|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **锥壳内压强度校核** | | | | | 计算单位 |  | | | |
| 计算所依据的标准 | | | | | | **NB/T 47003.1-2009** | | | |
| **计 算 条 件** | | | | | | **简 图** | | | |
| 设计压力, Pd | | | | MPa | **$$001** | $07  $15  $09  $10  $08  $20 | | | |
| 设计温度, t | | | | ℃ | **$$002** |
| 静压力, Ps | | | | MPa | **$$003** |
| 压力试验类型 | | | | **$$004** | |
| 锥 壳 | 材料标准号 | | | **$$005** | |
| 材料牌号/名称 | | | **$$006** | |
| 大端内直径, Dsi | | | mm | **$$007** |
| 小端内直径, Dpi | | | mm | **$$008** |
| 半顶角, α | | | ° | **$$009** |
| 名义厚度, δcn | | | mm | **$$010** |
| 腐蚀裕量, Cc2 | | | mm | **$$011** |
| 焊接接头系数, φc | | | / | **$$012** |
| 大端筒体 | 材料标准号 | | | **$$013** | |
| 材料牌号/名称 | | | **$$014** | |
| 名义厚度, δsn | | | mm | **$$015** |
| 腐蚀裕量, Cs2 | | | mm | **$$016** |
| 焊接接头系数, φs | | | / | **$$017** |
| 小端筒体 | 材料标准号 | | | **$$018** | |
| 材料牌号/名称 | | | **$$019** | |
| 名义厚度, δpn | | | mm | **$$020** |
| 腐蚀裕量, Cp2 | | | mm | **$$021** |
| 焊接接头系数, φp | | | / | **$$022** |
| **材 料 特 性** | | | | | | | | | |
| 锥 壳 | 密度, ρc | | | kg/m³ | **$$023** | 大端筒体 | 密度, ρs | kg/m³ | **$$031** |
| 试验温度下屈服点, RceL | | | MPa | **$$024** | 试验温度下屈服点, RseL | MPa | **$$032** |
| 材料负偏差, Cc1 | | | mm | **$$025** | 材料负偏差, Cs1 | mm | **$$033** |
| 设计温度许用应力, [σ]ct | | | MPa | **$$026** | 设计温度许用应力, [σ]st | MPa | **$$034** |
| 试验温度许用应力, [σ]c | | | MPa | **$$027** | 试验温度许用应力, [σ]s | MPa | **$$035** |
| 小端筒体 | 密度, ρp | | | kg/m³ | **$$028** | 设计温度许用应力, [σ]pt | | MPa | **$$036** |
| 试验温度下屈服点, RpeL | | | MPa | **$$029** | 试验温度许用应力, [σ]p | | MPa | **$$037** |
| 材料负偏差, Cp1 | | | mm | **$$030** | / | | | |
| **过 程 参 数** | | | | | | | | | |
| 计算压力, Pc | | | MPa | | Pc = Pd + Ps | | | | **$$038** |
| 锥 壳 | 厚度附加量, Cc | | mm | | Cc = Cc1 + Cc2 | | | | **$$039** |
| 有效厚度, δce | | mm | |  | | | | **$$040** |
| 大端 | 承受环向力  的有效宽度, | mm | |  | | | | **$$041** |
| 单位长度  经向内力, | N/mm | |  | | | | **$$042** |
| 单位长度  环向内力, | N/mm | |  | | | | **$$043** |
| 小 端 | 承受环向力  的有效宽度, | mm | |  | | | | **$$044** |
| 单位长度  经向内力, | N/mm | |  | | | | **$$045** |
| 单位长度  环向内力, | N/mm | |  | | | | **$$046** |
| 大端筒体 | 厚度附加量, Cs | | mm | | Cs = Cs1 + Cs2 | | | | **$$047** |
| 有效厚度, δse | | mm | |  | | | | **$$048** |
| 承受环向力  的有效宽度, | | mm | |  | | | | **$$049** |
| 母线上单位长度  环向内力, | | N/mm | |  | | | | **$$050** |
| 小端筒体 | 厚度附加量, Cp | | mm | | Cp = Cp1 + Cp2 | | | | **$$051** |
| 有效厚度, δpe | | mm | |  | | | | **$$052** |
| 承受环向力  的有效宽度, | | mm | |  | | | | **$$053** |
| 母线上单位长度  环向内力, | | N/mm | |  | | | | **$$054** |
| 设计温度下  材料许用压缩应力, | | | MPa | | 查表6-3 | | | | **$$055** |
| **锥 壳 内 压 强 度 校 核** | | | | | | | | | |
| 锥壳计算厚度, δcc | | | | mm |  | | | | **$$056** |
| 设计厚度, δcd | | | | mm | δcd = δcc + Cc2 | | | | **$$057** |
| 厚度校核 | | | | / | δcn ≥ δcd + Cc1 | | | | **$$058** |
| **大 端 筒 体 强 度 校 核** | | | | | | | | | |
| 计算厚度, δsc | | | | mm |  | | | | **$$059** |
| 设计厚度, δsd | | | | mm | δsd = δsc + Cs2 | | | | **$$060** |
| 厚度校核 | | | | / | δsn ≥ δsd + Cs1 | | | | **$$061** |
| **小 端 筒 体 强 度 校 核** | | | | | | | | | |
| 计算厚度, δpc | | | | mm |  | | | | **$$062** |
| 设计厚度, δpd | | | | mm | δpd = δpc + Cp2 | | | | **$$063** |
| 厚度校核 | | | | / | δpn ≥ δpd + Cp1 | | | | **$$064** |
| **大 端 连 接 处 强 度 校 核** | | | | | | | | | |
| 大端与圆筒  连接处总环向力, | | | | N |  | | | | **$$065** |
| 大端与圆筒  连接处所需总承压面积, As | | | | mm2 |  | | | | **$$066** |
| 实际有效承压面积, Aacts | | | | mm2 |  | | | | **$$067** |
| 承压面积校核 | | | | / | Aacts >= As | | | | **$$068** |
| 锥壳径向投影宽度, | | | | mm |  | | | | **$$070** |
| 最小投影宽度, 0.75%Dsi | | | | mm | 0.75%Dsi | | | | **$$071** |
| 投影尺寸校核 | | | | / |  | | | | **$$072** |
| **小 端 连 接 处 强 度 校 核** | | | | | | | | | |
| 小端与圆筒  连接处总环向力, | | | | N |  | | | | **$$073** |
| 小端与圆筒  连接处所需总承压面积, Ap | | | | mm2 |  | | | | **$$074** |
| 实际有效承压面积, Aactp | | | | mm2 |  | | | | **$$075** |
| 承压面积校核 | | | | / | Aactp >= Ap | | | | **$$076** |
| 所需增加的承压面积, Areqp | | | | mm2 | Areqp = Ap - Aactp | | | | **$$077** |
| 锥壳径向投影宽度, | | | | mm |  | | | | **$$078** |
| 最小投影宽度, 0.75%Dpi | | | | mm | 0.75%Dpi | | | | **$$079** |
| 投影尺寸校核 | | | | / |  | | | | **$$080** |
| **压 力 试 验** | | | | | | | | | |
| 试压系数, η | | | | / |  | | | | **$$081** |
| 锥壳试验压力值, PcT | | | | MPa | PcT = max{η×Pd×[σ]c/[σ]ct, 0.05} | | | | **$$082** |
| 大端筒体试验压力值, PsT | | | | MPa | PsT = max{η×Pd×[σ]s/[σ]st, 0.05} | | | | **$$083** |
| 小端筒体试验压力值, PpT | | | | MPa | PpT = max{η×Pd×[σ]p/[σ]pt, 0.05} | | | | **$$084** |
| 取用试验压力, PT | | | | MPa | PT = min{PcT, PsT, PpT } | | | | **$$085** |

注1：加强圈可采用扁钢、角钢、槽钢或其他组合型结构形式。

注2：加强圈伸出圆筒外侧的水平宽度不宜超过16倍的加强圈厚度，且应尽量设置在靠近封头与圆筒的连接处。