

# Updates in ProTOp 6.1

CAESS ProTOp  
Version 6.1 Build 200916  
www.caess.eu



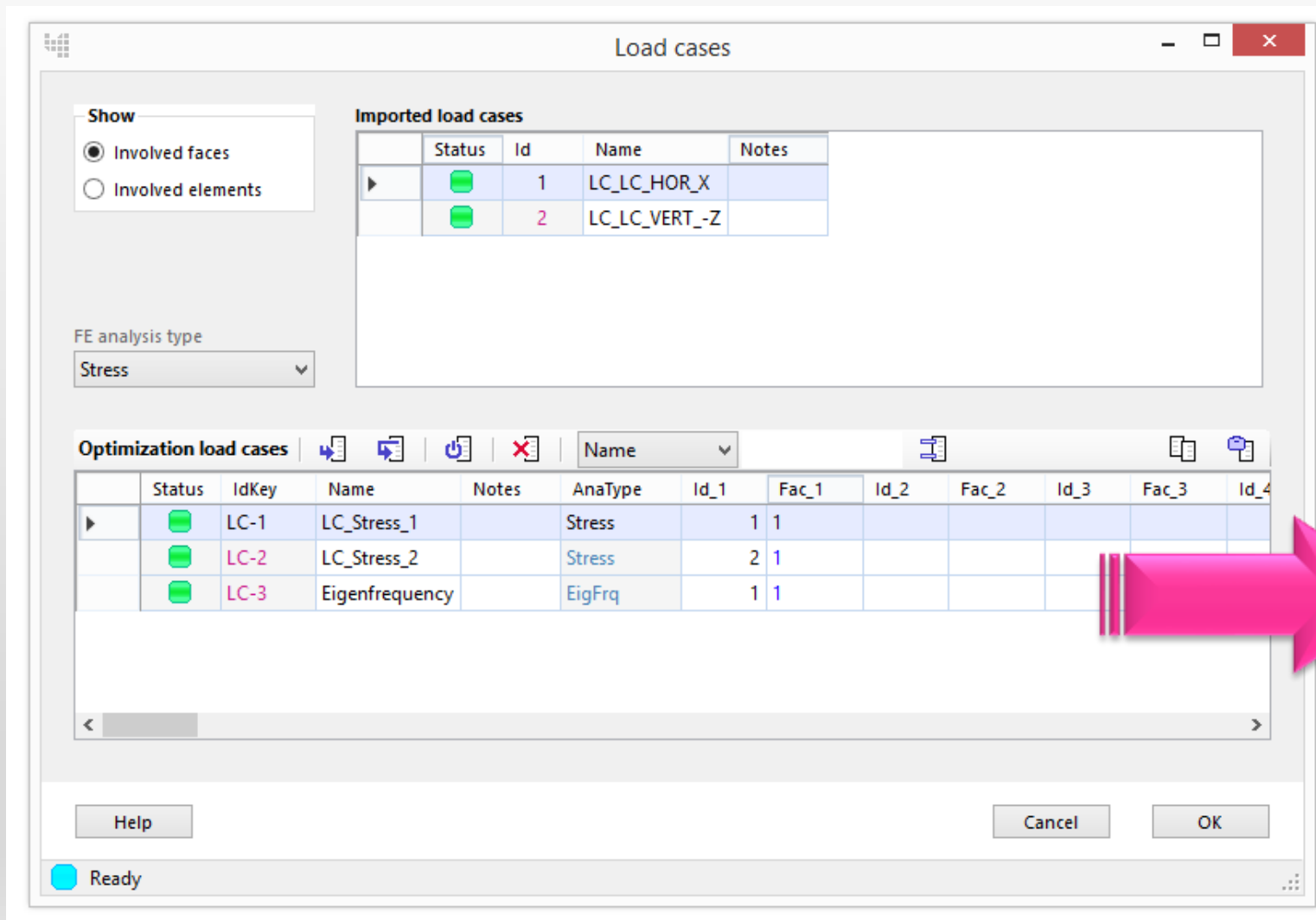
## Upgraded ProTOp 6.1

- New more efficient FEA solver
- Improved topology optimizer
- Improved export surface smoothing

# Main updates review table

| Update                                          | Benefits/Options/Features                                                                                                                                                                                                          |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. New FEA solver                               | <ul style="list-style-type: none"> <li>▪ New solver combines the old static and modal solvers.</li> <li>▪ <b>Benefit:</b> much faster optimization cycles in combined stress/eigenfrequency optimizations</li> </ul>               |
| 2. Fully renewed export surface smoothing tools | <ul style="list-style-type: none"> <li>▪ Much better peaks/pits removal and much better smoothing of export surfaces</li> <li>▪ Aggressive smoothing does not degrade the surface by making slender connections thinner</li> </ul> |
| 3. Significantly improved topology optimizer    | <ul style="list-style-type: none"> <li>▪ Better performance of the topology optimizer, especially in shell/lattice optimization</li> <li>▪ Removed annoying bug that caused problems in eigenfrequency optimization</li> </ul>     |
| 4. Various other updates/corrections            | <ul style="list-style-type: none"> <li>▪ Simplified and improved rounding options for shell/lattice configurations</li> <li>▪ Many other minor improvements and corrections ...</li> </ul>                                         |

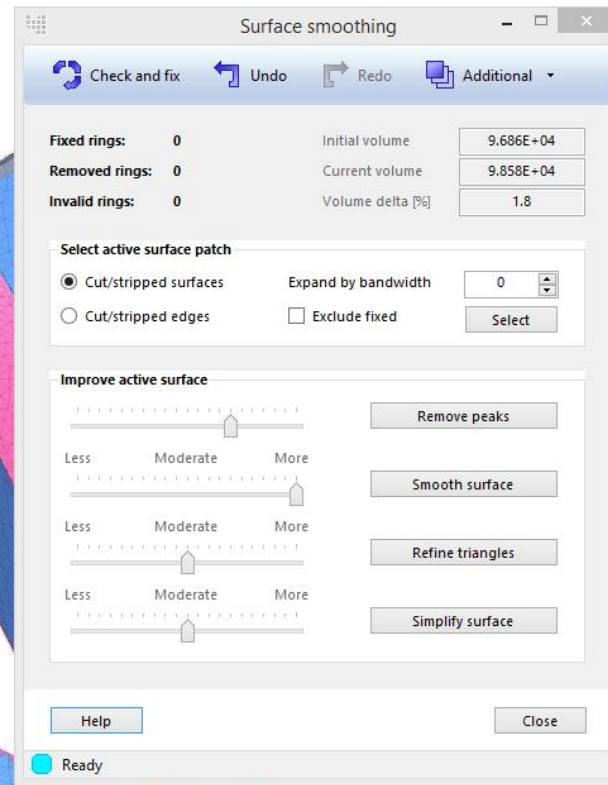
# New FEA solver



❑ Old V6.0: **2** stiffness matrix decompositions

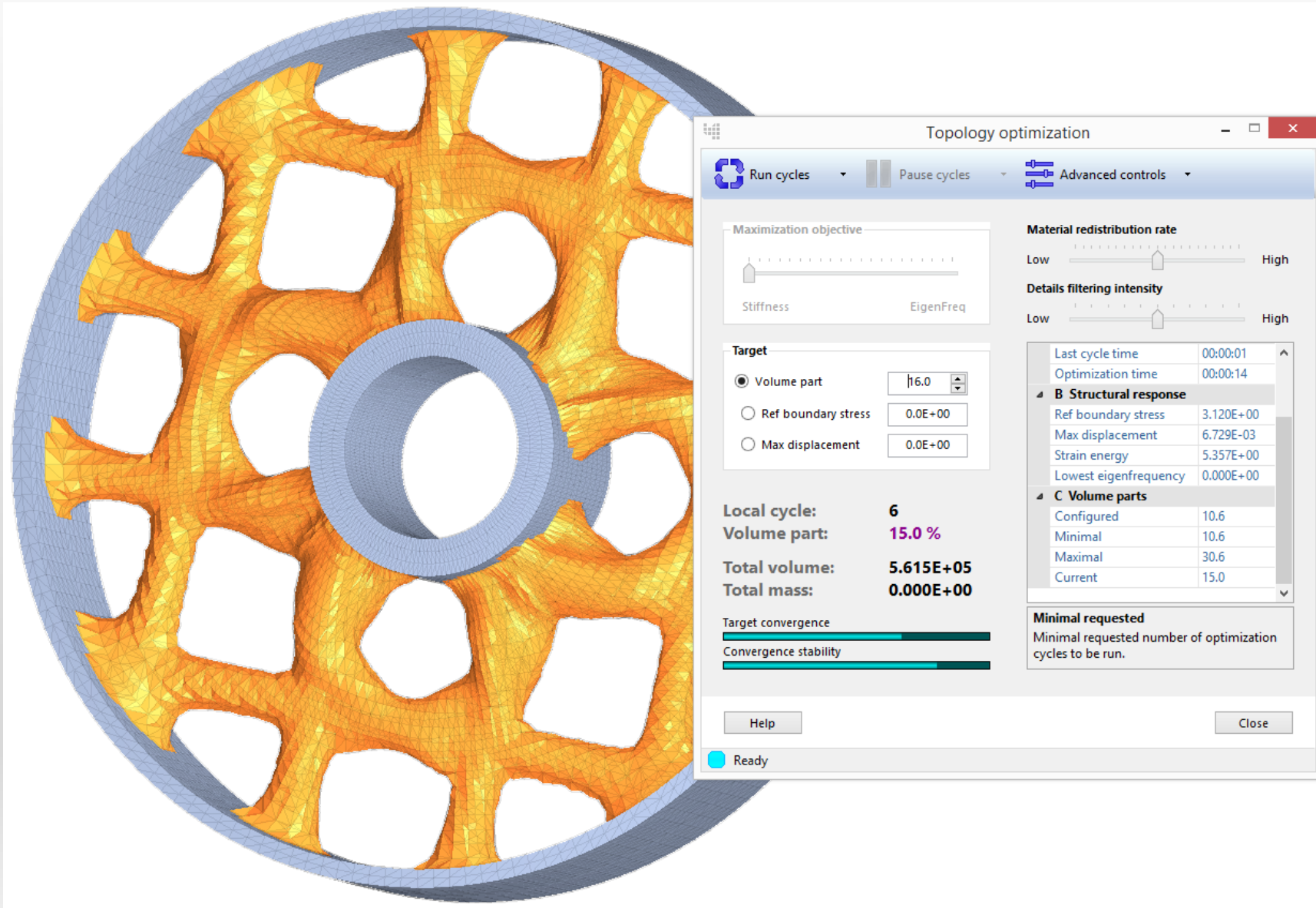
❑ New V6.1: **1** stiffness matrix decomposition  
(FEA cca 50% faster in this particular case)

# Fully renewed export surface smoothing tools



- ❑ Much more efficient: both peaks/pits removal and smoothing
- ❑ No degradation by exaggerated contraction of slender regions

# Significantly improved topology optimizer



- ❑ Much better performance, especially for shell/lattice configured designs (the 6.0 optimizer was faster than the old version but may produced very quickly very bad (jagged surfaces) designs for shell/lattice structures – this is now fixed and much better in 6.1)
- ❑ Fixed annoying bug in eigenfrequency optimization

## Various other updates/corrections

- ❑ Rounding of shell/lattice configurations (simplified and improved)
- ❑ Various other minor bug fixes or improvements ...

