



INALUM BOOST ENERGY PROJECT



CASE STUDY | INALUM BOOST

Project Data

Cargo Volume: 23 pieces/95,525 kg
Freight Highlights: 2 transformer units, 36 tons each
Origins: Finland/Switzerland
Project Location: Medan, Indonesia

Project Background

PT Indonesia Asahan Aluminium (Inalum), is a state-owned enterprise. The company is planning to gradually increase aluminum production from 260,000 to 650,000 tons per year by developing new stoves, power plants, and other supporting facilities.

Domestic demand for aluminum ingots in Indonesia is estimated to be as high as 600,000 tons annually, but the sole aluminum smelter in the country—Inalum—is only able, at the moment, to supply less than half of this amount, forcing the country to import major quantities of

aluminum from abroad.

The core of Inalum’s operations is the slated refinery, which produces smelter-grade alumina. The refinery will secure the raw material for aluminum ingot production, which is set to double after the capacity increase.

In order to reach this target, new equipment was required. deugro was chosen to provide freight forwarding services for the transformers, rectifiers, conservators, coolers, pipes, and other accessories.

Project Location

Kuala Tanjung, where Inalum is located, will be turned into an industrial cluster for aluminum-based products. A shift in Inalum’s output allocation means that many more ingots will become locally available, which will help the planned cluster idea come to fruition.

West Kalimantan, with an annual capacity of two million tons, will eventually allow the firm to buy the raw material from a local source in the future.

“deugro planned and performed several road improvement works.”

Despite Indonesia’s abundant bauxite output, in the past, Inalum has needed to source alumina totaling roughly 500,000 tons per year from Australia to support its operations, as there is no refinery to process the ore locally. The ongoing construction of an alumina refinery in Ketapang,



Positioning the transformer on the loading ramp in Helsinki



PROJECT EXECUTION

Challenges

- Ground-leveling works at the airport in Kuala Namu in order to receive the heavy cargo
- Tight time schedule during the holiday season
- Loading in heavy weather conditions

A major customer in Indonesia awarded deugro (Singapore) Pte Ltd an air freight charter from Europe to Indonesia. However, this air freight charter, which at first glance seemed like another daily operation for deugro, actually involved a series of challenges and special transport pre-arrangements. The client made clear from the very beginning that the over 95 tons of cargo had to arrive at the construction site in northern Sumatra, Indonesia in early January, just days after the transformers were expected to be

released from the factory in Finland. The shipment consisted of two transformers, weighing 36 tons each, plus accessories out of Vaasa, Finland and two five-ton rectifiers coming out of Baden, Switzerland.

deugro was only able to secure the shipment by working as a team with our air freight office in Singapore and our colleagues in Finland, who worked on the overland freight. After evaluating various options, we proposed to the client that we would consolidate both shipments in Helsinki and arrange for a combined air charter to Kuala Namu, Indonesia. Because of the transformer's dimensions (4.9m x 2.5m x 3.3 meters each), we needed to use an Antonov AN-124-100 aircraft. The remaining capacity of this open-plan aircraft would fit the five-ton rectifiers from Switzerland perfectly. During planning and execution, this solution proved to be the most cost-effective for our client.



Loading two transformer units in a snow storm in Finland

This was the first time the airport in Medan had received such a large aircraft, so deugro had to make sure that certain preparations were done in advance. deugro project team representatives arrived at the Medan Airport four days early to meet with local airport authorities, ground handling agents, and deugro's agent.

The airport authorities asked for some touch-ups on the road leading out of the airport, as it was not strong enough to handle the massive cargo load.



Discharge operation inside of an Antonov AN-124-100 aircraft

A tight time schedule

Date	Description of Transport Leg
Dec. 20, 2016	Collect cargo (rectifiers) from Switzerland (to Finland by road)
Jan. 2, 2017	Collect transformers from factory in Finland
Jan. 3, 2017	Transport both rectifiers and transformers to the airport in Finland
Jan. 3, 2017	Load on flight
Jan. 6, 2017	Arrival in Medan, Indonesia
Jan. 7, 2017	Delivery to site

In the end, deugro planned and performed several road improvement works and the airport issued the landing permit.

The timeline was challenging. The transformers were not scheduled to be ready until December 28, 2016. The cargo from Switzerland had to be forwarded during the holiday season. In addition, ground handling agents at both the origin and destination airports were unable to accept charter planes on New Year's Eve. It was only thanks to the full commitment of all of our team members to follow up on the transport even during the holidays that it was possible to complete every step of the project on time. deugro's in-house Transport Engineering Division provided a method statement, including details like drawings of the stowage plan, and the lifting, lashing, securing, and trucking configuration, over the weekend in order to figure out the best possible transportation solution. The client's insurance company approved the method statement.

We scheduled loading at the Helsinki airport for the night of January 3, 2017. Due to heavy weather conditions, loading the cargo from the trailer onto the AN-124-100 aircraft's roller system took almost ten hours. In the meantime, our staff on the ground in Sumatra arranged for ground leveling works at the airport in Kuala Namu, which had never before handled cargo of this magnitude.

The aircraft took off from Finland and headed to Indonesia the next morning, where our team was already waiting to supervise the discharging operation under a blazing sun at temperatures of over 40 degrees Celsius. With the help of purpose-built ramps and overhead cranes on board the AN-124, we were able to load and discharge via the front and rear doors simultaneously. Finally, the cargo was moved out of the cargo hold and onto a ramp via a trolley system, from where a mobile crane lifted the cargo to transfer it. The truck on the ground at the airport was ready to deliver the cargo to the construction site in Medan, Indonesia on time and to the full satisfaction of our client.



Discharge with the help of overhead cranes



View of a transformer stowed inside the aircraft



Front view of an Antonov AN-124-100 with the nose door open

ANTONOV AN-124-100

Technical Specifications

Length: 69 m

Range: 73 m

Engine type: Turbofan

Type: Transport aircraft

The AN-124-100 is part of the biggest series of heavy lifters in the world. It is designed to transport heavy and oversized cargo and various special-purpose vehicles. The AN-124-100 has a double-deck fuselage layout. On the upper deck, there is a cockpit, relief crew compartment and the cargo attendants' cabin. The lower deck is a pressurized cargo compartment. The construction and dimensions of the forward and rear cargo doors, closed with ramps, ensure quick and easy loading/unloading operations. The on-board ceiling-mounted cranes allow for loading/unloading without ground equipment. The multi-wheel landing gear with rough-field capability, two APUs, and mechanized loading enable independent operation of the aircraft from poorly equipped airfields. Simplicity, reliability, and safety of the aircraft operation are ensured by the redundancy and computerization of its systems. Source: antonov.com



Both transformers on the ramp, ready for offloading



Lifting a transformer



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