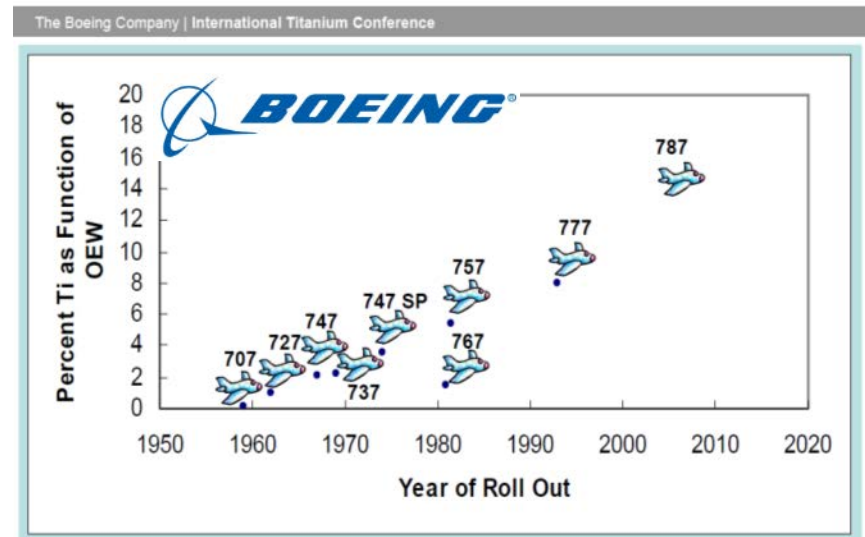
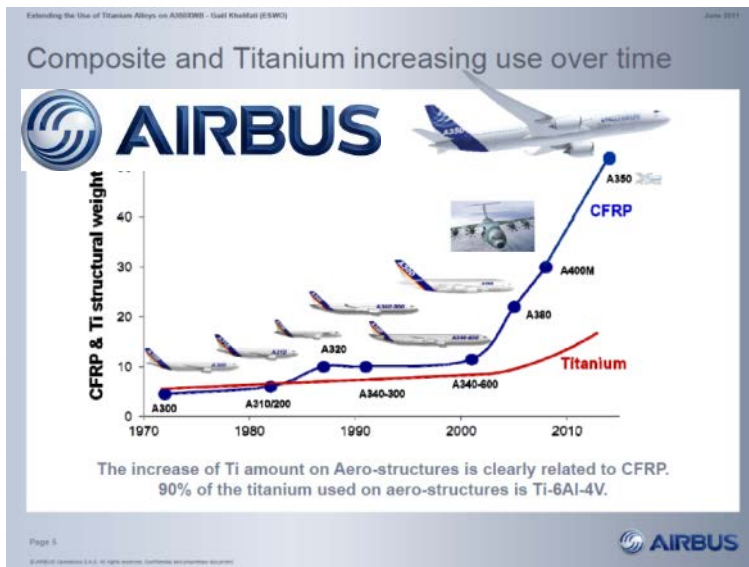




June 2016

The creation of **UKAD** was allowed by :

- the increase of Ti material in airplane structures



The creation of **UKAD** was allowed by :

- the increase of Ti material in airplane structures
- the **UKTMP** strategy with Ti downstream development
- the **Aubert et Duval** strategy with Ti upstream development
- the **Airbus** support with a 10 years sales agreement
- the french local authorities support

UKAD

UKAD

is a joint-venture which combines, in the titanium market, the forces of 2 companies :

➤ **Aubert & Duval**



➤ **UKTMP**

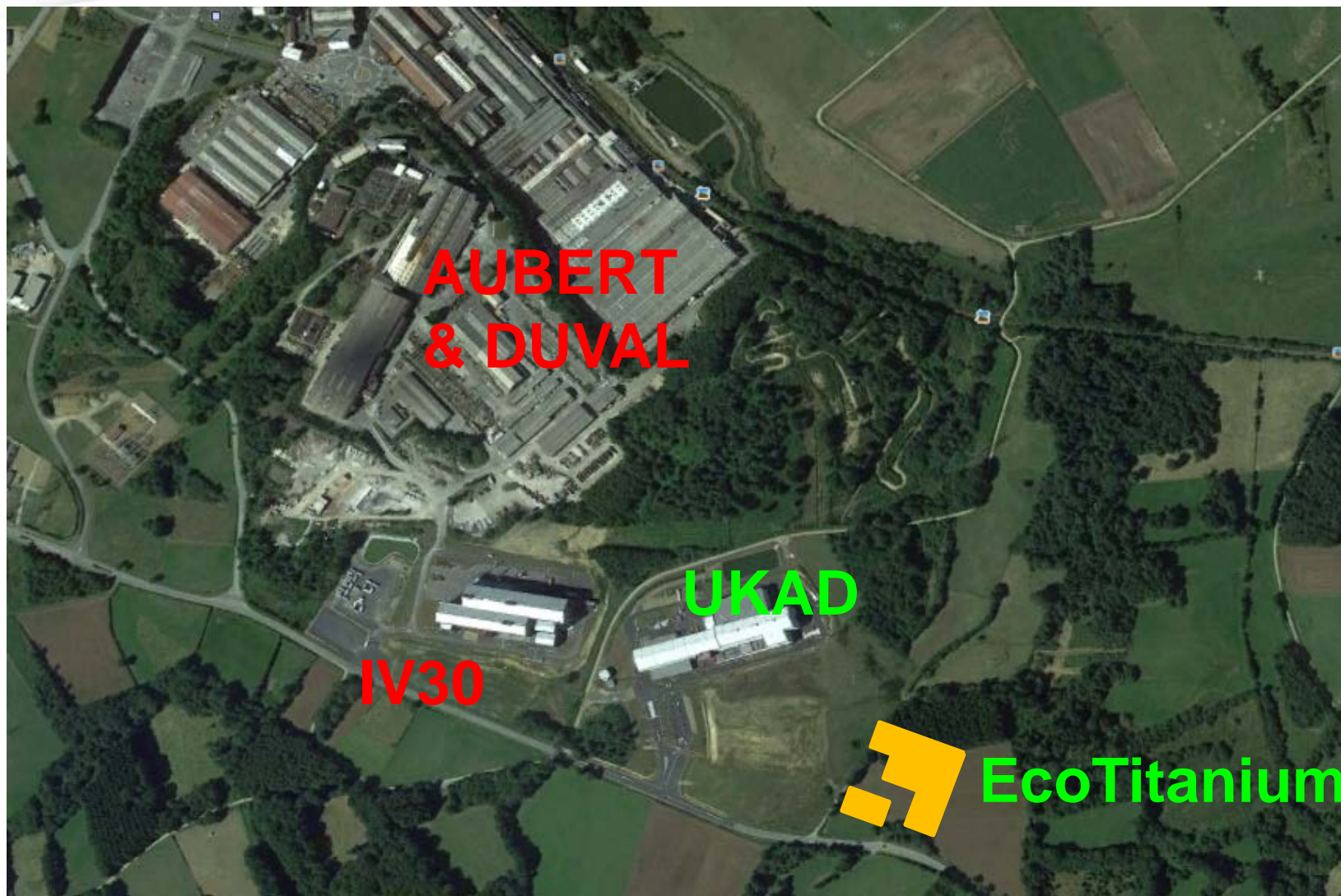


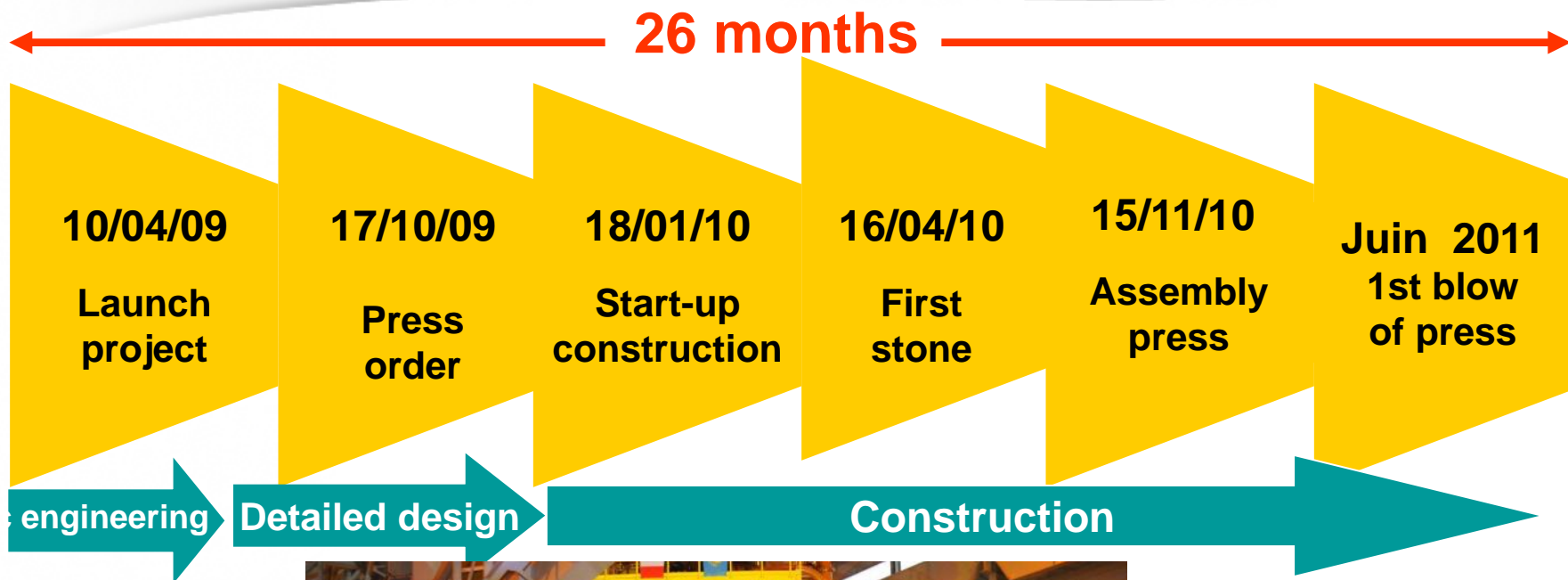
UKTMP is a Kazakh registered company. Well known for its high level of Titanium sponge quality :

1. Ilmenite mining operation
2. Titanium slag production
3. Titanium tetrachloride and magnesium production
4. Titanium sponge production
5. Titanium melting facility

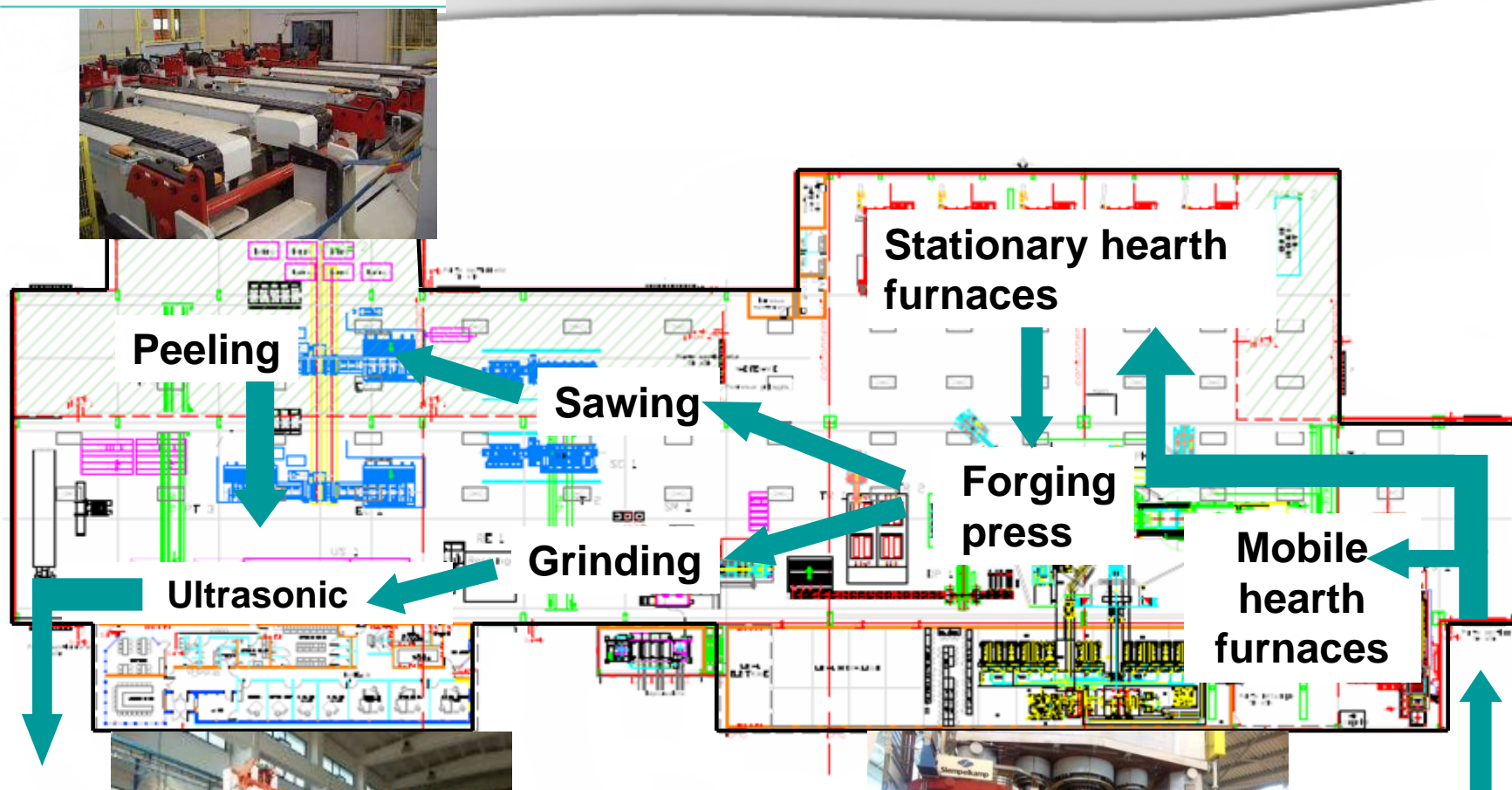


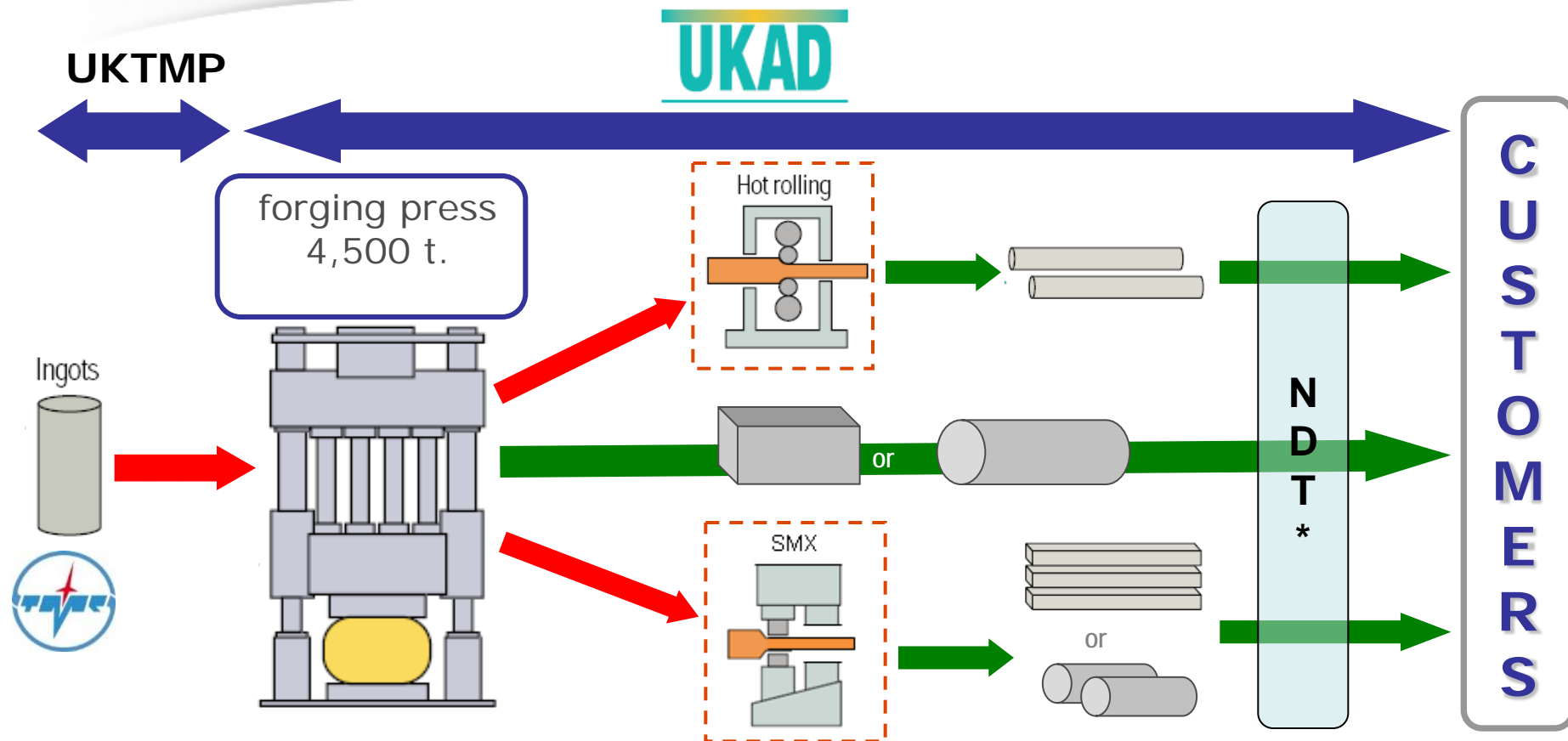






September 2011
Inauguration





→ UKAD :

- Ingots from 7 (titanium) to 18 t
- Blooms and billets from 85 to 450 mm in Ø and 4 to 6 m long
- Bars from 55 to 85 mm

*Non destructive tests (automatic multi-element ultrasonic)

Operations subcontracted to Aubert & Duval



UKTMP



Ti Alloy Ingot



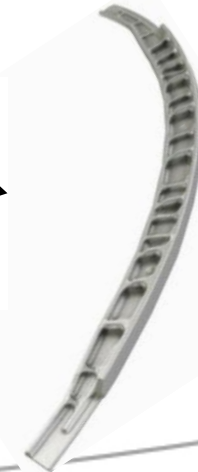
Many other forgers in Europe (3), UK (1) and USA (3).

UKAD

Billets



CUSTOMERS



UKTMP



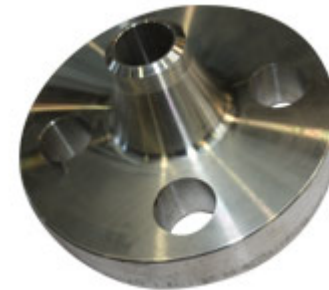
Ti CP or Ti Alloy Ingot

UKAD

Ingot → Blooms, Billettes



CUSTOMERS



Welding Neck



Covers and flanges



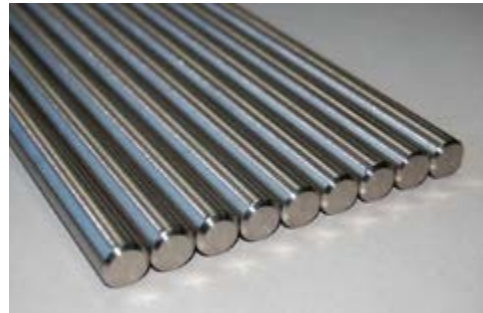
UKTMP



Ti Alloy Ingot

UKAD

Ingot → Blooms → Bars



CUSTOMERS

**Aeronautical
fastening market**



**Orthopedic
Implants**

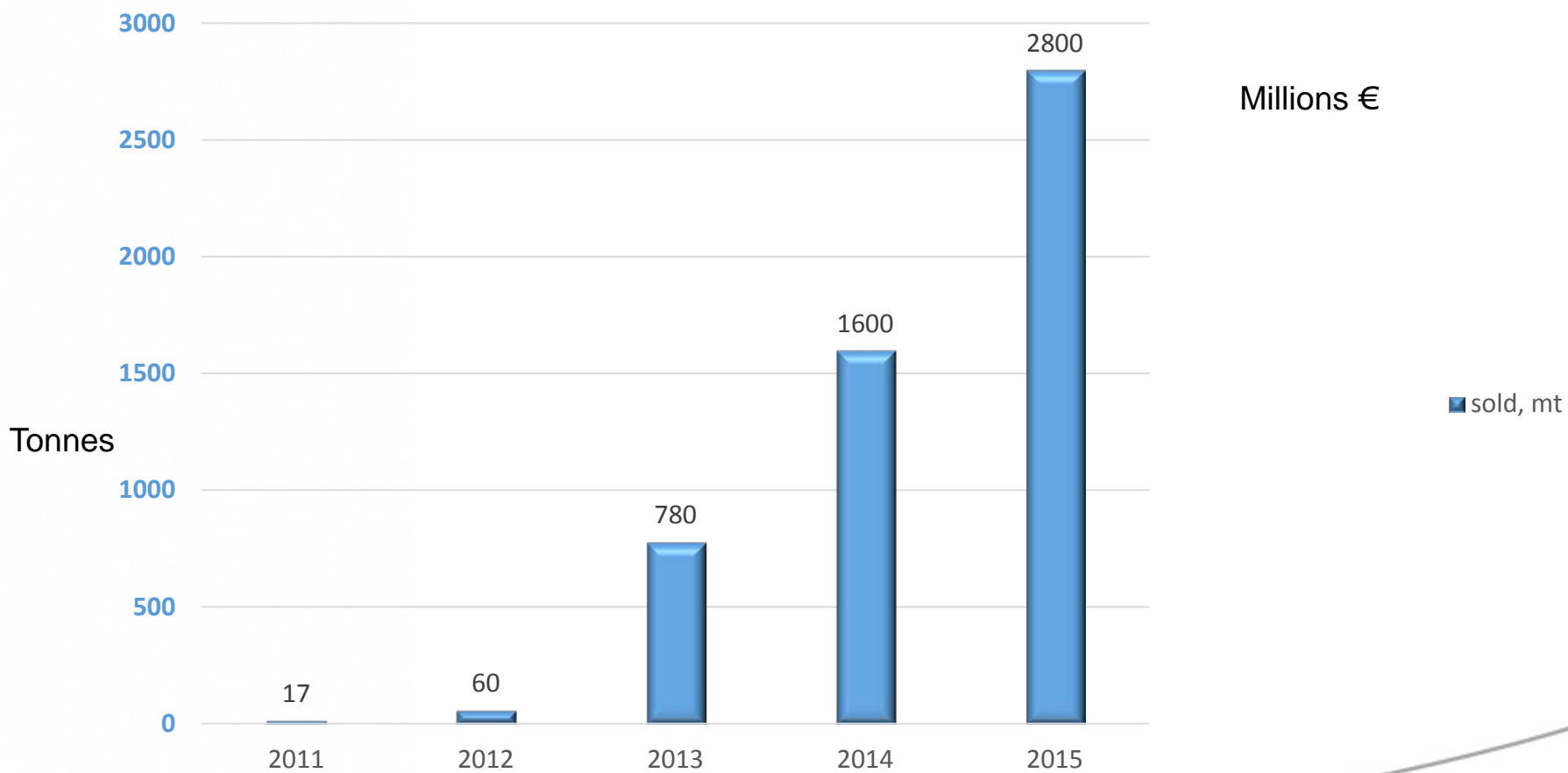


Knee



Hip

UKAD Deliveries



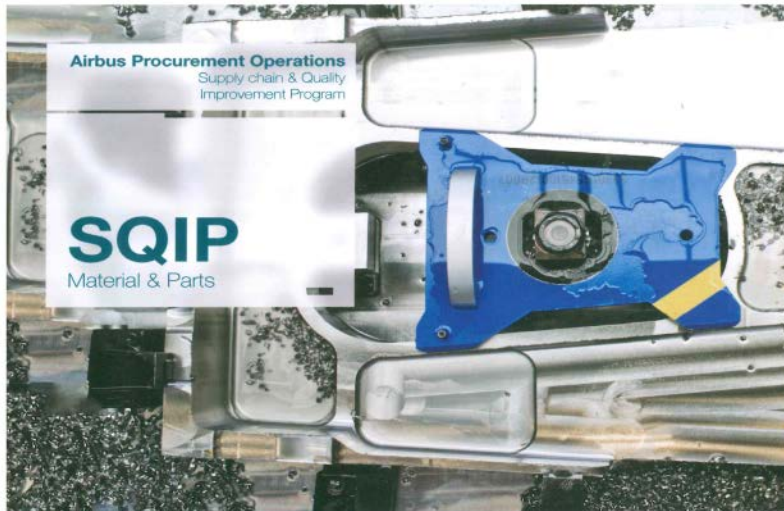
- ISO 9001 and AS 9100, last approval Dec 2015
- ISO 14 001 and OHSAS 18001, last approval Dec 2015
- Ultra Sonic Nadcap Certification in Dec 2014, confirmed in Nov 2015.
- **Airbus** :
 - IPCA Janv 2013 « C » ➔ IPCA+ 28 Janvier 2016 « B »
- **Boeing** :
 - UKTMP has been formally qualified in August 2015.
- **UKAD** delivers billets and bars in accordance with **AMS 4928** and Ultra Sonic tested in accordance with **AMS 2631**.

UKAD

UKAD :

For the second year UKAD was awarded by Airbus :

Best Improver Award 2015 .



Best Improver Award

UKAD

For demonstrated improvement of performance in 2015,
Strong continuous improvement and customer-oriented approach,
In line with Airbus targets and expectations.

Klaus RICHTER
Chief Procurement
Officer AIRBUS Group
& AIRBUS

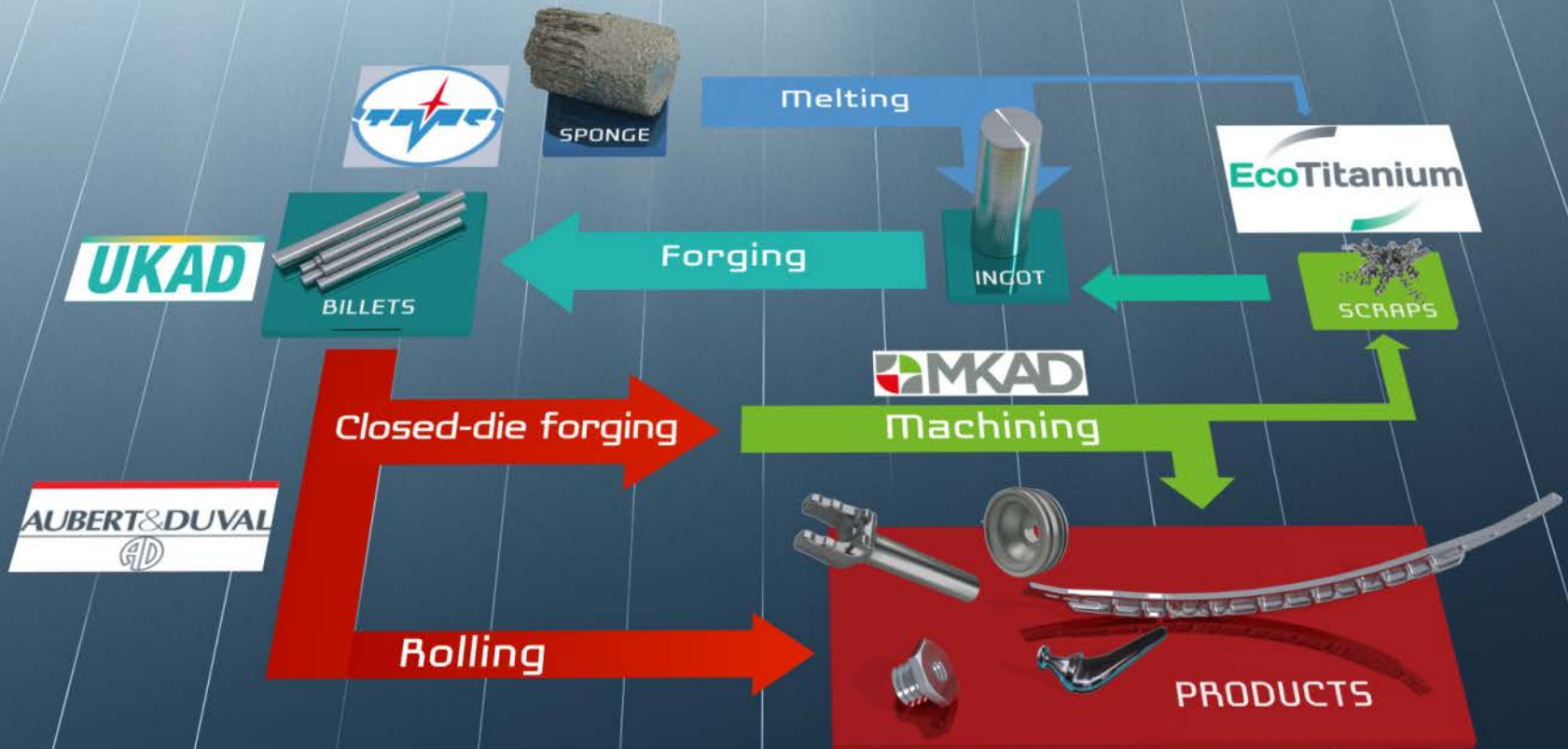
Olivier CAUQUIL
Senior VP,
Head of Material and
Parts Procurement
Chairman of the Airbus
Group Material board

Thomas MOIK
Senior VP,
Head of Procurement
Operations

Thierry VUILLEQUEZ
VP Supply
Chain & Quality
Procurement Operations
Material & Parts



Partnerships form an integrated Titanium Solution

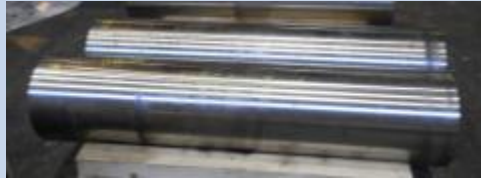


A FULLY INTEGRATED SOLUTION FOR TITANIUM

Production generates significant volume of scrap

Titanium closed die parts generate huge volume of scrap

Billet 200kg



Closed Die Part 150kg



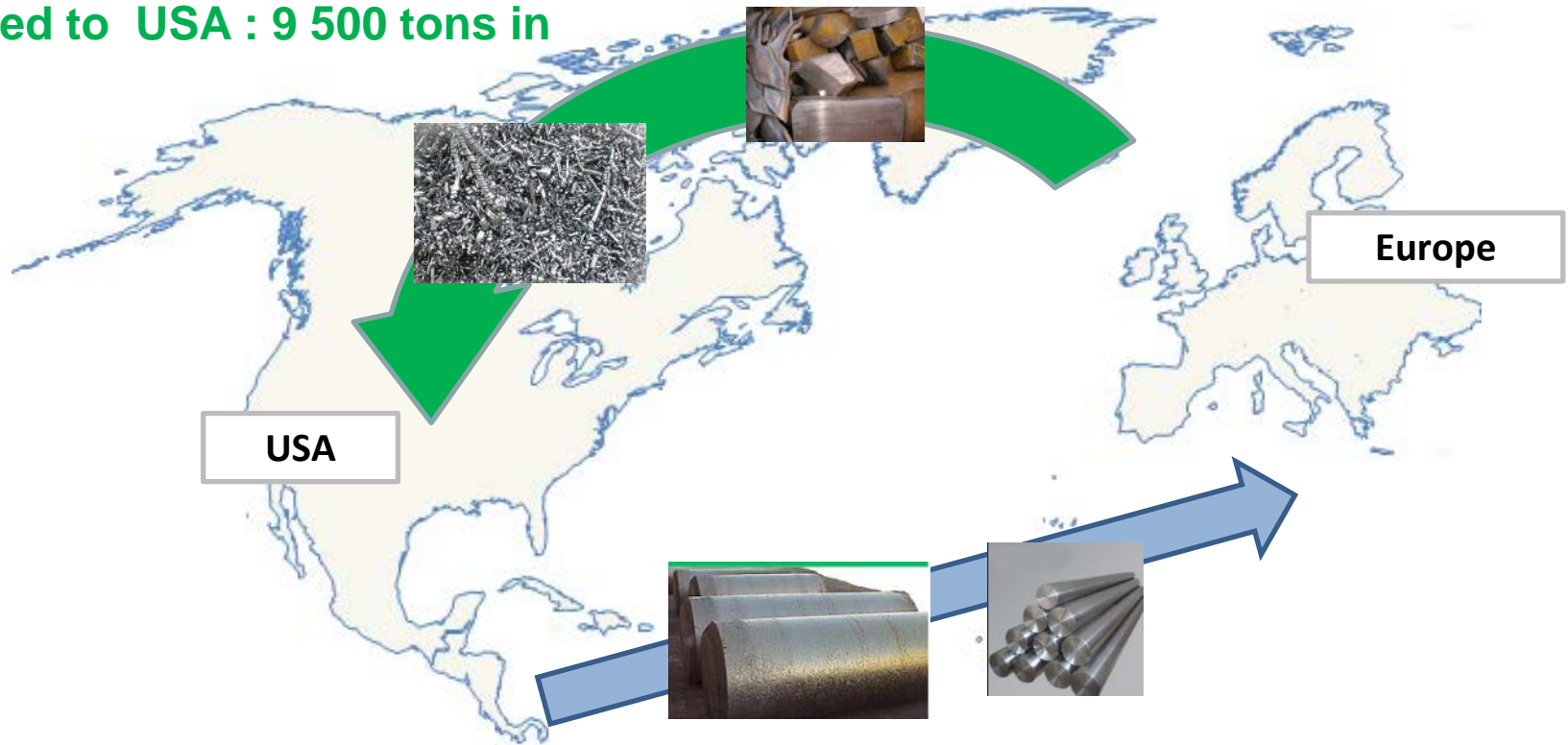
Finished Part 20kg



Ratio Buy to Fly : 10

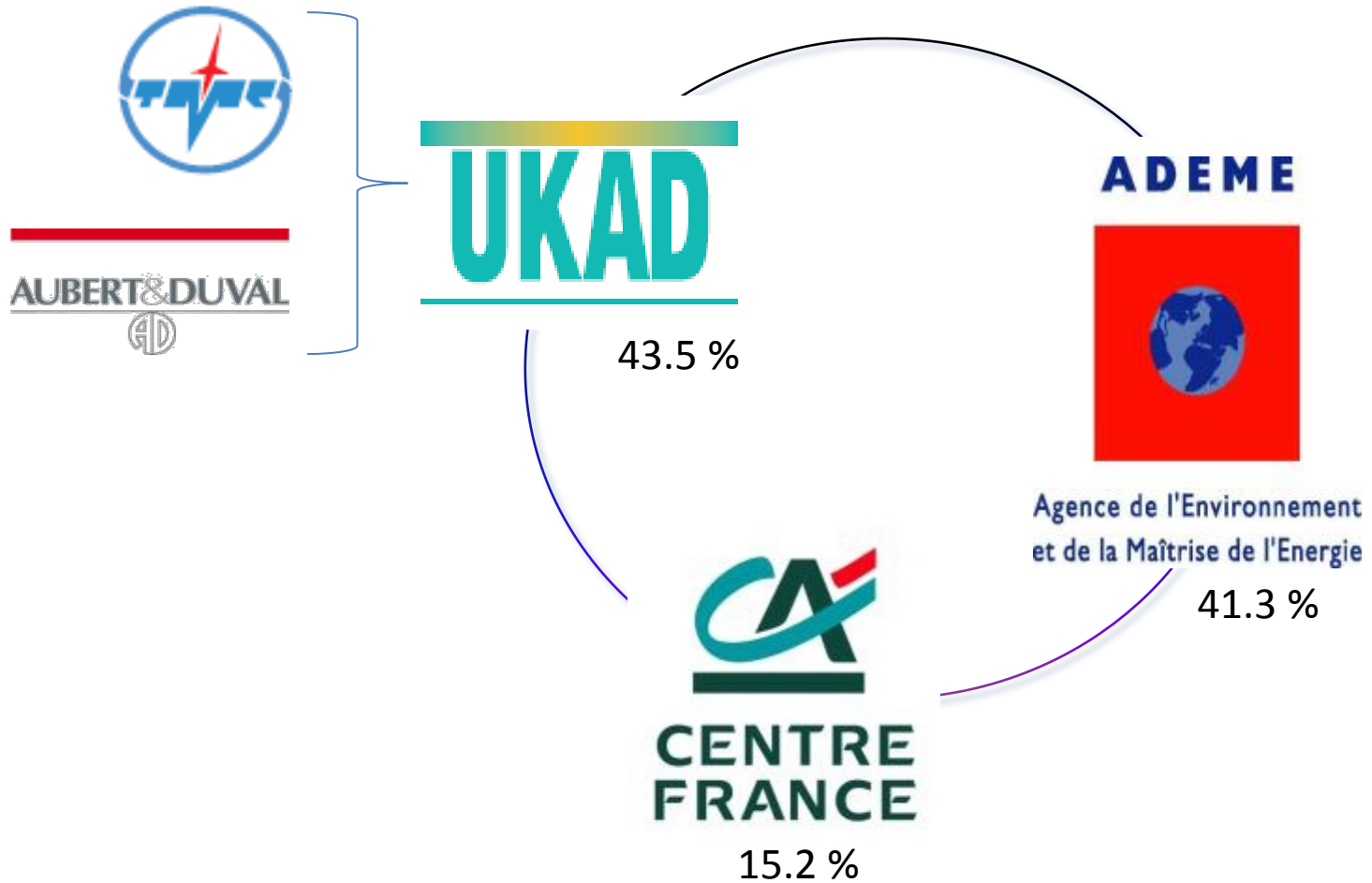
Scrap generated in Europe is a key for competitiveness of US titanium melters

European titanium scrap is mainly exported to USA : 9 500 tons in 2014



US ingots were mainly produced from titanium scrap in 2014, 63 % of the total consumption Scrap + Sponge.

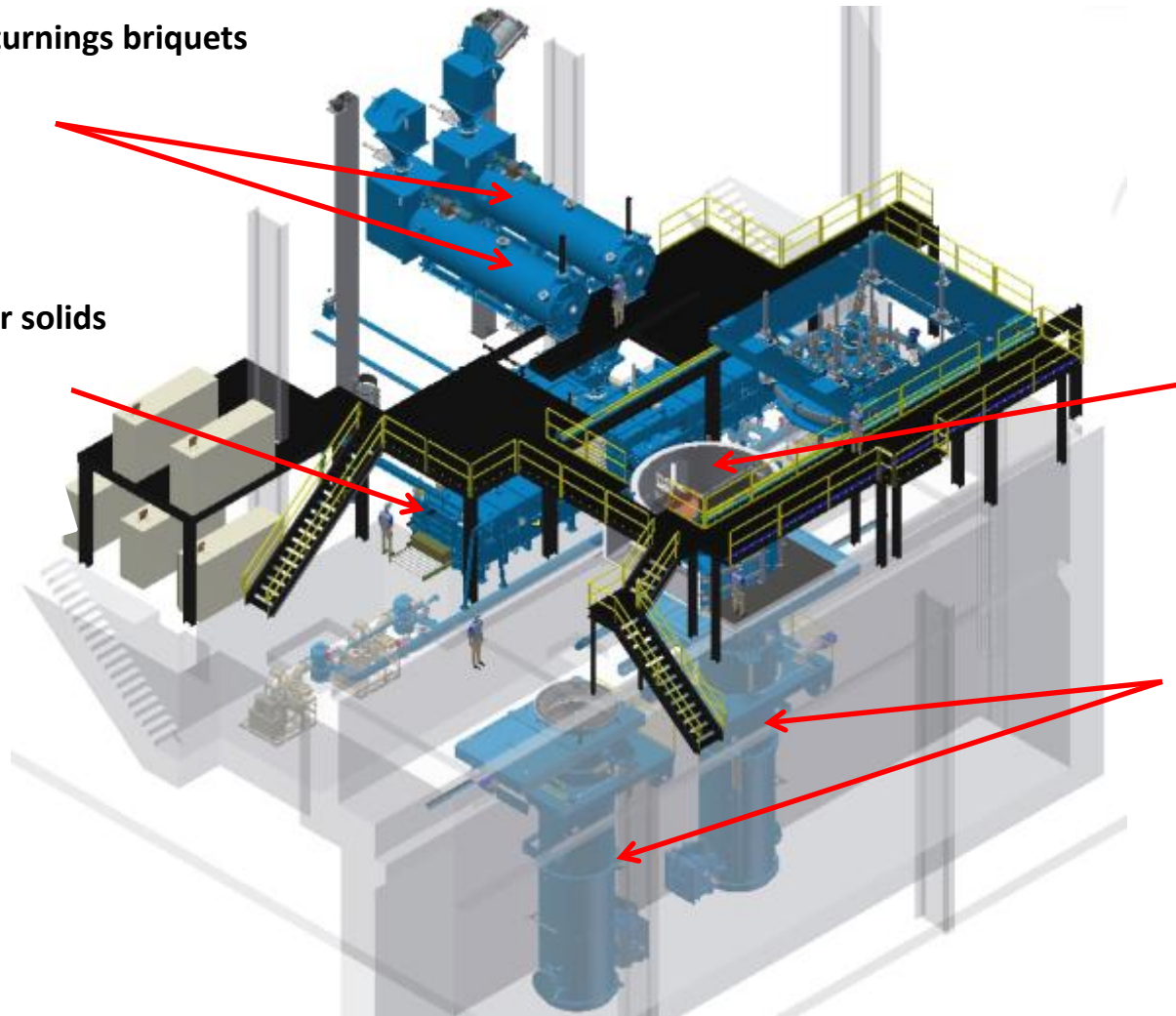
Committed shareholders



Main Equipment : A Plasma Furnace Cold Hearth Refining

Loading system for turnings briquets

Loadind system for solids

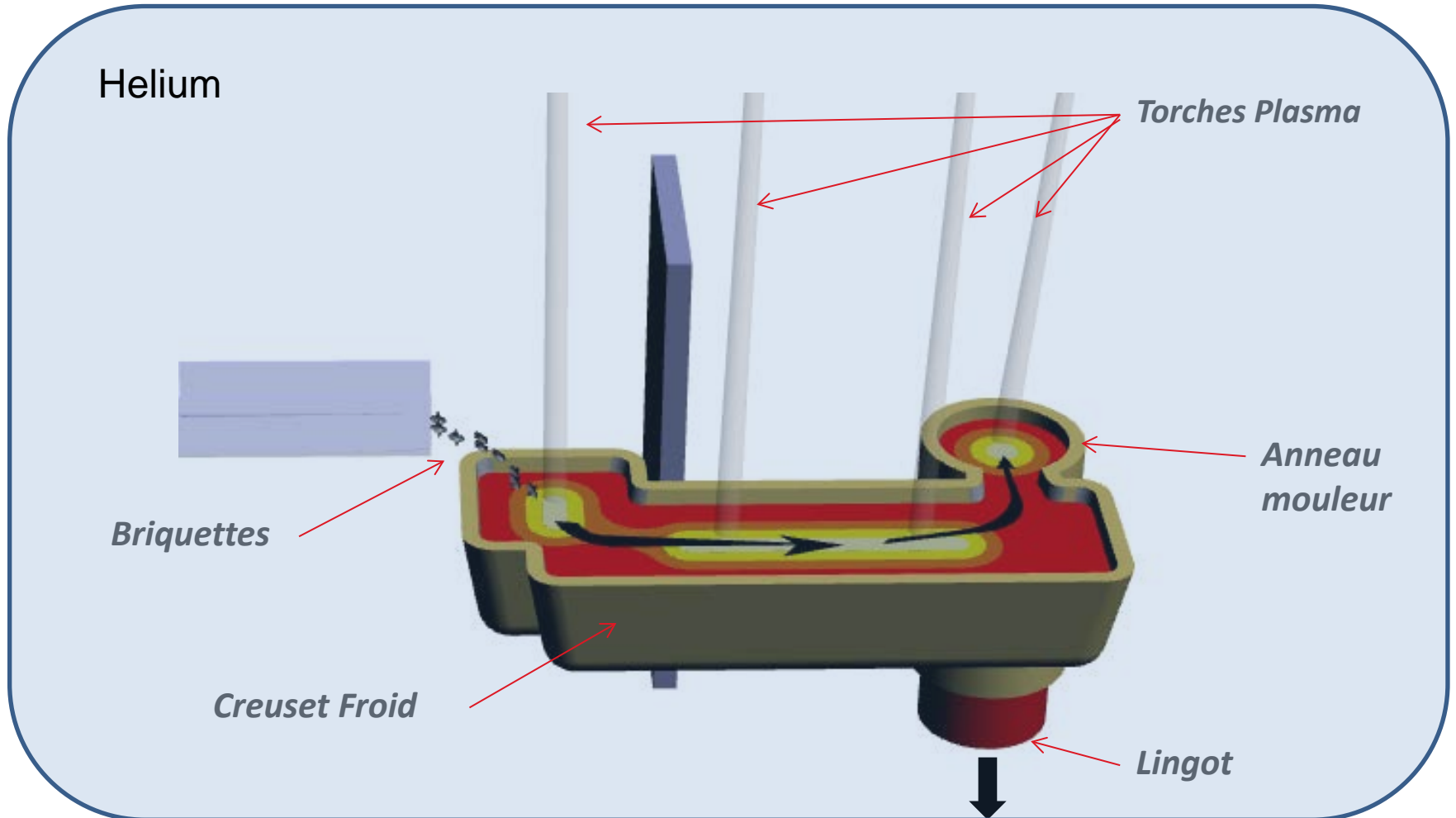


Melting Chamber

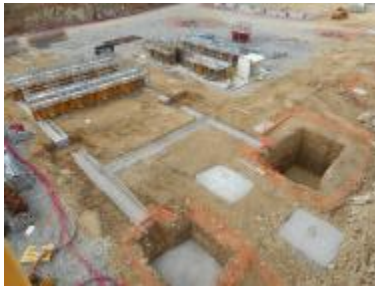
Electrods erection chamber

Principle

Principle of a PAMCHR furnace.



Melting 1700 °C



2010
Reflection and
project structuring

2015
Erection of the new
plant next to UKAD

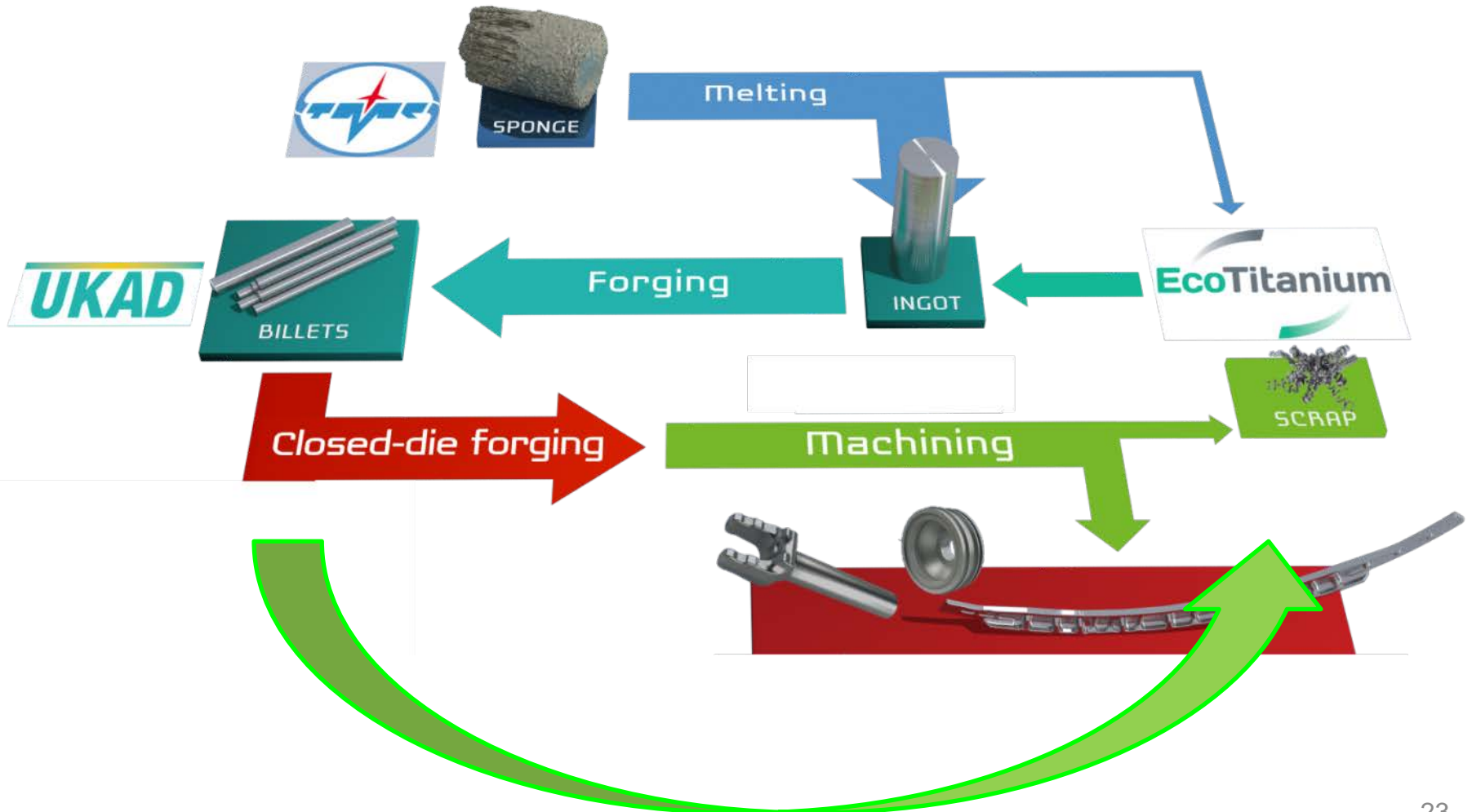
2017
Production startup

2022
Full maturity

EcoTitanium planning

An open Solution for all UKAD customers

The revert loop will be available for all UKAD's customers, based on circular Economy.





Thank you for your attention

