

deflexional.com/license-manager

# A New Licensing Tool for Compiled COMSOL® Applications

The Deflexional License Manager offers a developer-friendly licensing system designed for COMSOL® applications compiled using COMSOL Compiler™.

D. Ericsson<sup>1</sup>, A. Abida<sup>2</sup>

1. Deflexional AB, Stockholm, Sweden.

2. Abida Consulting AB, Stockholm, Sweden.

## Motivation

As the global use of COMSOL® apps continues to expand, developers are increasingly looking for practical and secure ways to protect their applications and manage access. Traditional software often relies on license keys, but until now there has been a lack of simple and flexible tools tailored specifically for COMSOL apps. The Deflexional License Manager fills this gap by providing a licensing system purpose-built for compiled standalone COMSOL® applications, where one single compiled app serves all users.

License keys and cryptographic secrets are securely generated and managed through a dedicated web interface. The system supports various licensing models, including trial licenses, time-limited licenses, and licenses locked to specific MAC addresses for enhanced control. In addition to license key handling, it includes utility methods for encrypting and decrypting text and files—useful for protecting sensitive data such as proprietary material properties.

## Integration

Integrating the Deflexional License Manager into a COMSOL® app is simple. Developers add a single JAR file through the *External Java Library* functionality in COMSOL Multiphysics®, which provides all required methods for decrypting and validating license keys. This gives direct access to the *LicenseManager* class, offering a comprehensive set of functions for verifying license status, managing trial periods, and enforcing usage constraints.

To get started, several working examples are provided. Developers with basic programming skills can quickly adapt their apps to use the Deflexional License Manager’s features. Importantly, they retain full control over how license checks are integrated into their workflows.

```
public class licenseIsValid extends ApplicationMethod {
    public void execute() {
        /**
         * Checks if the given license key is valid and if it can be decrypted.
         * This does not include checks for matching MAC address and license expiration.
         *
         * The global string licenseKey is the license key entered by the user.
         * The global string keys.appFrameworkSecretKey is the secret key for the specific app.
         *
         * Sets the boolean isLicenseKeyValid to true if the license key is correct.
         * If the license key is not validated, and warning message is sent to the user.
         */
        boolean isLicenseKeyValid = LicenseManager.IsValid(licenseKey, keys.appFrameworkSecretKey);
        if (!isLicenseKeyValid) {
            alert("The license key cannot be validated. Please enter a new license key.", "Warning");
        }
    }
}
```

Figure 1. Example code in the Application Builder for validating a user-entered license key with the *LicenseManager* class.

## Summary

The Deflexional License Manager can be tested for free, with upgrades to Professional or Enterprise accounts required for commercial use. It has already been successfully deployed by Heidelberg Materials in two projects: HETT<sup>22</sup> [1], serving thousands of users, and BI Dry [2]. Another example is Model One, which distributes its commercial COMSOL® apps using this licensing system.

By providing a secure, flexible, and easy-to-implement licensing solution tailored for COMSOL® developers, the Deflexional License Manager enables app creators to monetize and protect their intellectual property while ensuring full compatibility with the COMSOL® ecosystem.

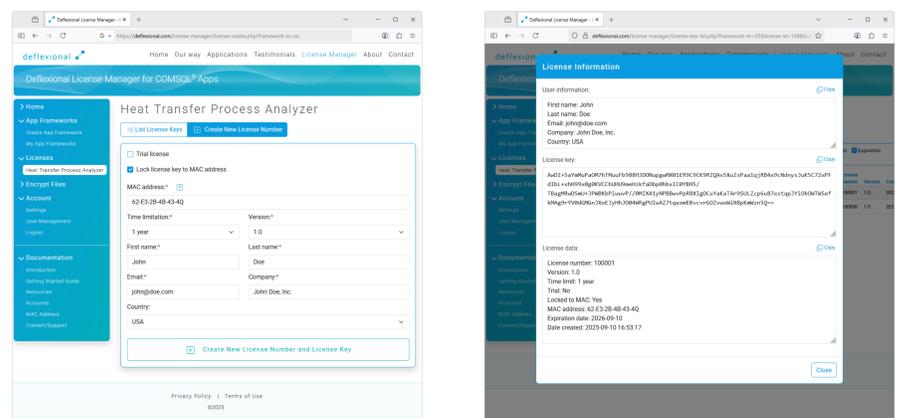


Figure 2. License keys that can be node-locked, time-limited, or trial-based with feature restrictions. License keys are securely generated and stored in the web interface.

## REFERENCES

1. D. Ericsson et al., COMSOL Conference 2023 Munich; [www.comsol.com/paper/hett22-a-comsol-app-to-accurately-simulate-plan-and-monitor-concrete-castings-122611](http://www.comsol.com/paper/hett22-a-comsol-app-to-accurately-simulate-plan-and-monitor-concrete-castings-122611)
2. D. Ericsson et al., COMSOL Conference 2024 Florence; [www.comsol.com/paper/bi-dry-30-a-comsol-app-for-simulating-concrete-drying-135332](http://www.comsol.com/paper/bi-dry-30-a-comsol-app-for-simulating-concrete-drying-135332)

