

MESK and DWSIM — Licence Compliance

Technical documentation of the separation between LV Atlas and the GPL-licensed physical-property calculation · Lauterbach Verfahrenstechnik GmbH

What this document is — and what it is not

This document describes, in a **verifiable** way, how the MESK module obtains physical properties from DWSIM and how LV's own code is kept separate from the GPL-licensed third-party software. It is the *factual basis* on which a licensing assessment can build.

It is not legal advice. Distribution to customers and the legal assessment itself are decided by company management, where appropriate after review by counsel. The file `DWSIM/NOTICE.md` in the source tree draws the same distinction.

1. Starting point

MESK designs multi-component condensers cell by cell. Every cell requires a phase equilibrium and mixture properties. These are supplied by **DWSIM** (`dwsim.org`, Copyright © Daniel Medeiros and contributors), an open-source process simulator.

Subject	Finding
DWSIM licence	GPL-3.0-or-later
Linking exception	None. The LGPL applies only to the separate <i>DWSIM Thermodynamics Library</i> (DTL 3.x), which has been unmaintained since 02/2023 and is not used here.
Consequence	DWSIM must not be loaded into the same process as LV's own code. Calling it across a process boundary is permissible.

2. How the properties travel

MESK does not address DWSIM itself. All property and flash calculations go through the **PROP** module and from there, via a licence-clean abstraction, to a **separate process** in which DWSIM runs:

```
MESK → PROP → DWSIM.Contracts (LV's own code, no GPL reference) → || process boundary
|| → DWSIM.Core + DWSIM (GPL-3)
```

The boundary is not merely described, it is enforced by construction: there is **no** transport in `DWSIM.Contracts` that would load DWSIM into the calling process. Exactly three transports exist, and every one of them crosses the process boundary.

Transport	Kind of boundary
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CliDaemonBridge	Long-running child process; requests over its standard input/output
CliOneShotBridge	One child process per call
HttpBridge	HTTP to a separately operated service

3. Verifiable evidence in the source tree

Each point below can be checked directly against the source tree. Date of verification: 13 October 2026.

File	Finding
DWSIM/NOTICE.md	States the origin, GPL-3.0-or-later, the absence of a linking exception, and the rule that LV's own code addresses the software "exclusively across a process boundary".
DWSIM/DWSIM.Contracts/ DWSIM.Contracts.csproj	References two Microsoft configuration packages and nothing else. No reference to any DWSIM binary. This is the LV side of the boundary.
DWSIM/DWSIM.Core/DWSIM.Core.csproj	References <code>DWSIM.Automation</code> and <code>DWSIM.Interfaces</code> , that is, the GPL binaries. This is the GPL side of the boundary; the code runs in the separate process.
.../PROP_.Net/LvPROP.NET/PROP.vbproj	References only <code>DWSIM.Contracts</code> , with the rule stated in the project file itself: "PROP never references DWSIM.Core / DWSIM.Interfaces / DWSIM.Thermodynamics."
.../PROP_.Net/LvPROP.NET/Ddbatlas.vb	Performs the flash calculation through the bridge. The cost of crossing is recorded in the code ("each call costs half a second across the process boundary") and mitigated by a cache.
.../MESK_.Net/LvMESK.NET/ KAPMESK.FastApi.vb	Since 12 October 2026 it no longer contains a DWSIM connection of its own. MESK asks exclusively through PROP (<code>ProperNS.PropFastApiFile</code>).

4. What is distributed

LV Atlas and MESK contain **no** DWSIM code. DWSIM remains independent, unmodified third-party software under its own licence. Where it is distributed together with LV Atlas, the GPL-3 obligations for DWSIM itself apply unchanged:

- The licence text accompanies the software (`LICENSE.GPL-3.0.txt`).
- The source code of DWSIM is offered or supplied.
- Any modifications of our own to DWSIM are marked as such and passed on under GPL-3.
- Copyright and licence notices remain untouched.

5. What would break the separation

Two conditions keep the boundary intact. Both can be checked mechanically and should be reviewed whenever the property path changes:

1. No LV project may reference `DWSIM.Core`, `DWSIM.Interfaces` or `DWSIM.Thermodynamics` — not even indirectly.
2. No transport may be added to `DWSIM.Contracts` that executes DWSIM inside the calling process. Such a transport would be precisely the case excluded by the missing linking exception.

6. Note on property accuracy

Choosing the property package remains an engineering decision by the user and is independent of the licensing question. For polar, associating mixtures — acetone/water, for instance — activity-coefficient models (NRTL, UNIQUAC, UNIFAC) yield dependable bubble and dew lines, whereas a cubic equation of state such as Peng-Robinson can produce unusable curves there.