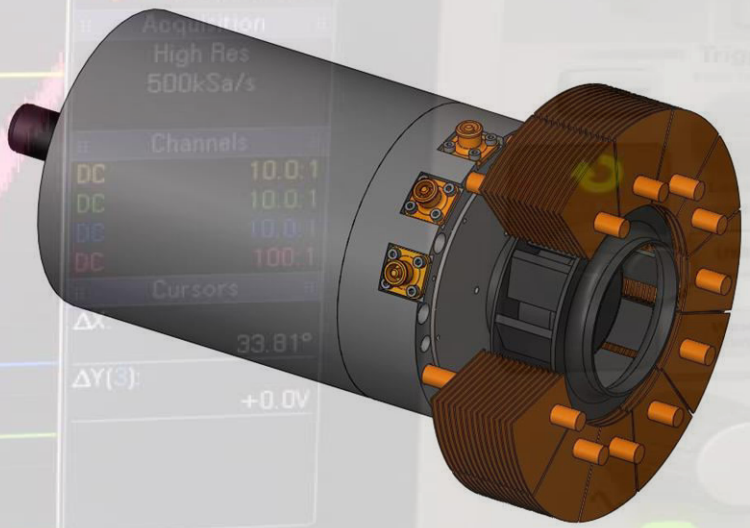
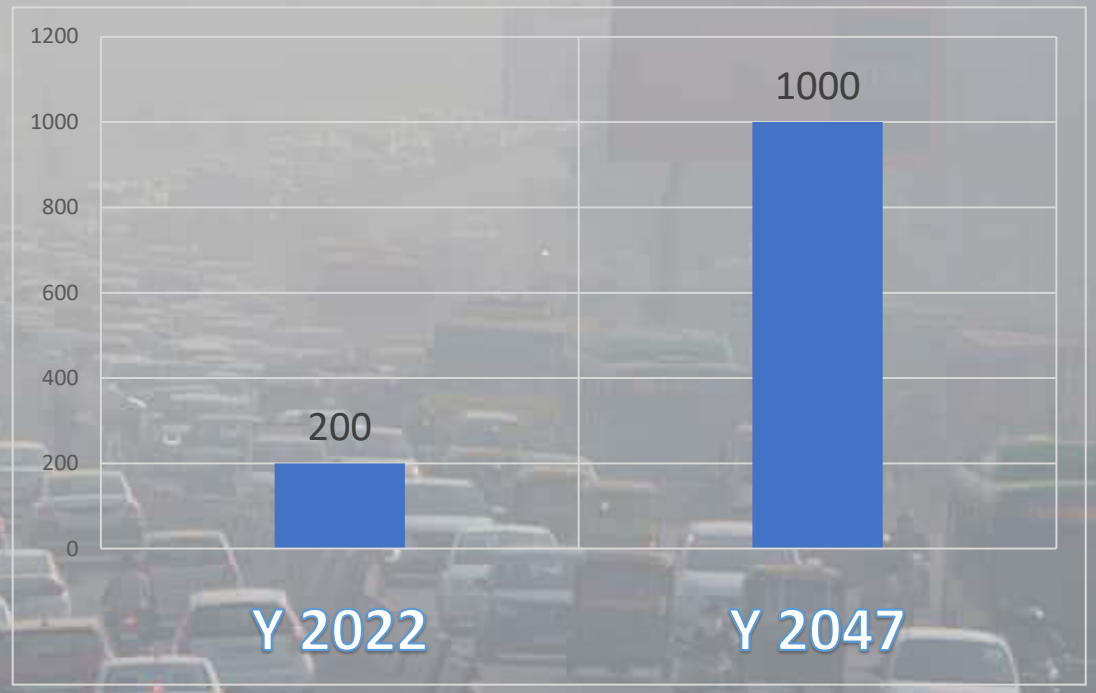
The Electric Future of Mobility



L. KANNAN

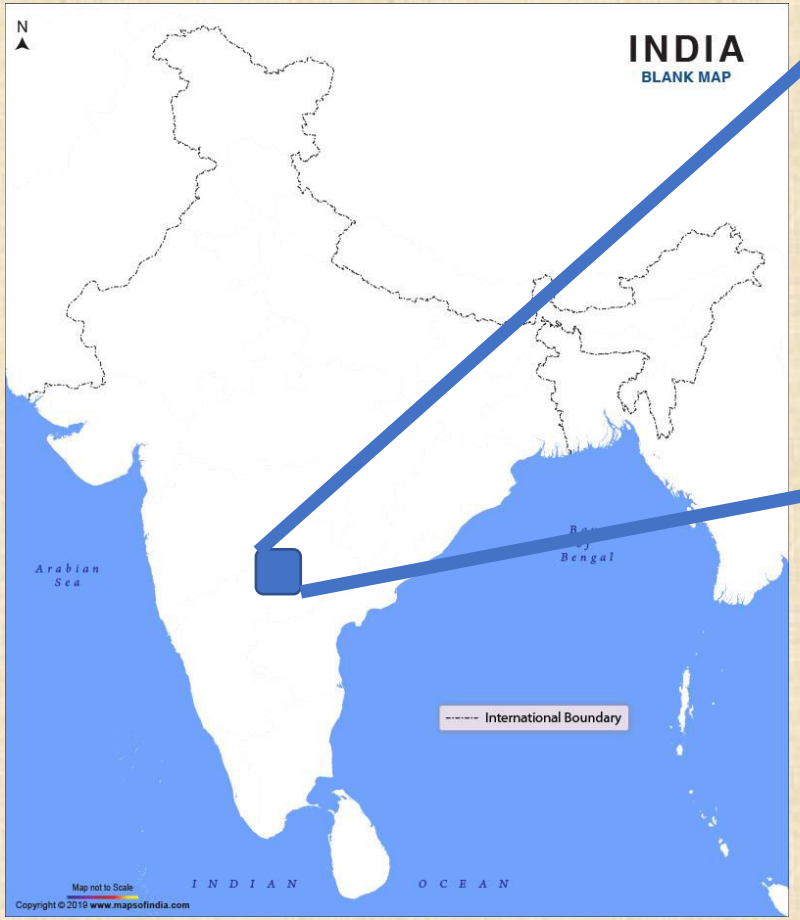
Vehicular traffic: How much CO_2 ? Kg/year/person?

FUN FACT: Food grain consumption is 100 Kg/year/person



22 of world's 30 most polluted cities

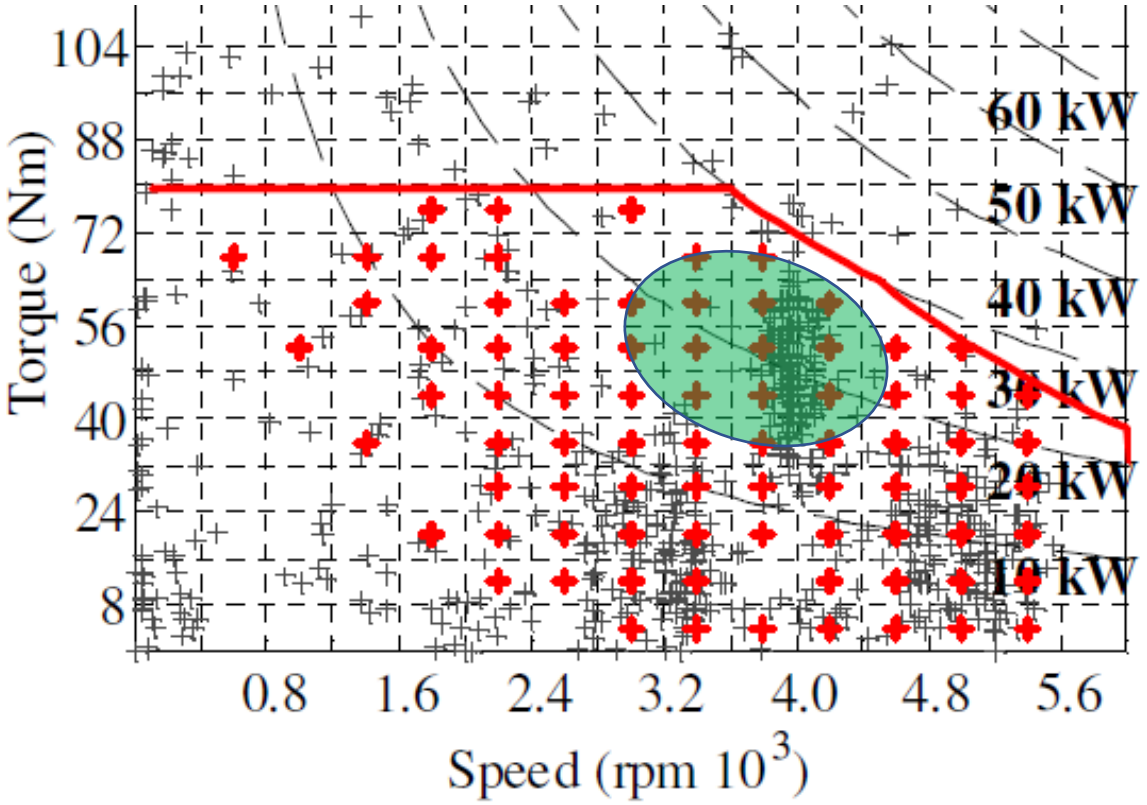
For 100% transition to EVs



Just 0.05% of land is needed

Power cost = to Rs. 7/litre diesel

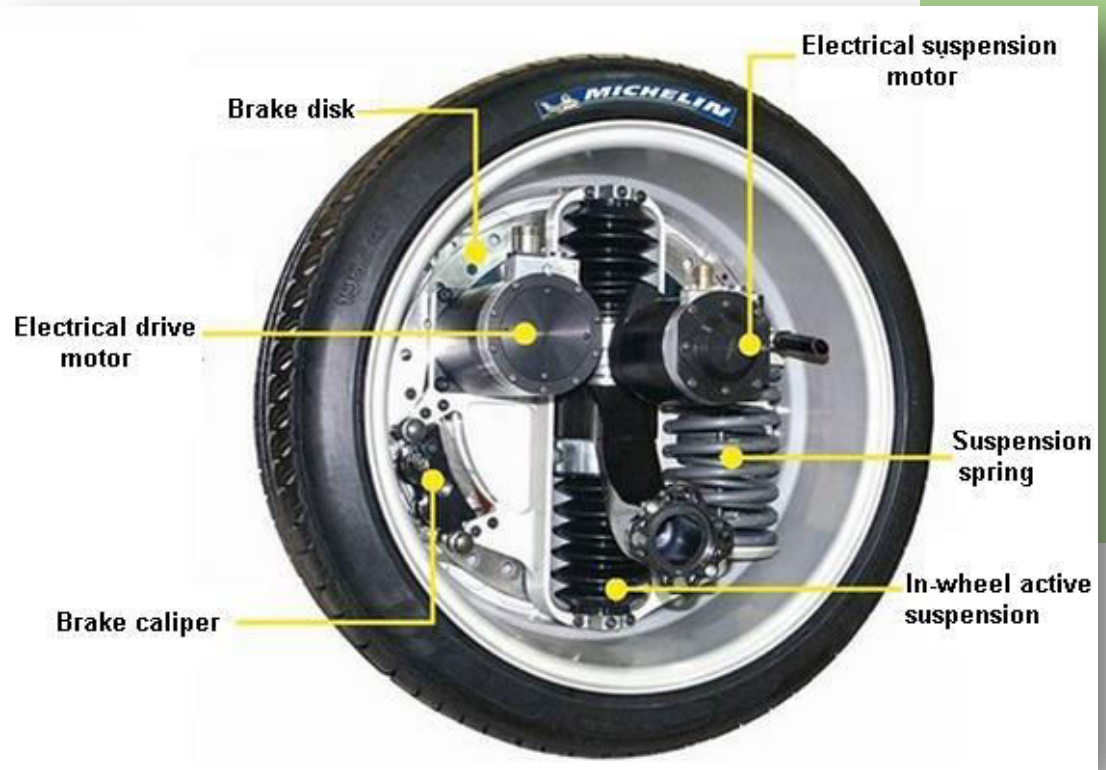
The challenge with “traction” motors



- Wide range of loads and speeds: Change in seconds
- Smallest possible size
- Least possible weight
- No noise, vibration

“Modularity” : the disruptive opportunity

The electric “engine” has only a single moving part!



X-by-wire

- Drive
- Steer
- Brake
- Suspension

Reduced part-count

- Increased reliability
- Higher efficiency
- Regeneration

India: Fragmented capability in mfg & design

What are the challenges?

Scarce minerals

- Rare-earths, Lithium…

Poor components capability

- We stopped making weak magnets
- We never made semiconductor chips or cells for batteries
- Even electrical steel is imported

Little manufacturing capability

- Competitiveness from wage arbitrage
- Capital goods are imported too

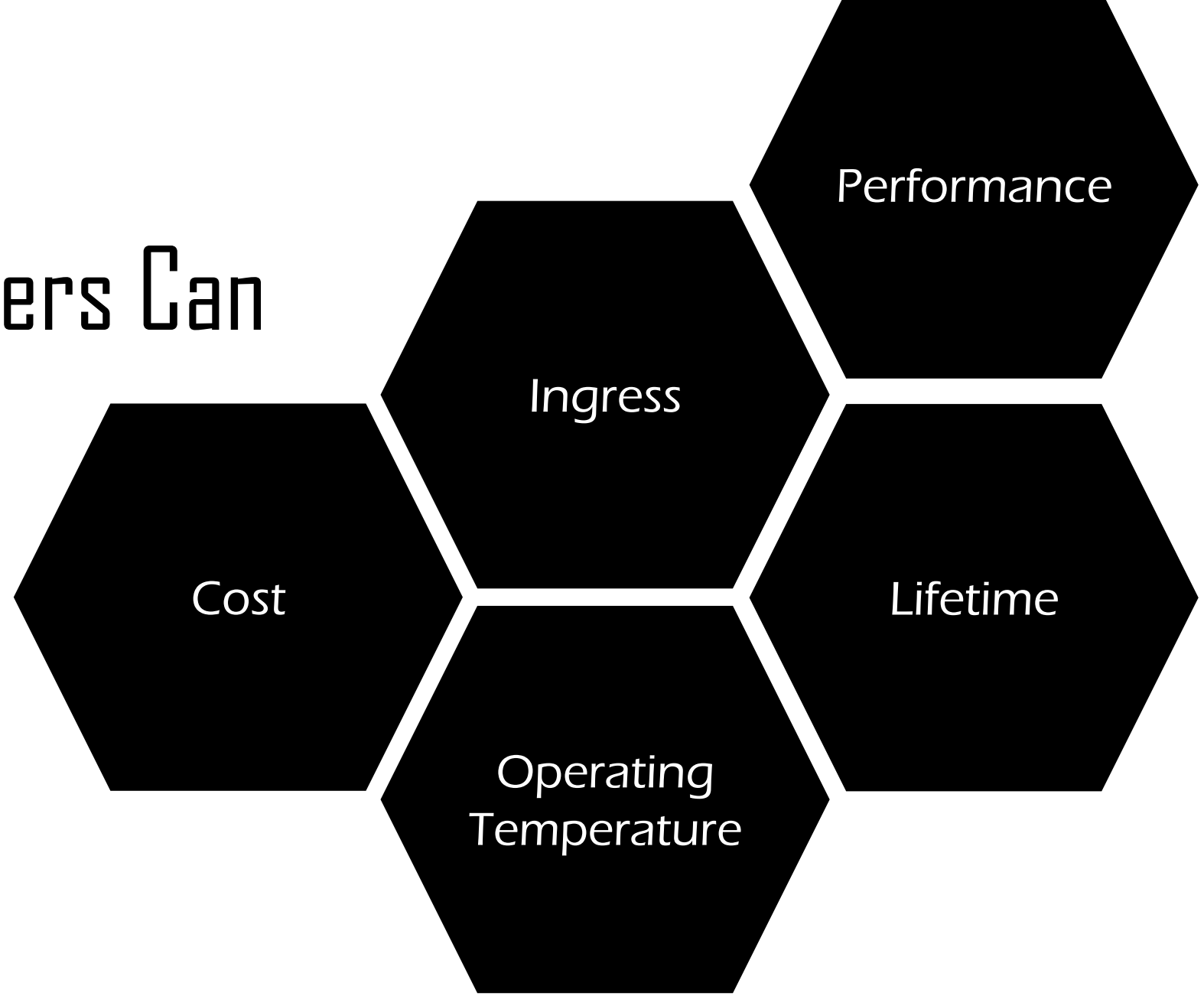
Needed: R&D-led manufacturing

- New design solutions that don't depend on scarce minerals
- Own processes for making components, assemblies

Did you know?
There are 6,000 "EV manufacturers" in India today!

Our Young Engineers Can

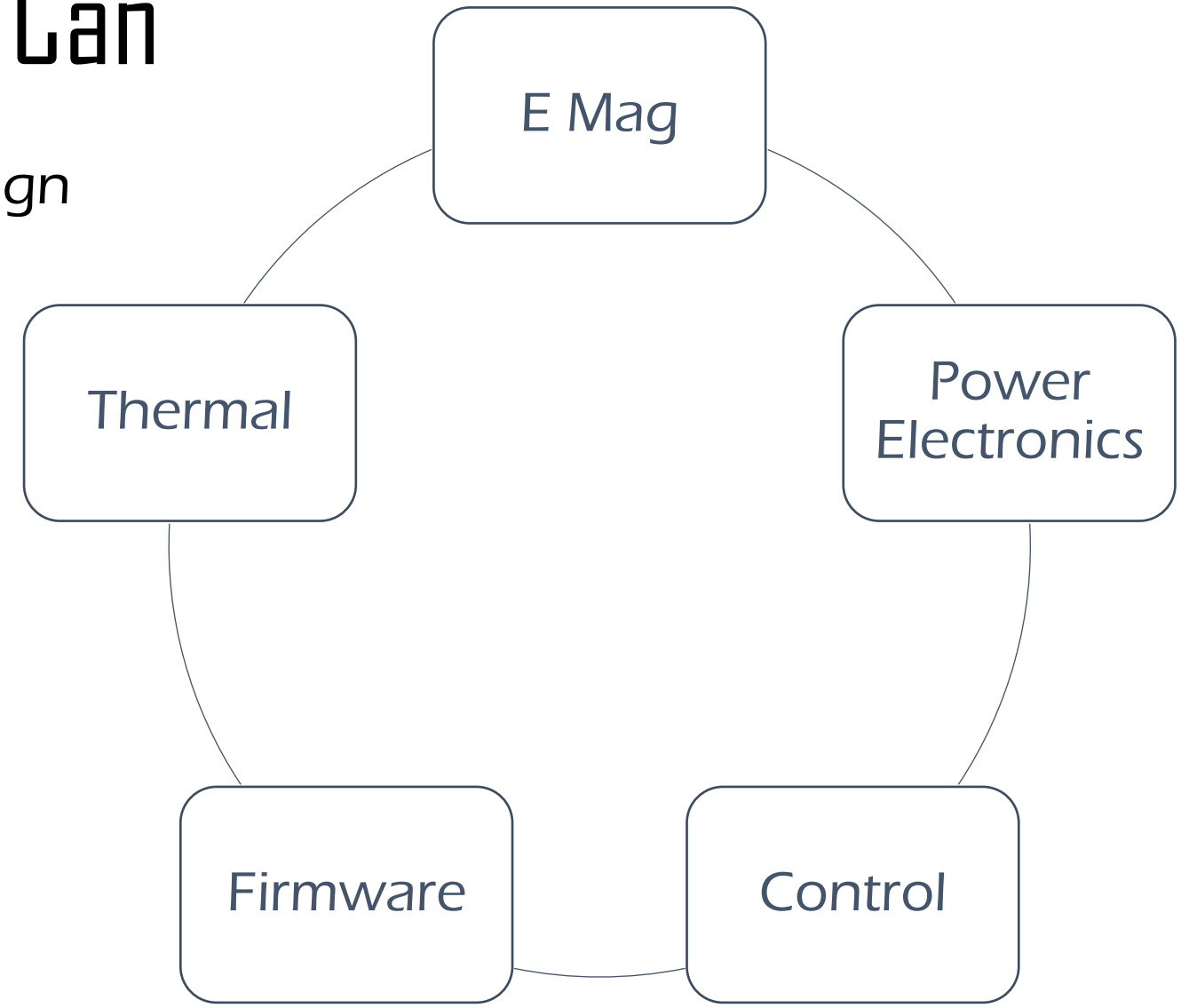
Design ground-up from end-use specs



Our Young Engineers Can

Align different aspects of design

- At affordable Price
- For Mass Manufacturing



We should get there by 2032

- 09 March 2022
- Kannan <at> motorz <dot> in