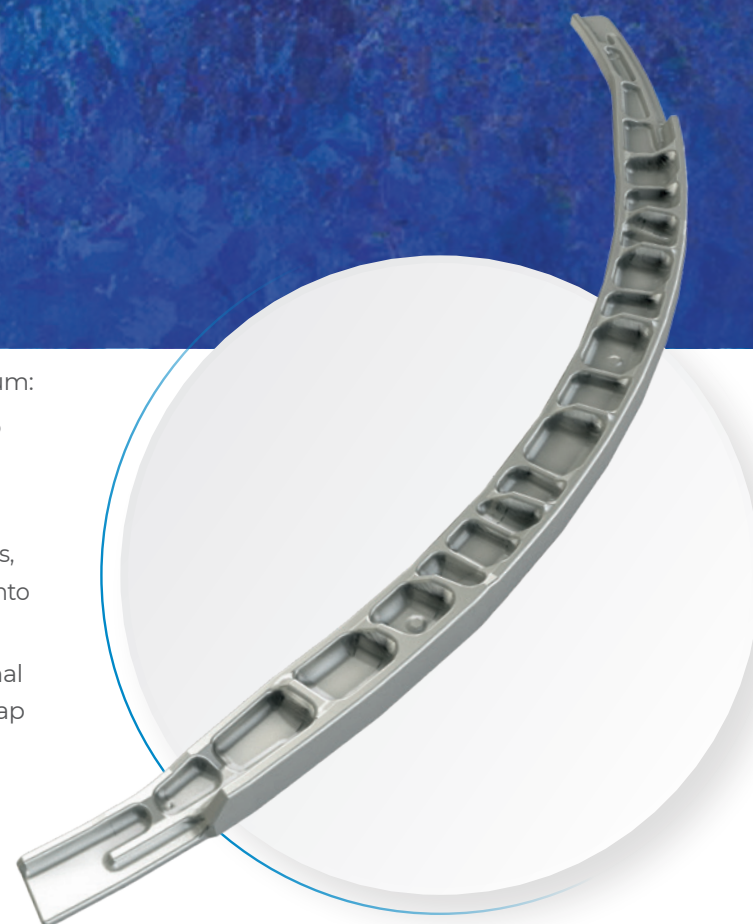
Our company develops high-performance metallurgical solutions in titanium, aluminum, superalloy and high-performance steel grades for high-tech industries (aerospace, energy, space, medical, defense,...)

A full titanium offer for stringent markets

Titanium's extraordinary properties of strength, resistance to high temperature and to corrosion, light weight and low coefficient of thermal expansion contribute to higher efficiency with minimum surcharge in the number of critical aerospace, defense and motorsport applications. Thanks to its bio-compatibility combined with light weight and fracture resistance, titanium is used from head to toe in biomedical implants. It is difficult to imagine how current performance levels in the industries we serve could be achieved without titanium.

World leader in forging

For many decades Aubert & Duval has been providing titanium open and closed-die forged solutions, responding to most stringent requirements. Supported by the ingenuity of its people, using with skill the technical capabilities offered by its 22,000, 40,000 and 65,000 metric ton hydraulic presses, hammers and other processing means, Aubert & Duval tailors its processes to manufacture highly performing products, consistent with customers' needs.

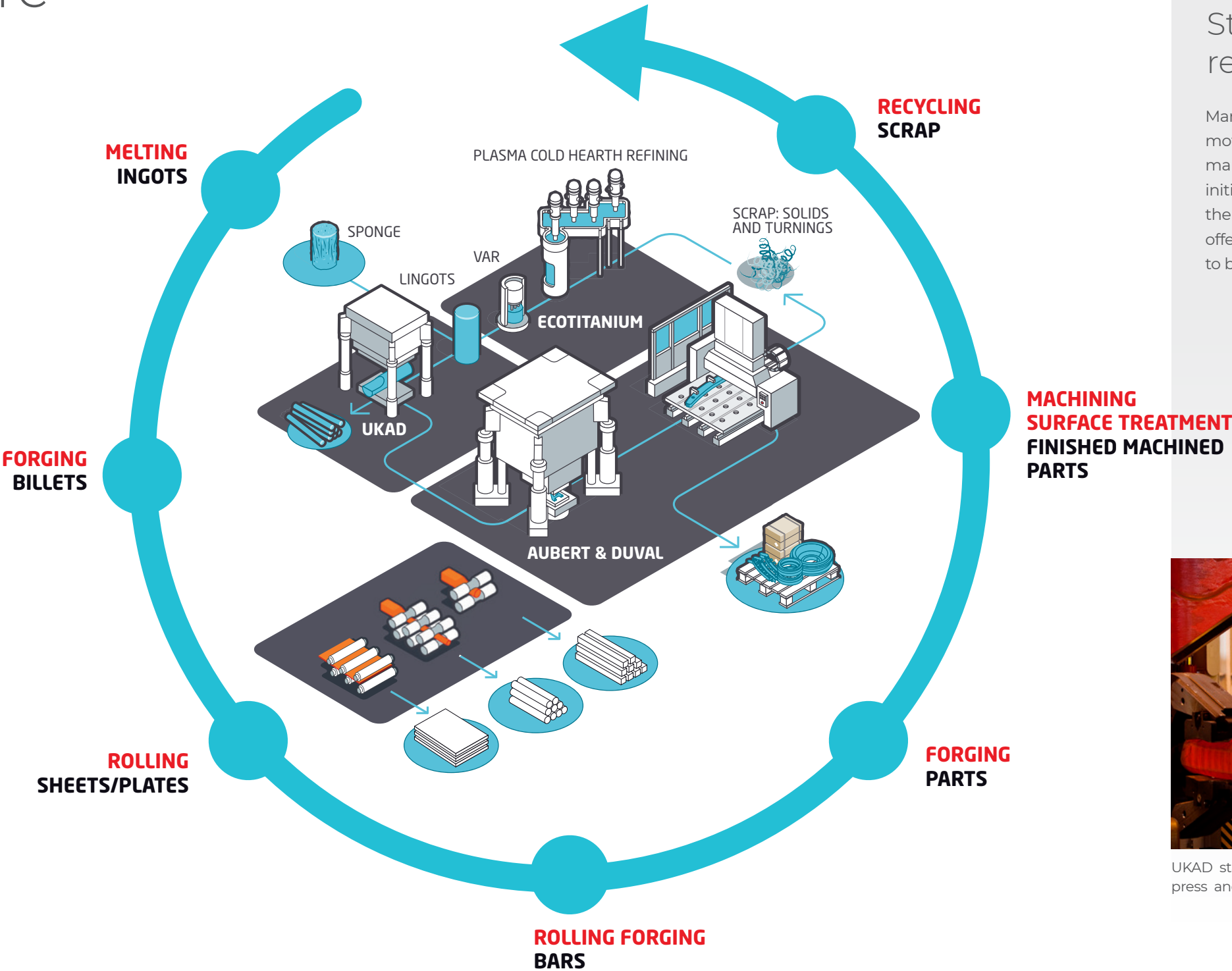


When environment, innovation and the industry of the future are summarized in one word



CO2 emissions reduced by 100,000 tons thanks to EcoTitanium's innovative process that consumes 4 times less than the primary melting route using titanium sponge.

At the forefront of technology, EcoTitanium is among the few to use Plasma Cold Hearth Refining to melt titanium ingots. This process allows the removal of a maximum amount of impurities in order to obtain premium quality ingots meeting requirements of the most critical industries such as aerospace.



Strength and reliability upstream

Many components in the aerospace, motorsport and medical industries are manufactured from titanium bars. The initial quality of material is therefore key in the final performance of the product. We offer a wide range of forged billets and bars to better fit our customers' requirements.



UKAD state-of-the-art facility with 4,500 ton forging press and lean manufacturing environment

80% recycled. This is the rate of titanium scrap used to produce EcoTitanium ingots.

A full and diverse titanium offer

From billets to forged or rolled bars and near net shape parts, we tailor our processes to satisfy your requirements. Whether it is the choice of the alloy, development of a new material, forging process design, study of grain flow or the method of non-destructive testing, our expertise covers the full scope of the alloys and their processing.

> Our titanium offer

Products	Dimensional range	Titanium grades
Ingots	Diameter 915mm (36in) Weight 7t (15400lb)	TA6V, TA6V ELI, Ti1023, Grade2, Grade4
Blooms, Slabs	Contact us	TA6V, TA6V ELI, Grade2, Grade4
Bingots & billets	Ø 110 – 800mm (4,3 – 31.5in)	Grade2, Grade4, TA6V, TA6V ELI
Rolled bars	Ø 20 – 150mm (0.78 – 5.9in)	TA6V, TA6V ELI
SHEETS & PLATES	Thk 1.50 - 100mm	TA6V, TA6V ELI
Rectangular bars & forged blocks	Contact us	Grade2, TA6V, TA6V ELI
Powders for Additive Manufacturing	Powder sizes 20-53 µm and 45-106 µm	Ti6Al4V ELI

The quality of your products at the heart of our requirements

The quality and conformity of the titanium products we supply on demanding markets (aerospace, energy, defense, medical, etc.) are at the heart of our stringency and our commitment to all of our customers. Every day, our teams work to ensure your satisfaction and support over the long term. with the most reliable and most efficient metallurgical solutions.



Spacecraft:

- | Engine parts
- | Propellant tanks
- | Helium pressurization tanks

Aerostructure:

- | Fuselage parts
- | Wing box parts
- | Engine pylon parts

Aeroengine:

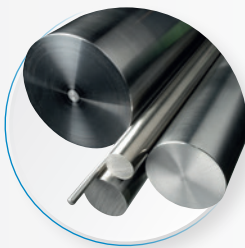
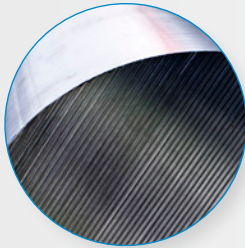
- | Fan disks
- | Boosters
- | Compressor disks
- | Impellers

Helicopter:

- | Engine parts
- | Rotor components
- | Main fittings

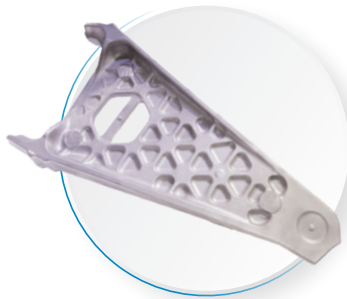
Landing gear:

- | Sliding tubes
- | Bogie beams
- | Arms
- | Torque links



Certifications:

- | EN9100, AS9100
- | ISO 9001
- | ISO 18001
- | ISO 14001
- | NADCAP US
- | Customers agreements: Airbus, Boeing, Safran, Nexter...MBDA, Dassault Aviation, Turkish Aviation, Turkish Aerospace Industries, Forecreu, ArianeGroup.





Design by  **irweego** www.irweego.com - Aubert & Duval - 04-2022

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