



## Case Study:

# TRIPLE-BOOM WITH BUCKET FOR ALUMINIUM SMELTER

SAUDI ARABIA

**Location:**  
Dubai, Saudi Arabia

**Operation Type:**  
Aluminium Smelter

**Equipment Solution:**  
Hydraulic Boom System  
Transmin Boomer-HD

### Issues on Site/Project Scope:

Transmin's extensive experience in heavy-duty rockbreaker booms for the global mining industry, led to a unique project to engineer and manufacture a boom system for an overseas aluminium smelter.

The client required a highly versatile hydraulic boom system for cleaning and emptying pot shells used in its aluminium smelter. The slag residue once removed, would need to be deposited onto a 'grizzly' grid for further downstream processing.

The brief therefore, was for an extra heavy-duty hydraulic boom fitted with a customised bucket-excavator

attachment. The horizontal reach required was 13.6m, with a vertical depth of 7.3m. Given the twin tasks required of emptying and then depositing from the pot shells, the boom required a full 360° range of rotation. To conclude the brief, the boom would need to be powered via an independent 90kW hydraulic power pack.

Safety was an important additional concern, given the potentially hazardous operating environment. Therefore, any additional features that could mitigate risk to both personnel and plant infrastructure, would be highly regarded.

## Solution:

The completed boom system was designed with the upper swivel mounted on an excavator style slew ring bearing to provide the 360° of rotation. The drive of the slew mechanism was via a hydraulic motor with a customised heavy duty planetary gearbox and pinion.

Having external gear teeth on the bearing and fully adjustable slew drive, accommodates for wear and also ensures correct tooth engagement at all times - ensuring the client experiences less downtime.

Another major design feature was having the 8" and 9" diameter hydraulic cylinders specifically designed to enable over-centre valves that bolted directly on to the cylinder ports, thus providing additional safety.

The boom system also incorporates Transmin's proven "Taper Lock" style pin and bush locking system. The system was designed to enable the tapered caps at each end of the pin to provide rigid support, even though the pins may become worn.

To date the bucket boom system is working better than expected - aiding plant productivity and reducing downtime. Recently, the same client has contacted Transmin about extending the reach on the boom system. We look forward to working with them on this next stage.

## Key Features:

### ► Heavy Duty Design

Decades of testing and analysis has allowed Transmin to compare calculated loads with actual readings; continuously refining our internal design programs to deliver the most reliable boom systems on the market.

### ► Boom & Jib Locking Kit

These ensure that the pins remain correctly aligned and prevent any suffering from unforeseen bending loads by gripping radially and axially.

### ► Heavy Duty Slew

The unique slew motion control valve brings the rock breaker to a controlled stop when the slew control is released and delivers optimum torque through the drive train, improving wear rates and reliability.

### ► Radio Remote Control

Allows precise movements whilst remote operating maximises user visibility and personal safety.

### ► Taper Lock Bush Assembly

Ensures that the pins remain correctly aligned, whilst preventing any suffering from unforeseen bending loads.

### ► Custom Boom Design

Transmin has the engineering capability to custom design booms to any requirements.

### ► Custom Cylinder Design

Transmin cylinders are specifically designed and built using special rod coatings and full strength rod end attachments to provide superior strength and extended life under arduous conditions.



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