## **Usage Guides**

These are guides that are useful for learning how to use OpenLane, including

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## hardening macros and writing custom flows and scripts.

- Power Distribution Networks
  - Straps
  - Rings
  - Macro Integration
  - Ring Method
- Using PDKs
  - Specifying your PDK
  - Standard Cell Libraries
  - Building, location and downloading
  - The PDK Root
- Timing Corners
  - Default Flow Configuration
- Achieving Timing Closure
  - Introduction
  - Tips for Achieving Timing Closure
  - SDF Annotated GL Simulation using CVC
  - References
  - Acronyms on this Page
- Using Macros
  - Macro Files
  - In OpenLane Configurations
  - o STA
  - Working with Macros in your RTL
- Tutorial: Implementing a Macro for Caravel
  - Creating your own project repository
  - RTL integration
  - Hardening strategies
  - 1. Macro-First Hardening strategy
  - 2. Full-Wrapper Flattening strategy
  - 3. Top-Level Integration strategy
- Writing Custom Flows
  - Custom Sequential Flows
  - Fully Customized Flows
  - Error Throwing and Handling

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- Writing Custom Steps
  - o Generic Steps
  - Creating Reports
  - Creating Metrics
  - Tool-Specific Steps
- Writing and Using Plugins
  - Registering new Flows and Steps
  - Including Tools



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