

Session 5

The Regenerative power of lifts

Presentation 53:
Optimization of the Machine Power

Mr. Abdo Achkar - Mitsulift

❖ $P_{\text{mech}} = \text{Force} \times \text{Speed}$

So, we can have a
Variable Speed Elevator
from Mitsubishi

Presentation 53: Variable Speed Elevator from Mitsubishi

Mr. Abdo Achkar – Mitsulift



Energy-Saving Elevator Technology

Variable Traveling Speed System



Symposium Fisuel – Liban – 30 Avril & 2 MAI 2019
Fisuel Symposium – Lebanon – 30th of April & 2nd of MAY 2019



VSE – Why???

Can we reduce the average waiting time and shorten the travelling distance time without adding any units?

A way to do it is getting faster elevators.
Why not faster than their rated speed!

By benefiting from unused energy, where possible, to make the elevators travel faster than their rated speed

VSE
Variable Speed Elevator Technology based on the balance ratio of Car/ CW

VSE – How???

Depending on the number of passengers in the car

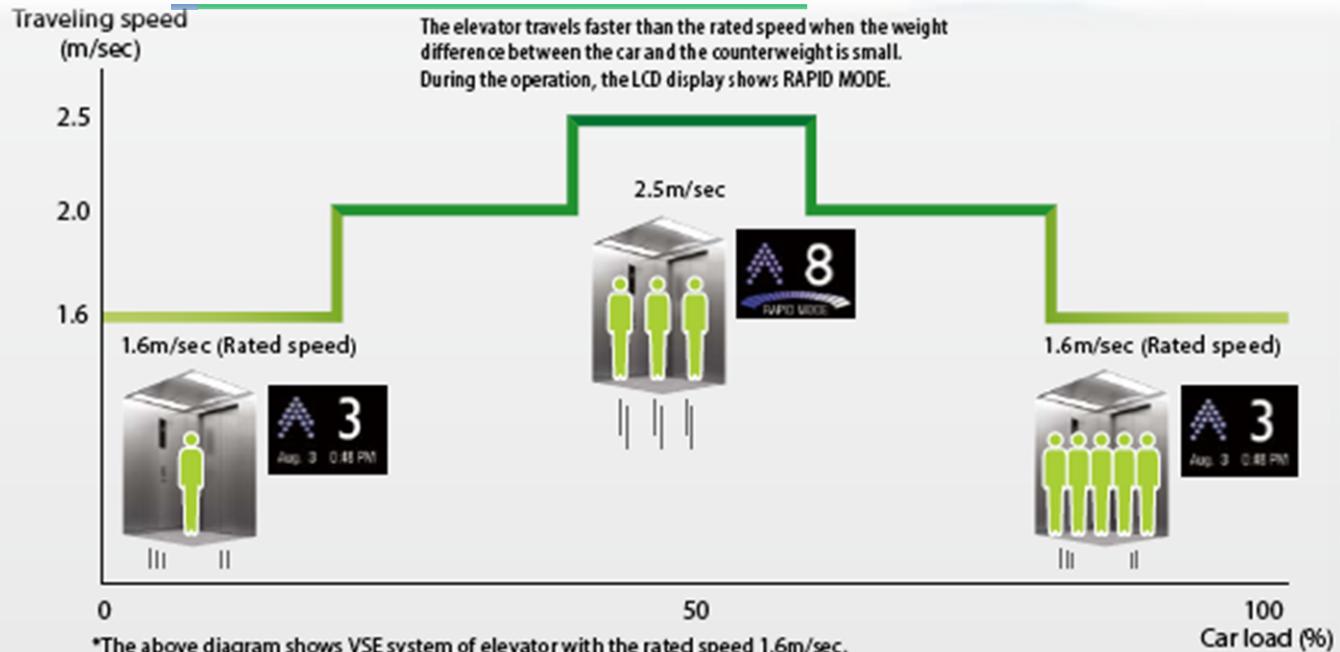
Determine the percentage of balance between the car and the counterweight

In a well - balanced car, we benefit in an optimal manner from the unused power

Injection of unused power will make motor turn faster and car travel quicker

Reducing average waiting time and travel time

VSE – HOW?



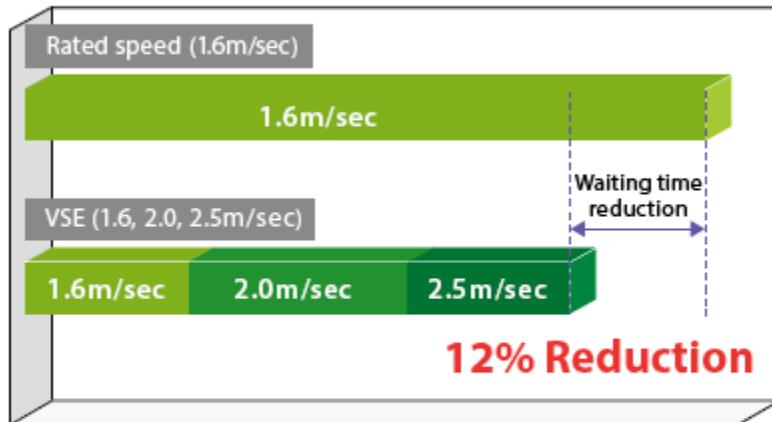
Maximum Speed and Car Load

Rated speed	Car load					
	0%		50%		100%	
	1.6m/sec	1.6m/sec [1 person]	2.0m/sec [2-4 persons]	2.5m/sec [5-9 persons]	2.0m/sec [10-11 persons]	1.6m/sec [12-14 persons]
1.6m/sec	1.75m/sec	1.75m/sec [1 person]				1.75m/sec [12-14 persons]
1.75m/sec	2.0m/sec	2.0m/sec [1-2 persons]		2.5m/sec [3-10 persons]	2.0m/sec [11-14 persons]	
2.0m/sec						

[Number of passengers in the car when the maximum number of passengers is 14.]

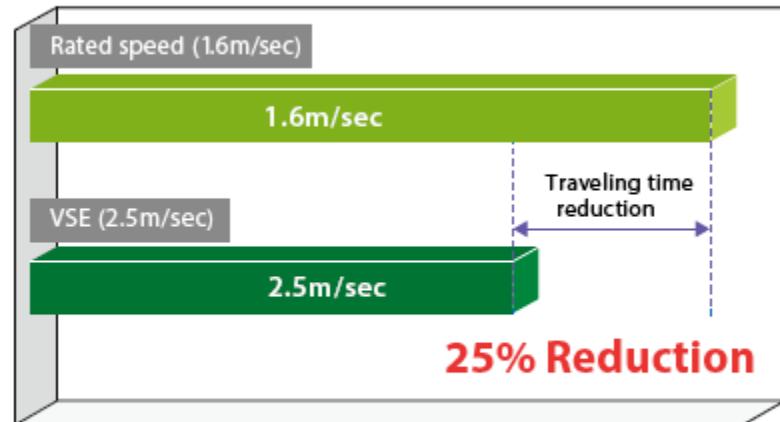
VSE – RESULTS

Waiting Time Reduction



According to Mitsubishi Electric's simulation, waiting time can be reduced up to approximately 12% when VSE is applied.

Traveling Time Reduction



Traveling time can be reduced by approximately 25% when the elevator travels from the bottom to the top floor directly under rapid mode in VSE.

(Conditions)
Travel: 36m, Floor height: 4.0m, 10 floors, Car load: 50%



VSE - Video

THANK YOU

MERCI



fisuel