

## ABSTRACT for IMARC 2018

### **“eDumper” - The newly developed 111-tonne haul truck produces no CO2 and consumes almost no primary energy.**

Using novel new technology, a fully laden Komatsu eDumper HD605-7 haul truck can transport 65 tonnes of limestone from a high-elevation extraction area, down to a permanent crusher and transport system below. Each downhill journey generates 40kWhr to be stored in large 700kWh lithium batteries to be used for the unladen journey back uphill. The vehicle becomes a net electricity exporter, with approximately 200kWh available to send to the grid after a 10-hour shift.

The key factor is the choice of a suitable type of storage and the assembly of the cells into one or generally multiple reliable batteries as well as the evaluation (or design) of optimal drive systems which can provide the expected haulage performance (speed, loading capacity) considering the characteristics of the terrain (steep gradients, freezing climate).

The components needed for this (motors, transmissions, brakes, batteries, inverters, overall controls, etc.) are state-of-the-art industrial products or innovations based on scientific research (laboratory simulations, computer models, series of measurements) by local universities and technical institutes. The eDumper is fitted with a *Duratray* suspended dump body, because the electrified drive system cannot use traditional engine exhaust systems to heat the body to prevent carryback in frozen conditions during the winter.

Based on this initial 65-tonne payload machine, plans are underway to expand the eDumper concept to design of 100 - 200 tonne electrified construction & mining machines.

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[www.emining.ch](http://www.emining.ch)

[www.edumper.eu](http://www.edumper.eu)

