```
min_auto_wf  THM

⊢  ∀Alph,St:Type, Auto:Automata(Alph;St).
|  MinAuto(Auto)
|  ∈ Automata(Alph;x,y:Alph*//(x LangOf(Auto)-induced Equiv y))
| by Unfold ‘min_auto‘ 0 THEN UnivCD
|
1. Alph : Type
2. St : Type
3. Auto : Automata(Alph;St)
⊢  A(λl.Auto(l)↓)
|  ∈ Automata(Alph;x,y:Alph*//(x LangOf(Auto)-induced Equiv y))
| by Inst
|    Thm* ∀L:LangOver(A). EquivRel x,y:A*. x L-induced Equiv y
|    {lang_rel_equi}
|    [Alph;LangOf(Auto)]
|
4. EquivRel x,y:Alph*. x LangOf(Auto)-induced Equiv y
⊢
| by BackThru
|    Thm* ∀Alph:Type, L:LangOver(Alph)
|          , g:((x,y:Alph*//(x L-induced Equiv y))→𝔹).
|          A(g) ∈ Automata(Alph;x,y:Alph*//(x L-induced Equiv y))
|    {lang_auto_wf}
|    THENL
|    [Auto;Auto;Analyze]
|
5. l : x,y:Alph*//(x LangOf(Auto)-induced Equiv y)
⊢  Auto(l)↓ ∈ 𝔹  by Analyze 5
|
5. l1 : Alph*
6. l2 : Alph*
7. l1 LangOf(Auto)-induced Equiv l2
⊢  Auto(l1)↓ = Auto(l2)↓  by Unfold ‘lang_rel‘ 7 THEN Reduce 7
|
7. ∀z:Alph*. LangOf(Auto)(z @ l1) ⟺ LangOf(Auto)(z @ l2)
⊢   by Witness7 nil THEN Reduce 7
|
7. LangOf(Auto)(l1) ⟺ LangOf(Auto)(l2)
⊢   by Unfold ‘auto_lang‘ 7 THEN Reduce 7
|
7. Auto(l1)↓ ⟺ Auto(l2)↓
⊢
  by BackThru Thm* ∀a,b:𝔹. (a ⟺ b) ⇒ a = b    {iff_imp_equal_bool}
END
```