



计及初挠度的圆柱壳开孔结构极限承载能力研究

Ultimate bearing capacity research of cylindrical shell with a cutout considering initial imperfection

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英文关键词: [buckling mode of consistent imperfection](#) [buckling mode of localized imperfection](#) [ring-stiffened cylindrical shell](#) [initial imperfection](#)

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中文摘要:

主要研究了一致缺陷模式和局部缺陷模式两种初挠度形式对圆柱壳开孔结构极限承载力的影响。在通用有限元软件中建立了相应的模型,对施加了不同缺陷幅值初挠度的圆柱壳开孔结构进行了非线性极限承载计算,分析了开孔区域附近结构的塑性扩展情况,获得了结构对初挠度幅值的敏感度。此外还研究了开孔区域加强构件的几何参数对结构极限承载能力的影响。

英文摘要:

Two kinds of initial imperfection: buckling mode of consistent imperfection and buckling mode of localized imperfection were analyzed to obtain their influence to ultimate bearing capacity of cylindrical shell with a circular cutout. The model was established in the finite element program. After the calculation of nonlinear ultimate bearing capacity of cylindrical shell with a circular cutout considering different kinds of initial imperfection and their amplitudes, the plastic growth near the cutout was studied and achieved the sensitivity of the structure to amplitude of initial imperfection. Besides, impact on structure's ultimate bearing capacity through changing the geometrical parameters of the reinforcement near the cutout was researched as well.

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