

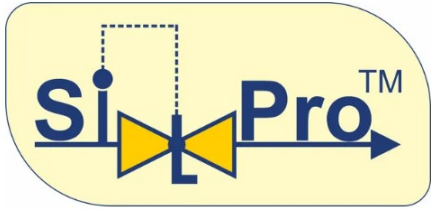
## **SILPro® for HAZOP and SIL Studies**

Hazard Identification, SIL Assessment (LOPA) and SIL Verification



### **Why SILPro®?**

- ✓ The best in-class, internet-based software developed by experts from Process Safety industry for HAZOP, Layer of Protection Analysis (LOPA) and SIL Verification. SILPro® can be accessed anywhere, anytime using conventional web browsers such as Google Chrome, MS-Edge etc.
- ✓ Easily customizable data-base to align with customer specific criteria/company norms/risk tolerance
- ✓ Automated transfer of high-risk Hazard scenarios from HAZOP to LOPA
- ✓ A 10x10 grid for preliminary risk assessment using a **risk matrix** with customizable values for risk of Human injury or Damage to property or Environmental damage or Loss-of-Reputation.
- ✓ Full customer support via phone and email with on-site technical training (at additional cost).

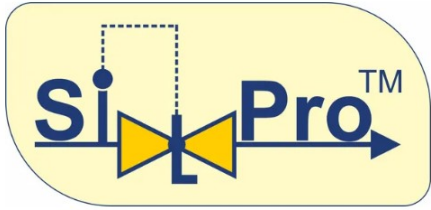


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- ✓ The HAZOP and LOPA Projects can be accessed by two or more simultaneous users, for example a facilitator and scribe can work together from different physical locations remotely
- ✓ HAZOP is connected/linked with LOPA for automated transfer of high-risk Hazard scenarios, resulting in greater accuracy, easier screening, reduced team effort and time. The consequences in Hazop can be referenced to have a single impact event in LOPA with corresponding multiple causes and their safeguards.
- ✓ Appropriate safeguards can be selected as Protection Layers. A SIF data-base is available across the HAZOP and LOPA study to enable SIF selection as a safeguard.
- ✓ Hazop studies are enabled to set Alarm priorities and identify safety critical equipments and /tasks

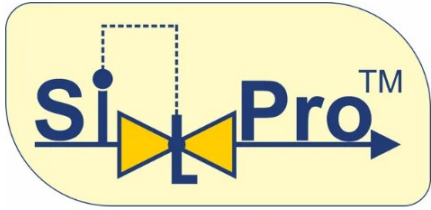


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- ✓ Comprehensive LOPA database of Initiating Event frequencies, PFD avg values and suggested risk tolerance criteria. SILPro® has the flexibility to customize / over-ride the data-base values with user data and values.
- ✓ Smart Hazop and LOPA scenarios are available to facilitate quick and easy access to industry information
- ✓ Intra and Inter project transfer of Node information to improve efficiency of the studies

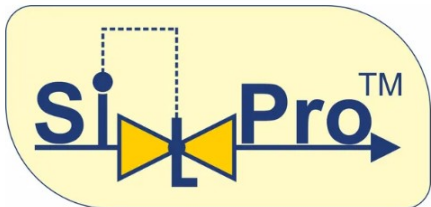


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- ✓ SIS / SIF configuration with SE, LS and FE details to generate Cause & Effects diagrams in Excel format.
- ✓ Automated transfer of SIFs from SIF data-base to SIL verification module with Target SIL, RRF
- ✓ SIL Verification based on Reliability Models method (IEC 61511 part-6) considering PTI, MTTR,  $\beta$ , DC for the following architectures: 1oo1, 1oo2, 2oo2, 1oo2D, 2oo3, 1oo3, 2oo5, 3oo5
- ✓ **REPORTS:** SILPro® generates comprehensive Hazop and LOPA reports in editable word format and Cause and Effect diagrams in Excel format. The Hazop reports have Alarm List, Safety Critical Equipment list, Hazop worksheets and action items, Hazop action items for LOPA, Node list etc etc. The LOPA report has the Work-sheet for cause-consequence pair and the SRS sheets with pre-populated SIL rating and PFD.



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### **Prerequisites:**

- ✓ Internet connectivity – a reliable internet connection is essential; disruption of internet may lead to loss of un-saved data
- ✓ Facilitator must be trained and competent with excellent knowledge of relevant IEC codes,
- ✓ Team members must be trained and should be experienced and be able to assess the qualitative severity of the hazard realistically and accordingly select the risk tolerance criteria

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