

$$R_{HSST} = 22.8 + 0.0225v + 0.0119v^2 \quad (4)$$

$$R_{LIMG} = 19.3 + 0.0164v + 0.0216v^2 \quad (5)$$

$$R_{AGT} = 67.0 + 0.22v + 0.00759v^2 \quad (6)$$

R:Running resistance (N/t).v:Speed(km/h)

As AGT is driven by rubber tires, running resistance is larger than other linear motor drive systems.

The limit speed at curve radius on each system is decided by practical data(AGT) and experimental data(HSST and LIM on G). As the reference, the relation of curve radius and speed on HSST is decided to satisfy equation (7).

$$v < 5.5 \sqrt{R} \quad (7)$$

v:Speed(km/h).R:Curve radius(m)

2.2 Simulation results

Above mentioned method, simulation is carried out based on route data and transportation data.

Photo 1 shows the example of output results.

Each transportation system runs on the estimated route and we can see the real speed of train and energy consumption at this time simultaneously on the right side of the computer screen.

Besides, the example of simulation result output after running on the map is shown figure 4.



Photo 1 Example of output screen on computer



Fig.5 Example of output results

In this example, urban Maglev system of HSST reduces running time for 17% in comparison with AGT because of high speed and low running resistance. However, energy consumption is a little larger than AGT for 6% nevertheless high regenerative power. This depends on the high performance of HSST for high speed and thrust.

3. Conclusion

The above mentioned, through proposed simulation, we can evaluate several items for examples, running time and energy consumption, quantitatively on the supposed route. By this, we can find and prove the merits quantitatively for introducing urban Maglev in Japan. Especially, we need the clear reasons for choosing new transportation systems in Japan because there are several transportation systems in several areas. Therefore, these quantitative evaluation data can make good help to realize urban Maglev system. In fact, HSST will start revenue service at the north-east side of Nagoya in 2005. This result shows the usefulness of this simulation.