

## Teaspoon Ventilation Technique Tip Sheet

1. Refresh your understanding of the Concept
  - The "Teaspoon Technique" uses airflow patterns to mix and distribute air in a car park, eliminating the need for extensive horizontal ductwork.
  - Visualize stirring coffee with a teaspoon—this technique creates a similar uniform mixing effect within the space.
2. Plan Air Intake and Discharge Placement
  - Strategically position air intakes and discharges to maximize airflow momentum.
  - Use the car park's natural geometry to guide airflow instead of relying on ducts.
3. Leverage Momentum and Stickiness of Air
  - Recognize that air behaves differently from "thrown" objects—it shares momentum with surrounding air due to its viscosity.
  - Design to achieve effective mixing – try blowing “down the aisles” as opposed to across the aisles.
4. Avoid Overcomplicated Systems
  - Minimize the use of jet fans unless necessary, as they can complicate compliance with fire safety regulations.
  - Opt for simpler systems with fewer mechanical components to save costs and reduce maintenance.
  - Keep airflows over 2.5LPS/sqm or up to 3LPS/sqm if this is the first one you are doing.
5. Adapt to Car Park Size and Shape
  - For long, narrow car parks, avoid running ducts along the entire length. Instead, design airflow patterns that naturally sweep the space.
  - For smaller car parks, direct air from ramps or openings to avoid dead spots and maintain compliance.
6. Optimize Design for Cost and Efficiency
  - By eliminating extensive ductwork, projects can save significant money (e.g., \$25,000–\$100,000 in case studies).
  - Smaller fans with lower pressure requirements can be used, resulting in quieter and more energy-efficient systems.
7. Address Challenges with Effective Design
  - Consider structural and service challenges (e.g., sloping floors, limited headroom) when designing airflow systems.
  - Use Computational Fluid Dynamics (CFD) modelling to validate and optimize designs.
  - Keep CFD grids below 250x250x250.
8. Monitor for Dead Spots
  - Pay attention to potential "dead spots" where air circulation may be insufficient. Adjust intake or exhaust locations to mitigate these issues.
  - Consider whether adjacent plantroom ventilation systems can relief air out into dead spots.
  - Only use jet fans or “scour” systems as a last resort. They complicate compliance reporting and create additional coordination effort.

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### 9. Coordinate with Other Services

- Ensure ventilation design aligns with drainage, lighting, and sprinkler systems to avoid conflicts and maximize usable space.
- Keep out of stair exits if possible, we don't want to block any running-man signs.

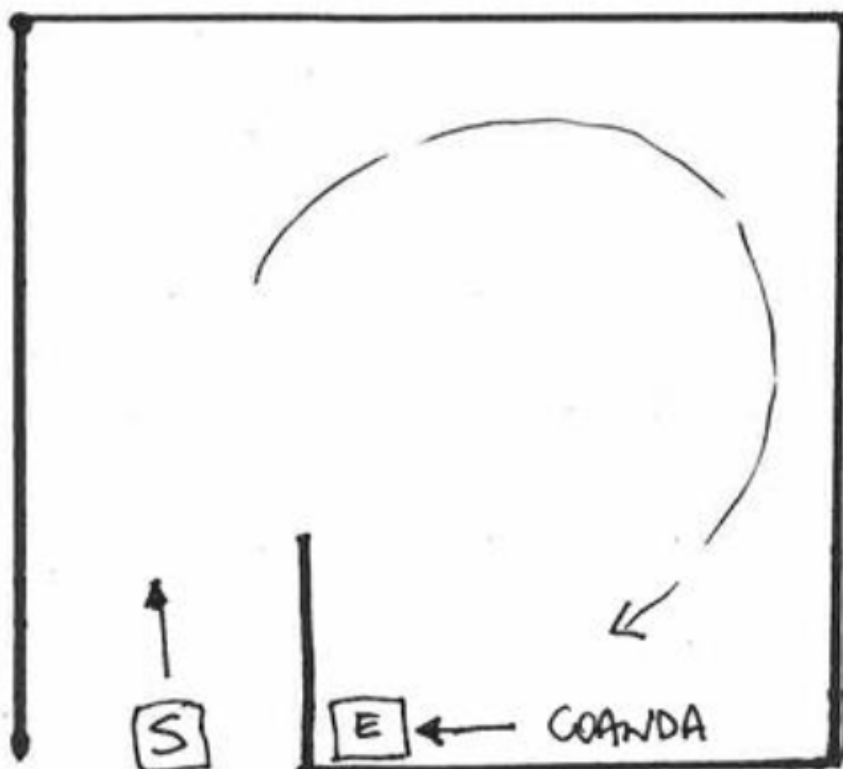
### 10. Compliance and Safety

- Always adhere to building codes and performance standards to ensure compliance, particularly for fire safety and air quality benchmarks.
- Position CO sensors so that a 25m radius covers all parts of the car park.
- Avoid reducing air volumes below code requirements, as this can complicate certification. Whilst it is feasible, it creates additional compliance effort.

### 11. Documentation and Communication

- Clearly document the design rationale and expected performance outcomes to facilitate approvals and project coordination.
- Engage with stakeholders, including builders and regulatory bodies, early in the design process to address concerns proactively.

This tip sheet provides actionable steps to implement the Teaspoon Ventilation Technique effectively, improving cost efficiency and performance for basement car parks.



TEASPOON TECHNIQUE

To help you remember, this cartoon adjacent gives you a way to remember the 3 core elements:

- Teaspoon Airflow Pattern
- Coanda Principle
- Exit path focus (or can I use ramps as an air supply?)