



**Universidade Técnica de Lisboa**

**Faculdade de Arquitectura**

**Anexo 4.2 – Manual Resultados Temperatura**

**Tese de Doutoramento**

**“Sistemas Solares Passivos na Arquitectura em Portugal”  
Os Envidraçados nos Edifícios Residenciais em Lisboa**

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**Documento Definitivo**



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## **Anexo 4.2 (CAPÍTULO IV) – Manual Resultados (Temperatura) Soluções Matriz**

### **Introdução Manual Temperatura – Soluções Matriz**

Neste Manual encontram-se resultados referentes às condições interiores de temperatura obtidos para as soluções contempladas na Matriz adoptada no estudo em questão. Os dados em questão são disponibilizados através de um conjunto de gráficos, os quais estão organizados consoante:

- 1º) Modelo Tipológico (Modelo1 com 1 face exposta, ou Modelo 2 com 2 faces expostas opostas);
- 2º) Localização do Modelo no Edifício (Andar Intermédio ou Andar de Cobertura);
- 3º) Orientação;
- 4º) Tipo de Dispositivo de Protecção Solar junto aos envidraçados (sem protecção, com dispositivo interior, com dispositivo pelo exterior)

Desta forma, os dados referentes às condições interiores de temperatura das soluções da Matriz também poderão ser consultados através deste Manual, para além da Base de Dados.

- Manual Temperatura: permite consulta e comparação do conjunto de soluções presentes na Matriz
- Base de Dados; consulta e comparação de soluções mais específicas, auxílio ao interessado na formulação de relatórios

**Leitura e Organização dados Temperatura – Manual de Temperatura Soluções Matriz**

Conjunto de Gráficos do Tipo 1, Soluções organizadas no Manual por: orientação solar e área da(s) fachada(s) envidraçada(s) entre 40% e 80% da(s) mesma(s).

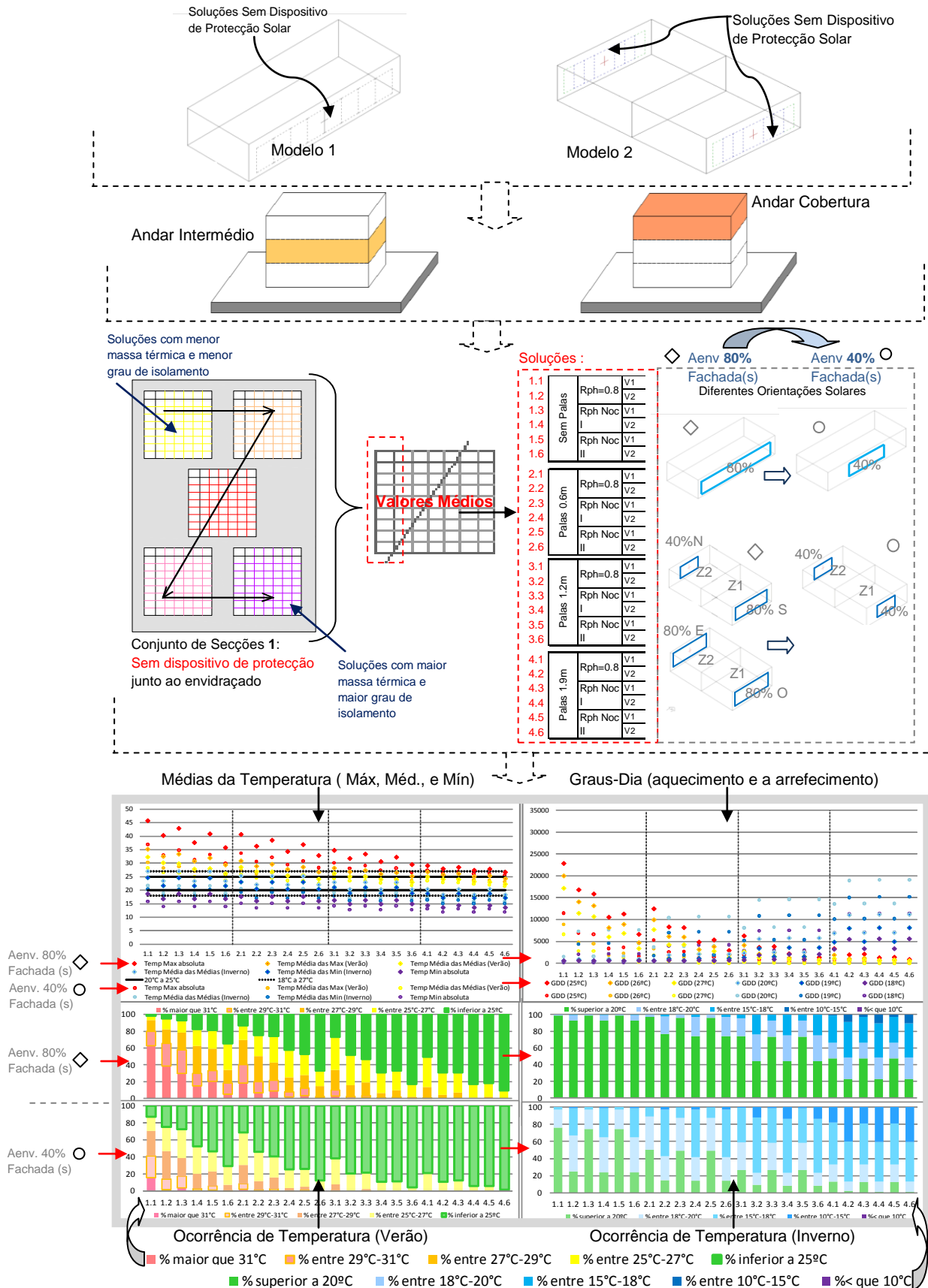


Figura 1 Anexo 4.2: Exemplo leitura dados de temperatura para soluções da Matriz, conjunto 1.

Conjunto de Gráficos do Tipo 2, Soluções organizadas no Manual: sem e com palas de 1,20m de largura para as soluções nas diversas orientações e áreas de envidraçados.

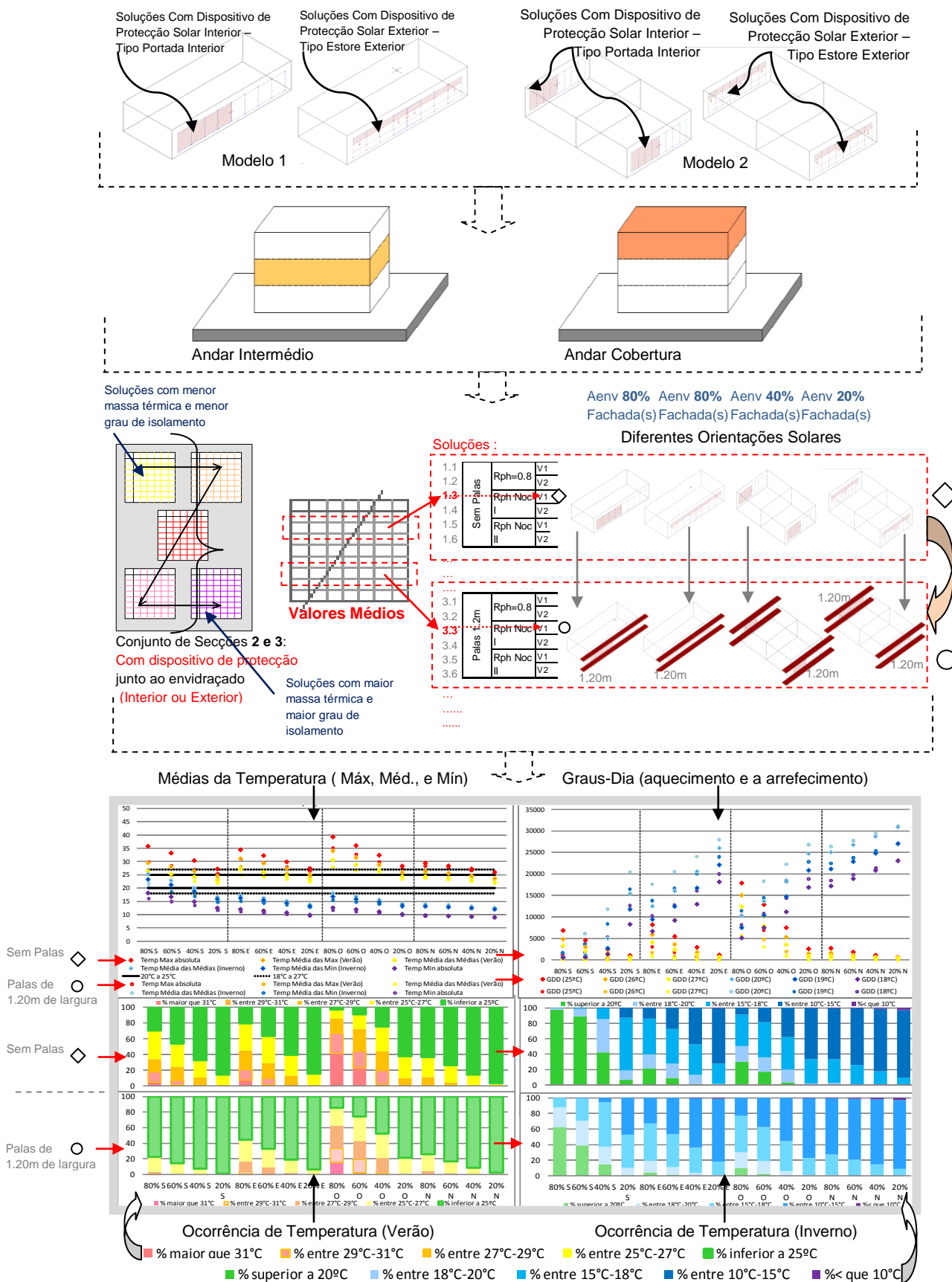
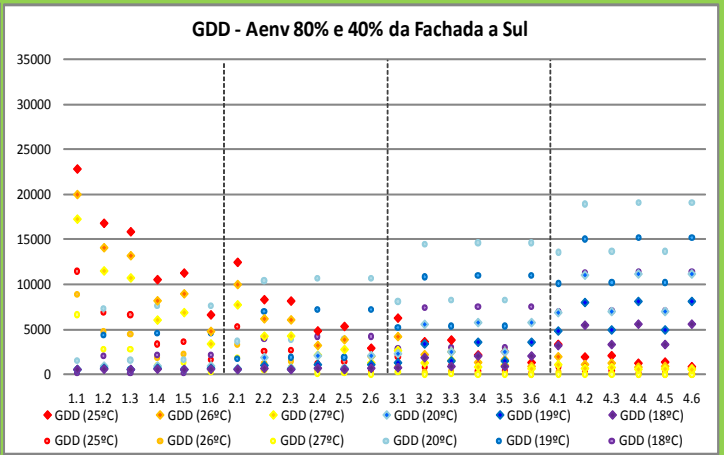
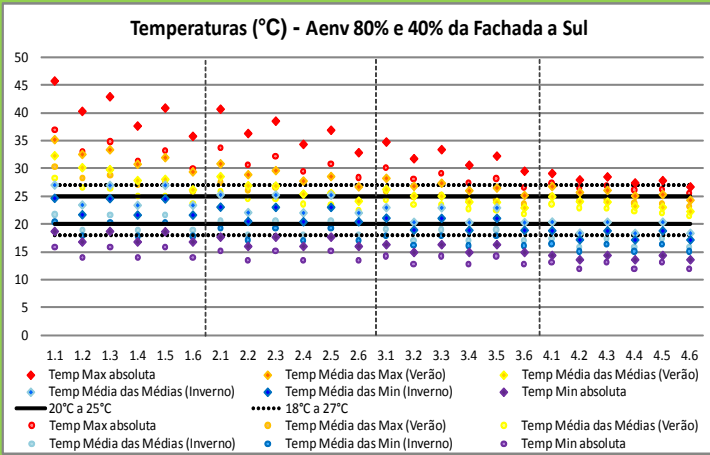


Figura 2 Anexo 4.2: Exemplo leitura dados de temperatura para soluções da Matriz, conjunto 2.

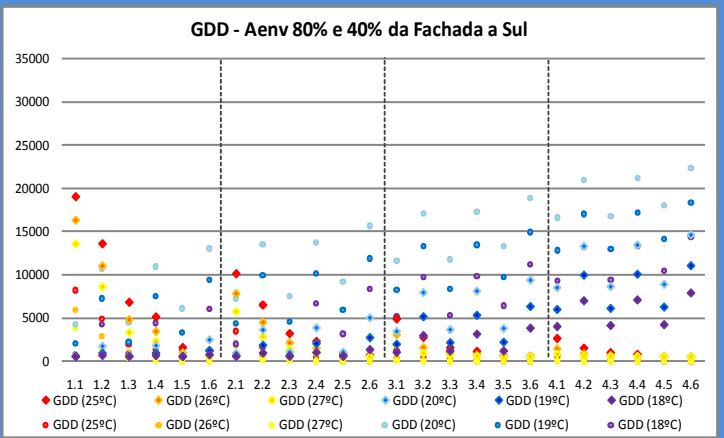
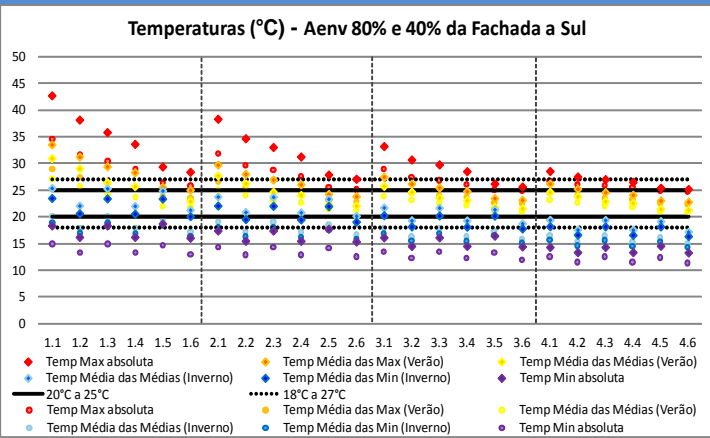


Modelo1 Intermédio: 80% e 40% Fachada Envidraçada a Sul

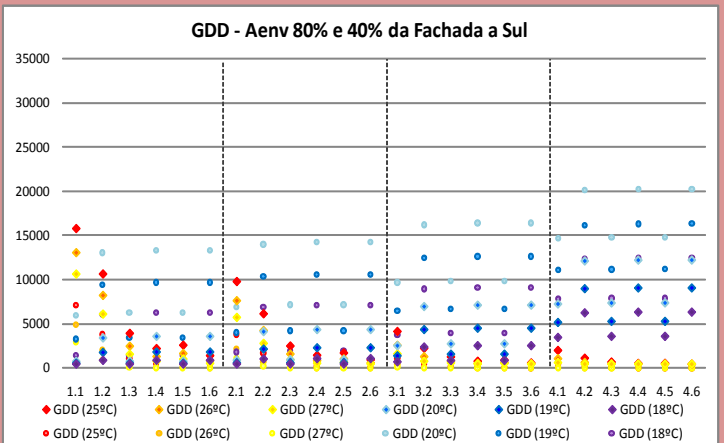
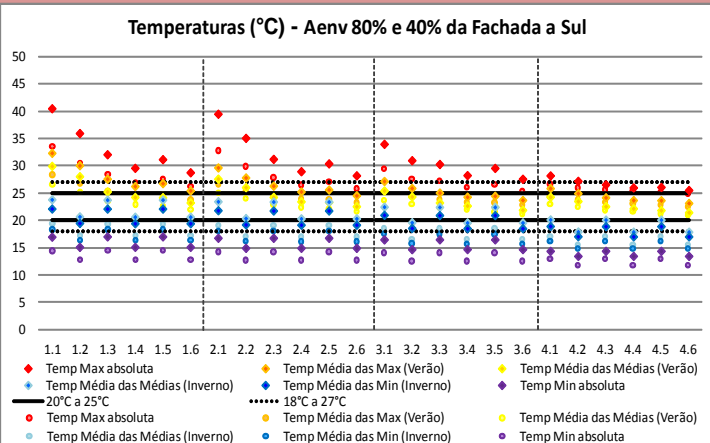
Sem Protecção Solar Junto ao Envidraçado



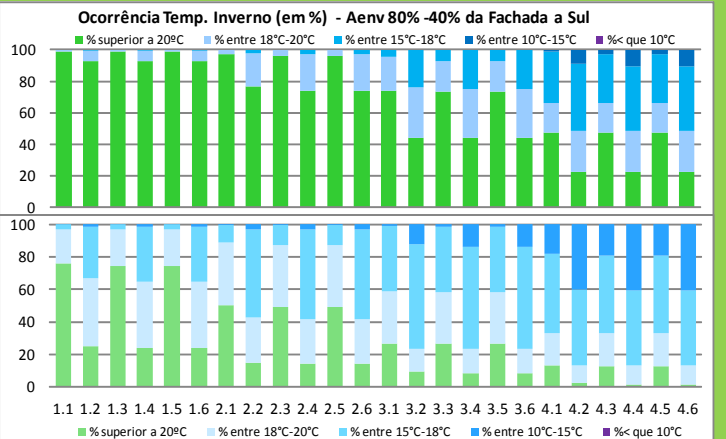
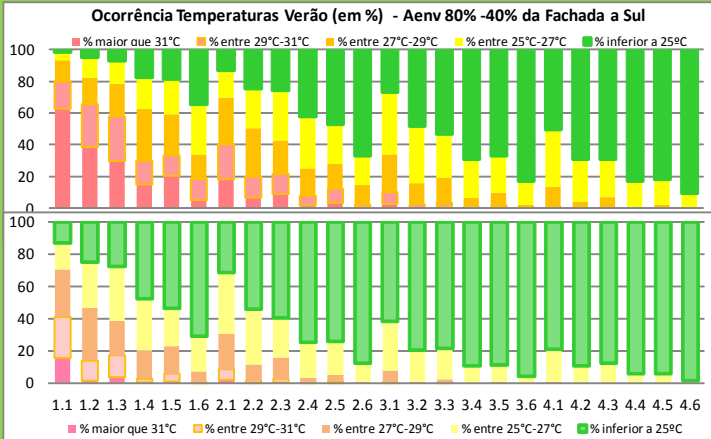
Com Protecção Solar Interior Junto ao Envidraçado



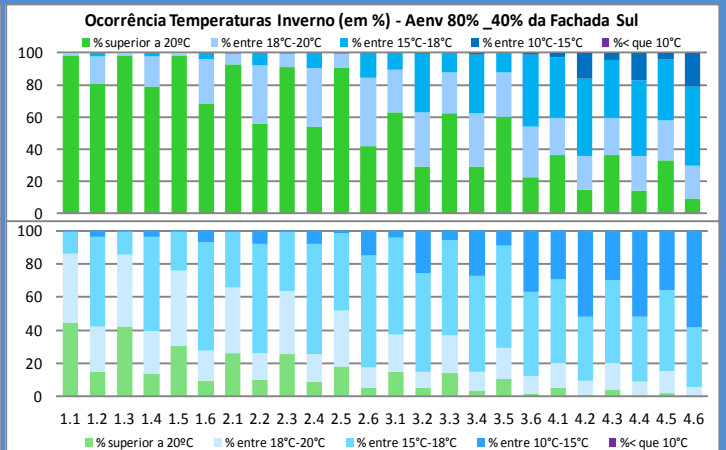
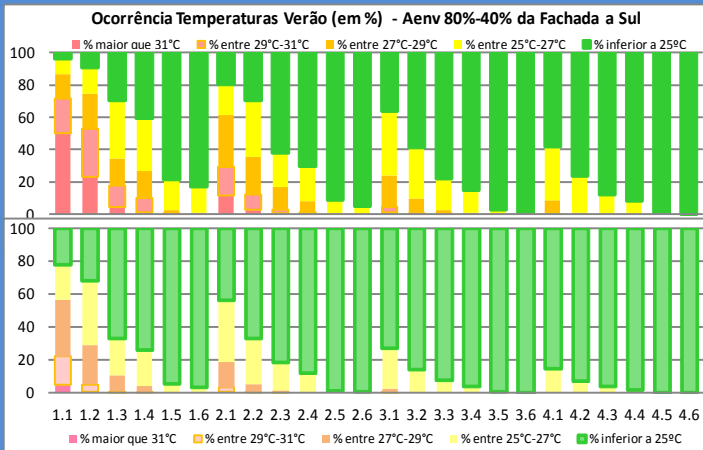
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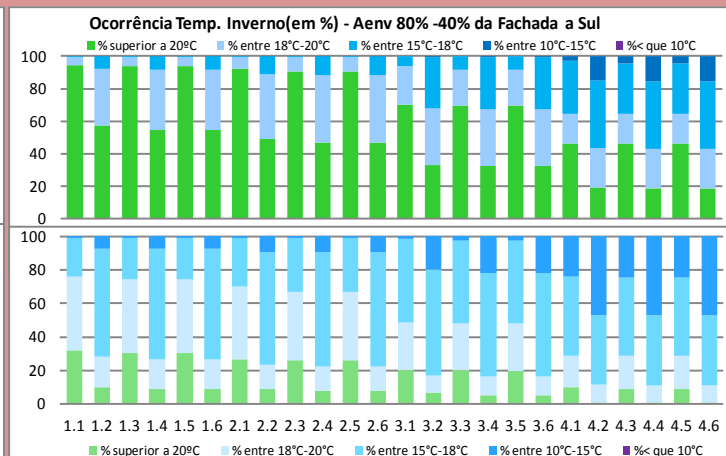
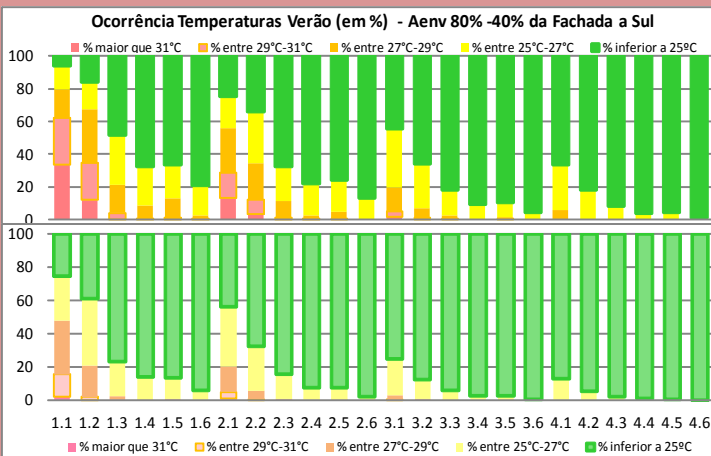
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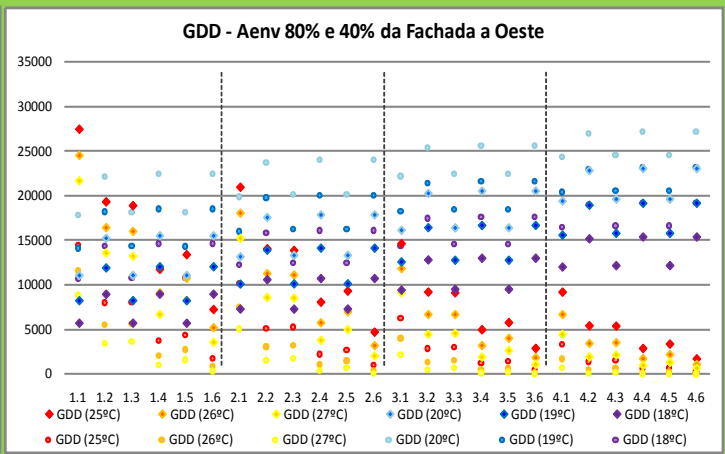
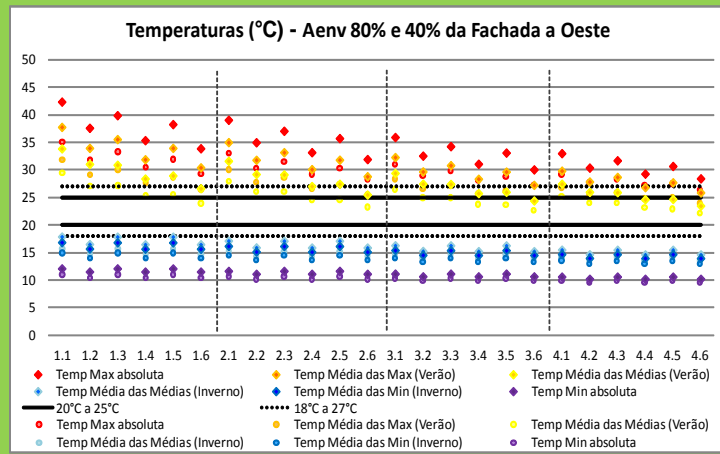


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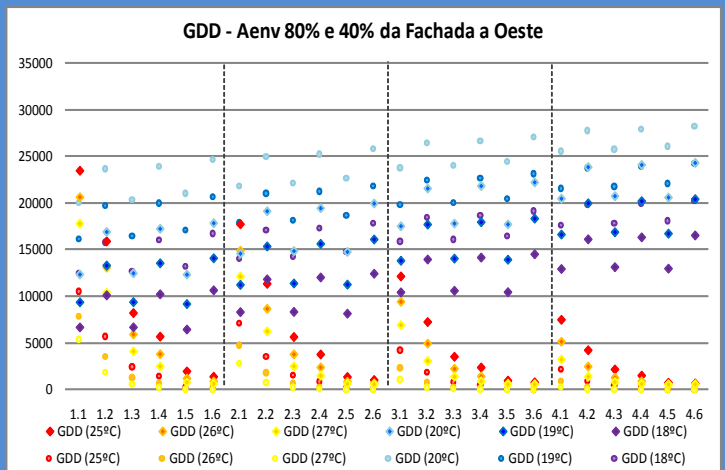
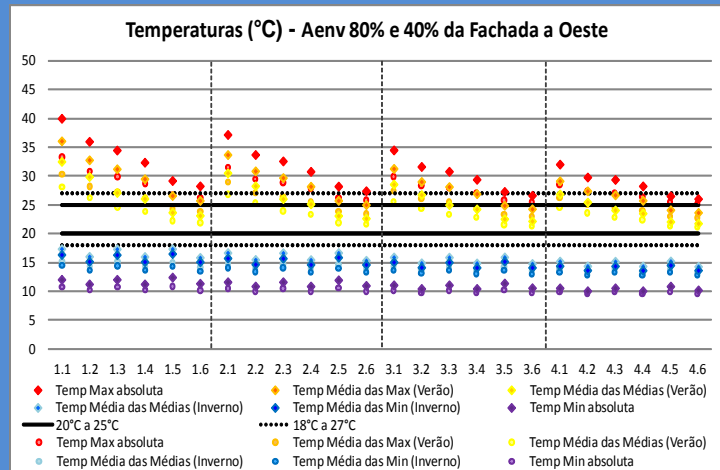


Modelo1 Intermédio: 80% e 40% Fachada Envidraçada a Oeste

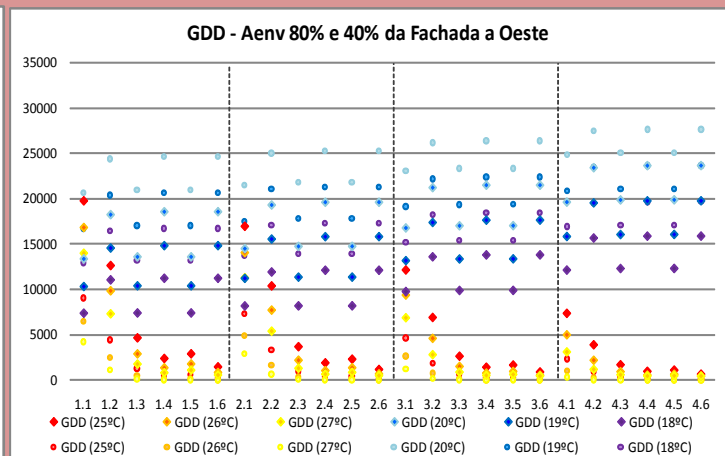
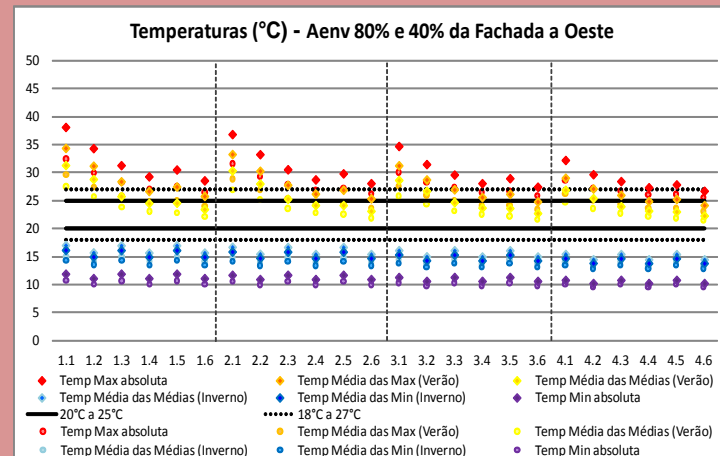
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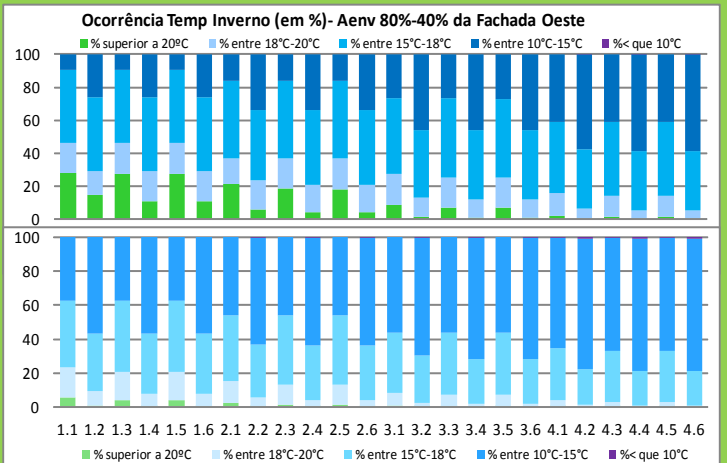
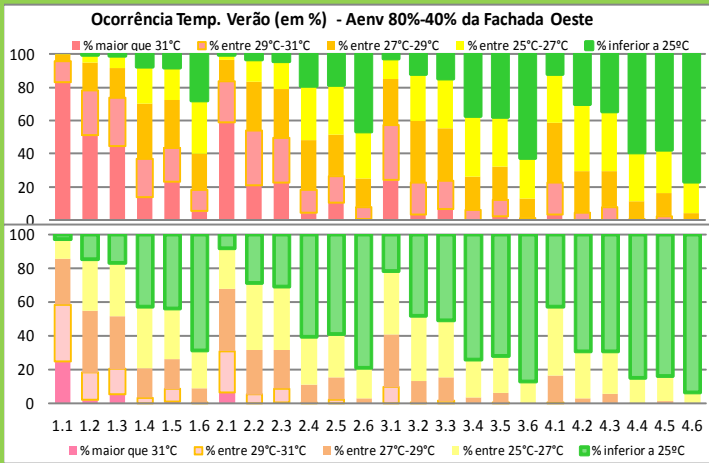
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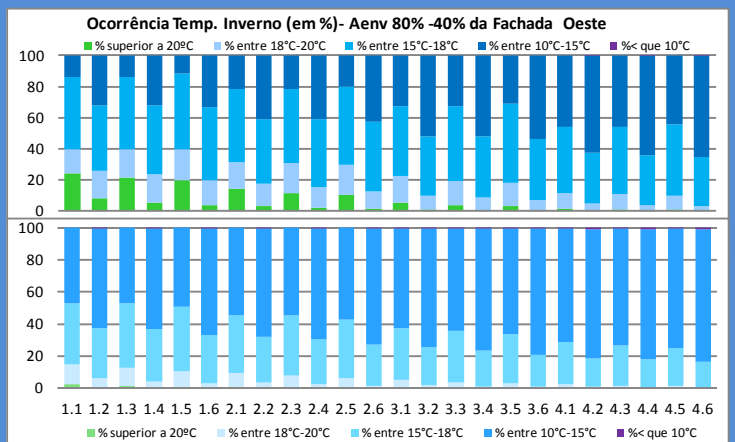
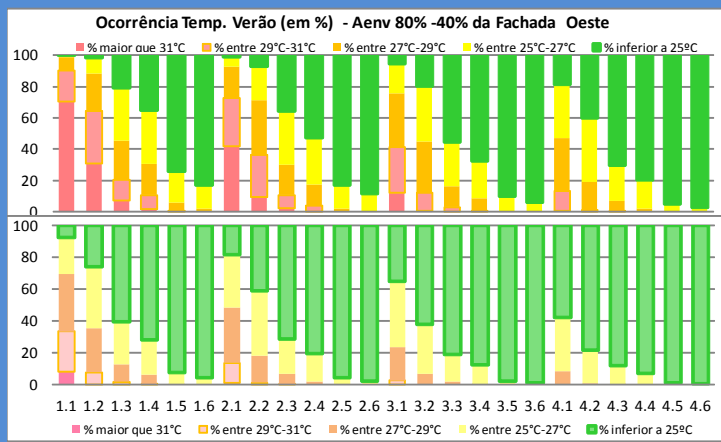
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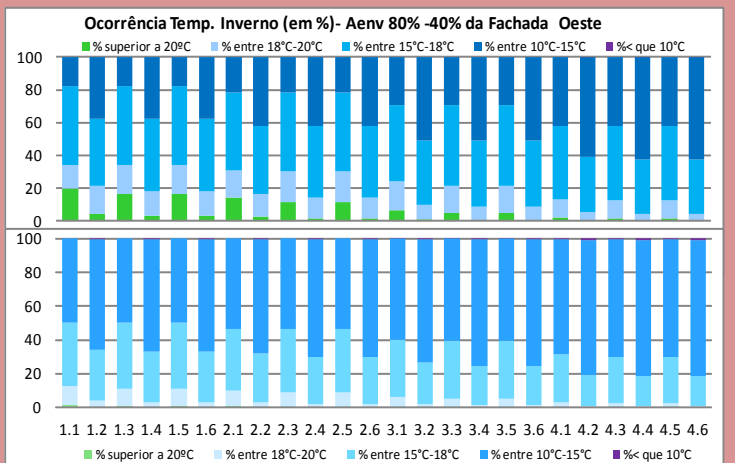
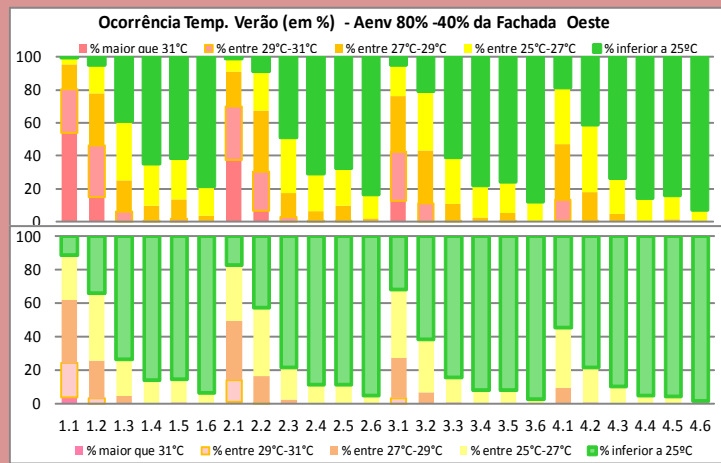
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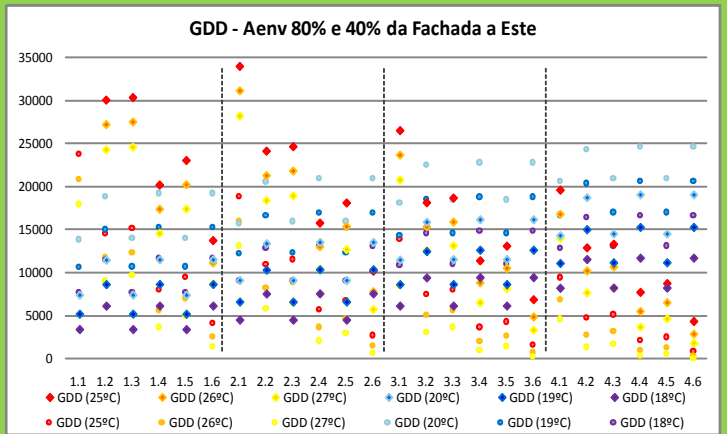
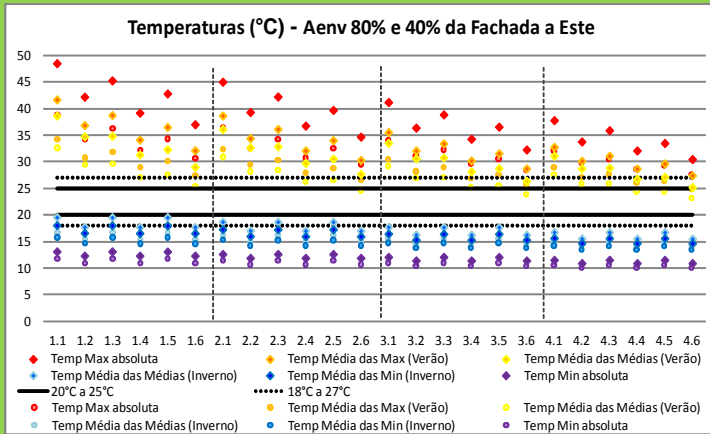
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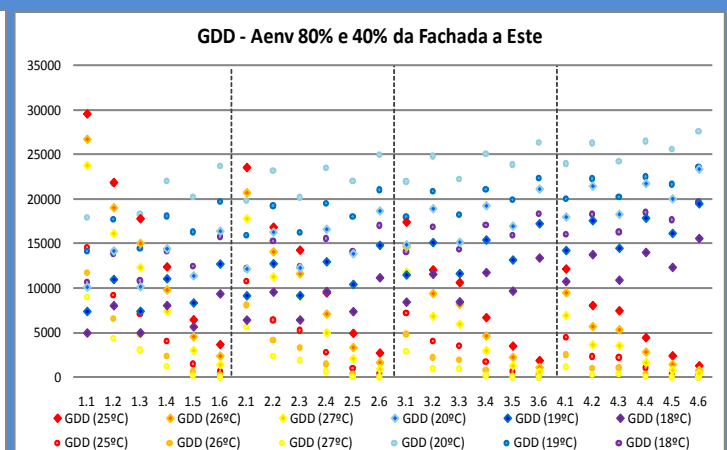
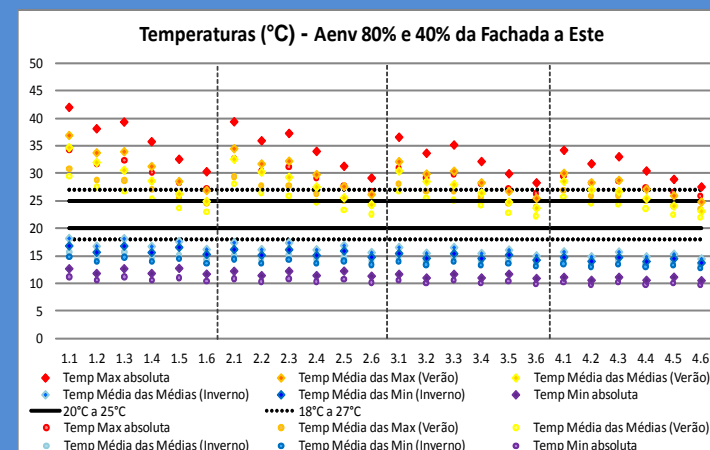


Modelo1 Intermédio: 80% e 40% Fachada Envidraçada a Este

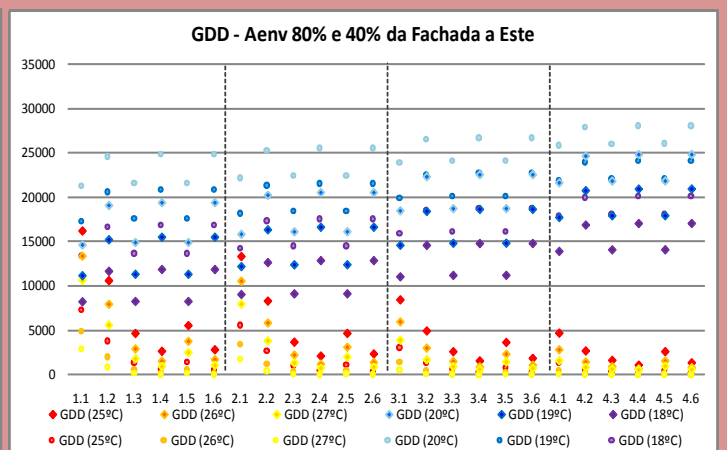
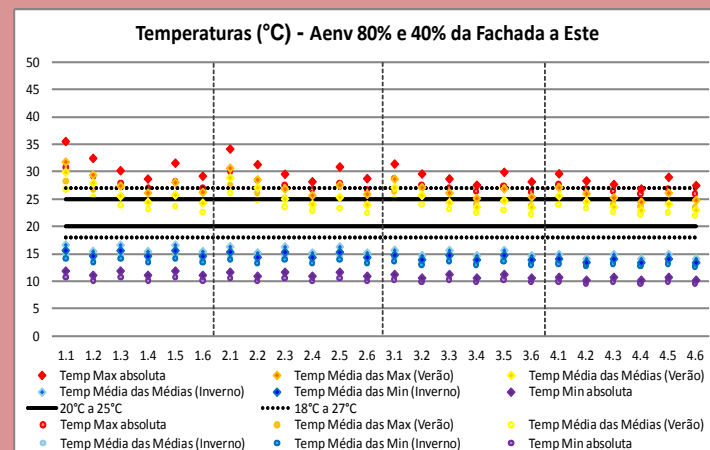
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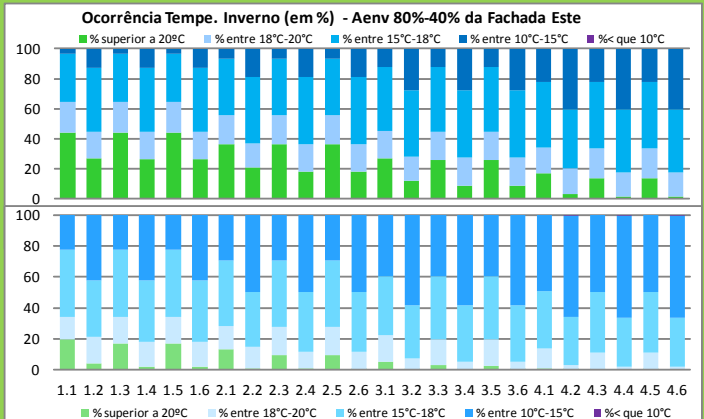
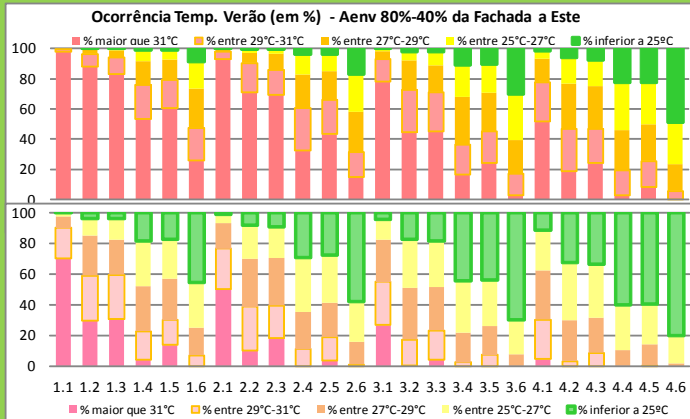
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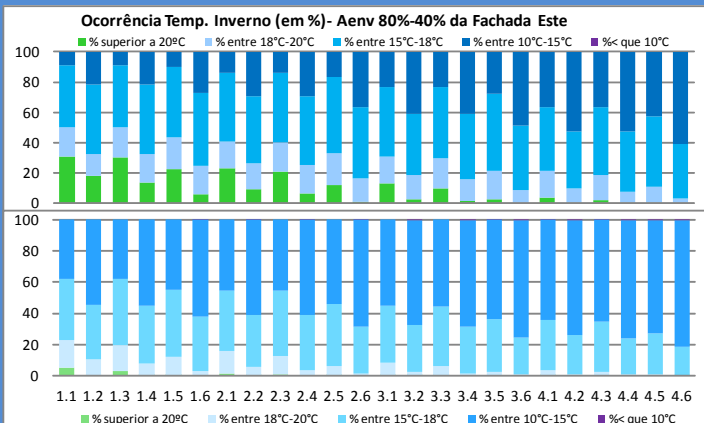
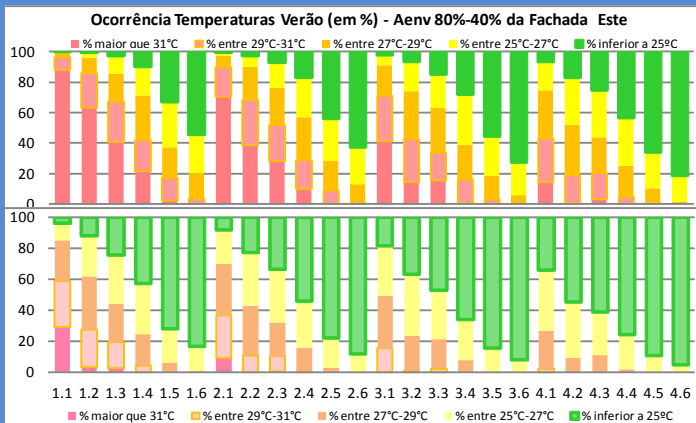
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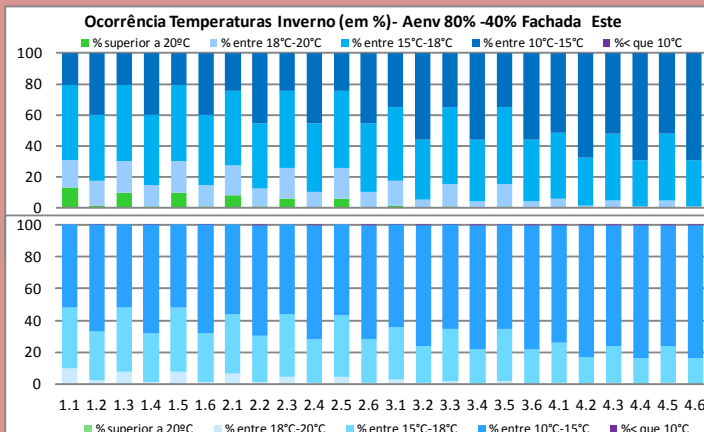
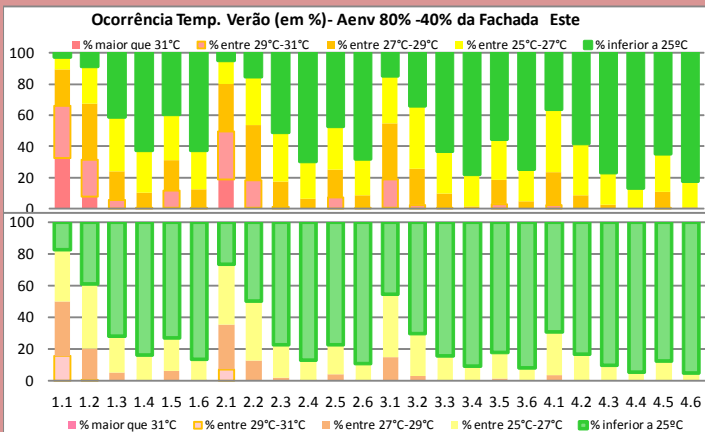
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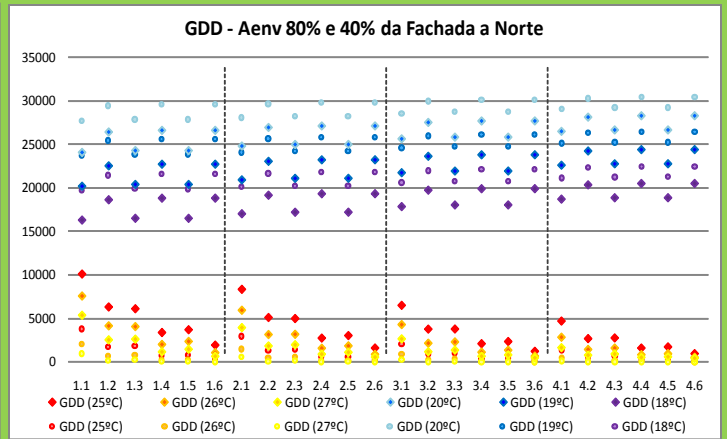
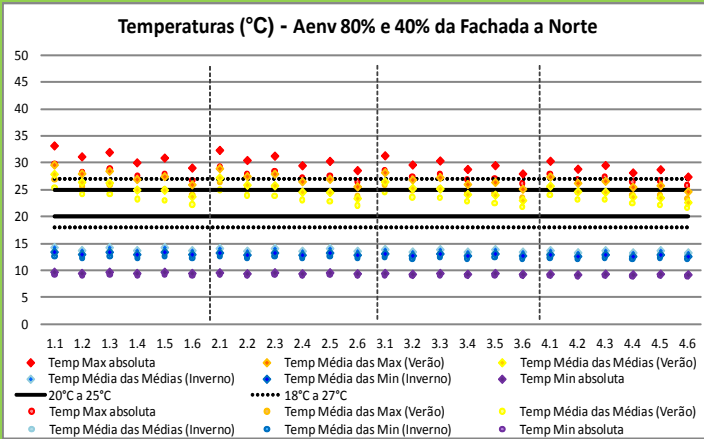


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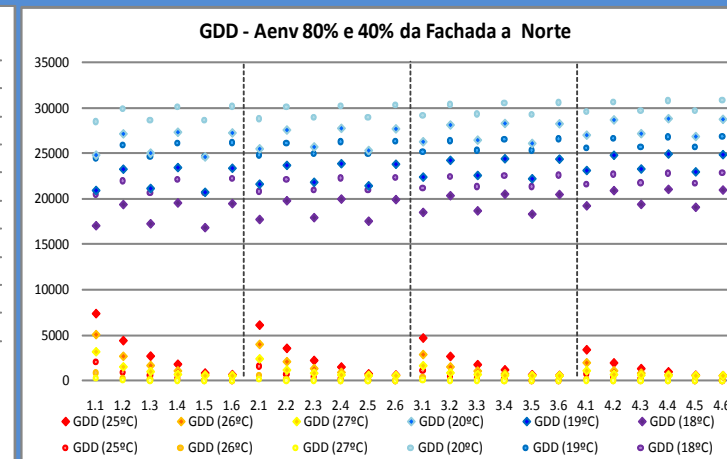
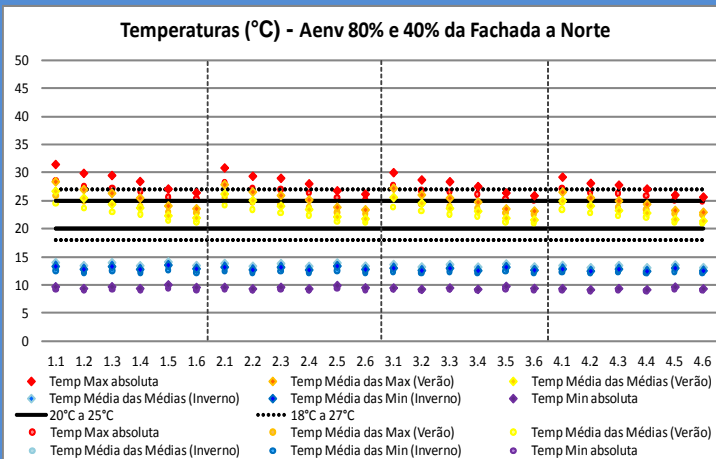


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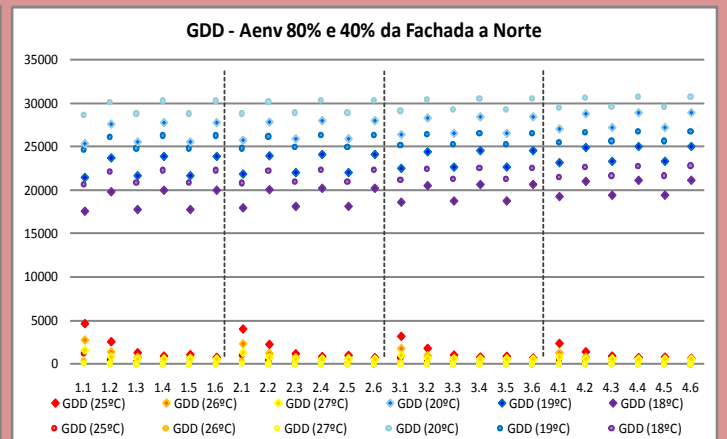
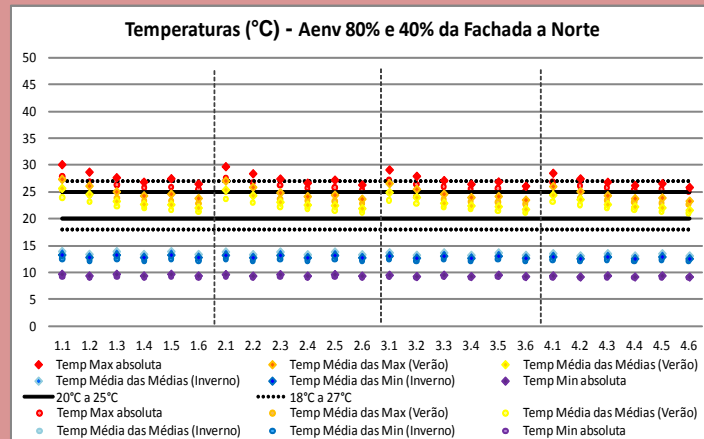
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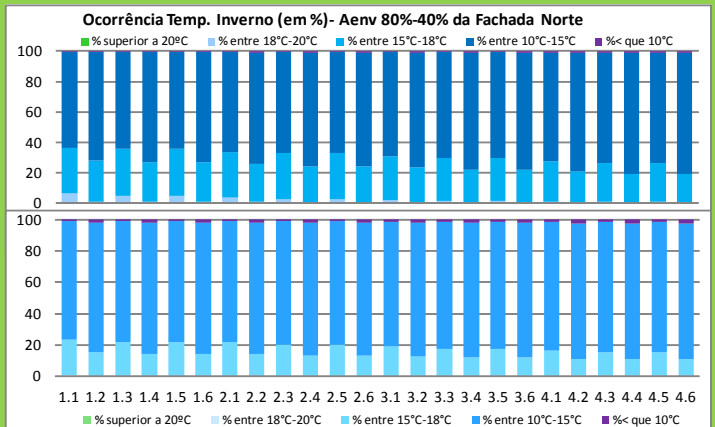
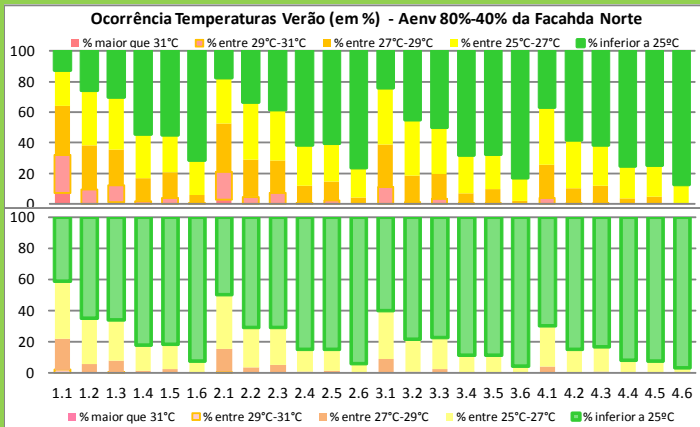
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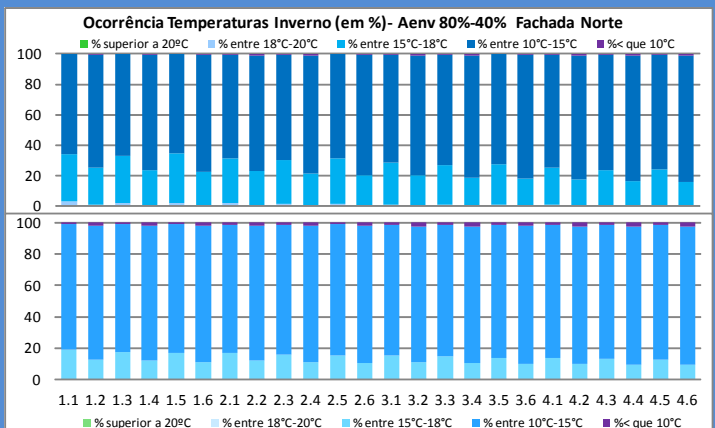
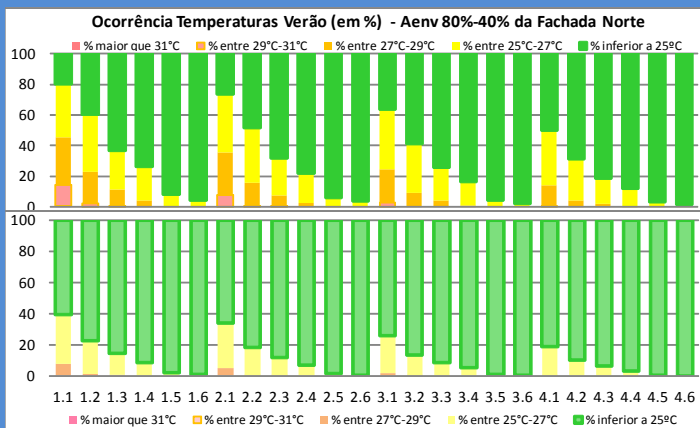
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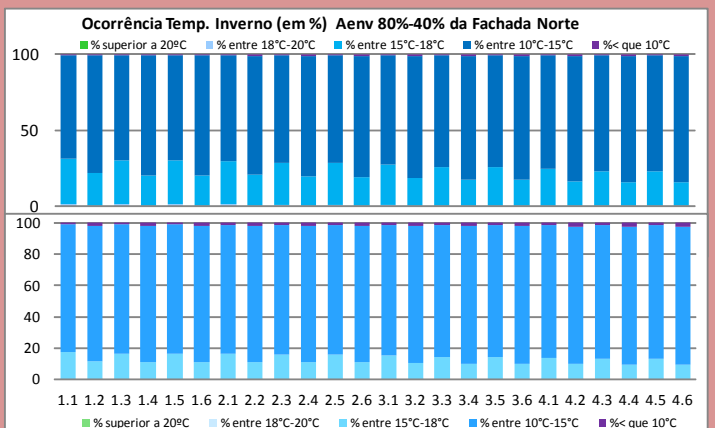
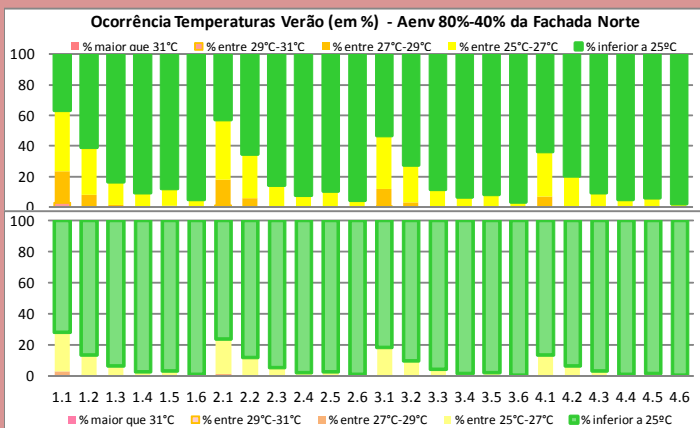
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Com Protecção Solar Interior Junto ao Envidraçado

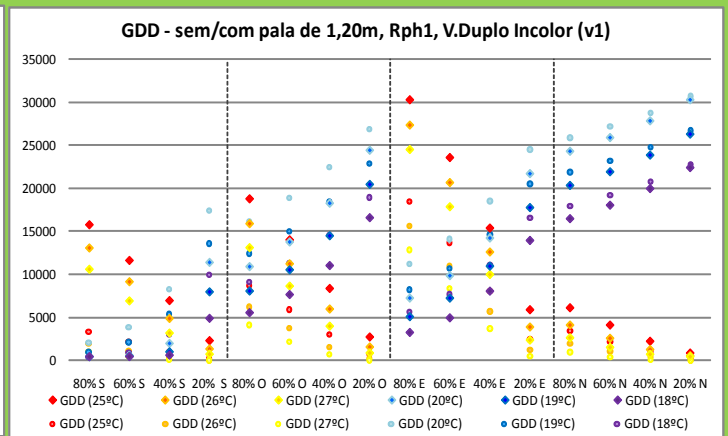
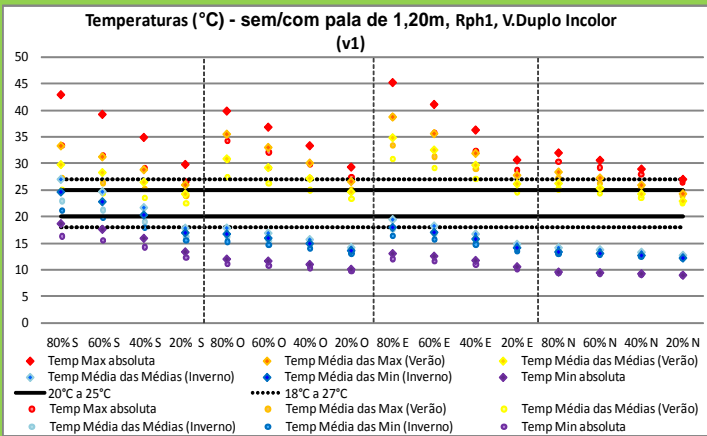


Com Protecção Solar Exterior Junto ao Envidraçado

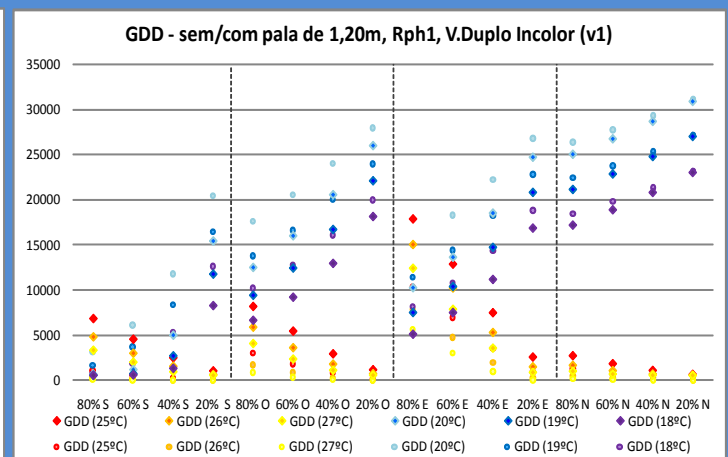
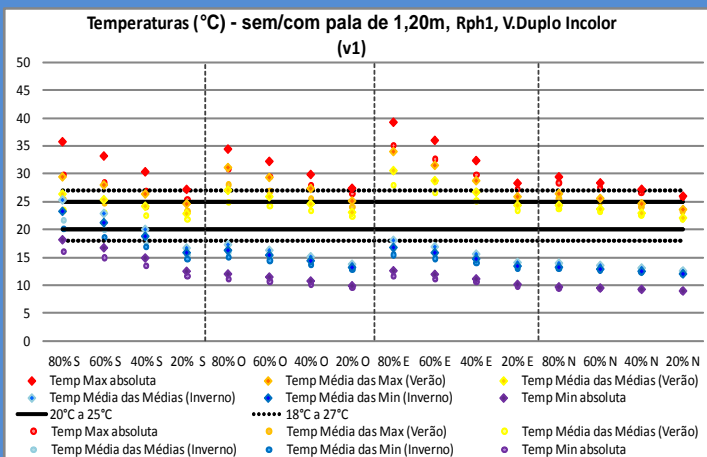


**Modelo1 Intermédio: Sem e Com Palas de 1,20m**

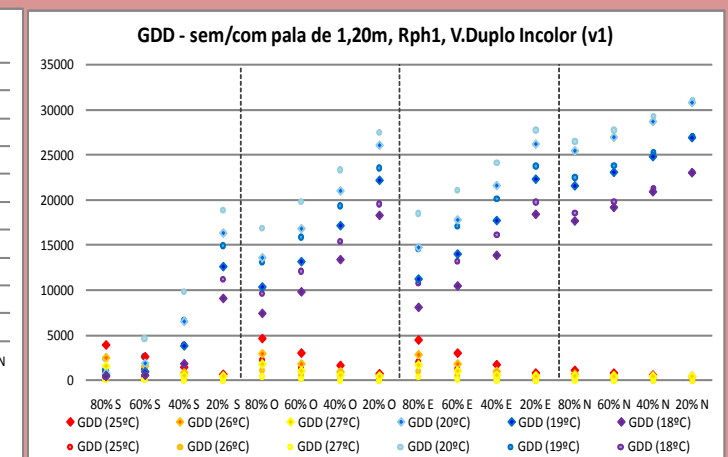
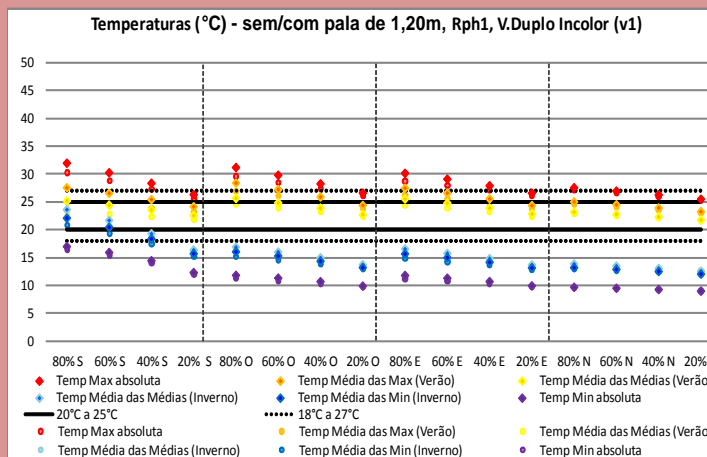
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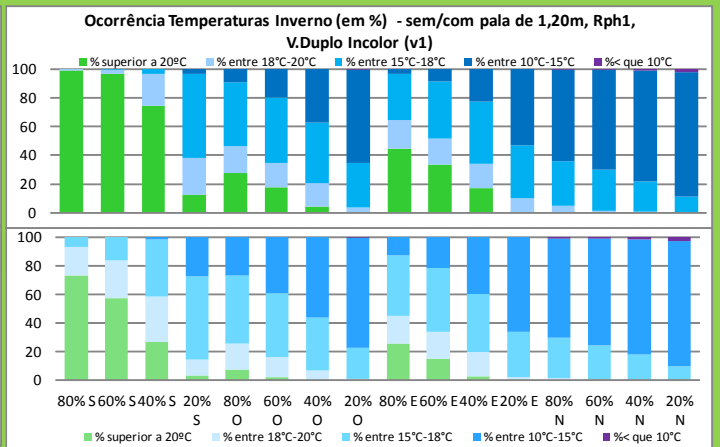
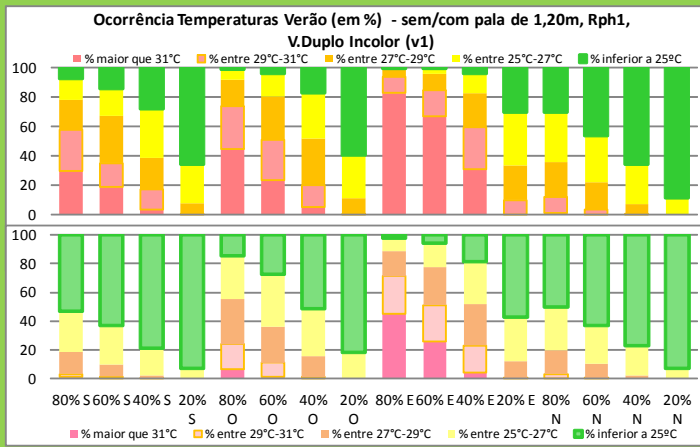
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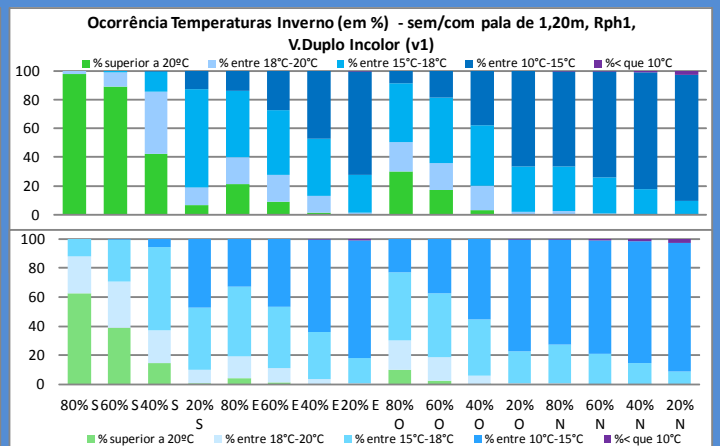
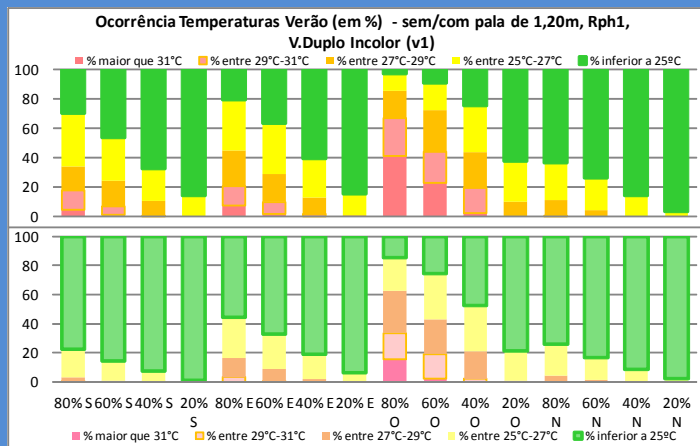
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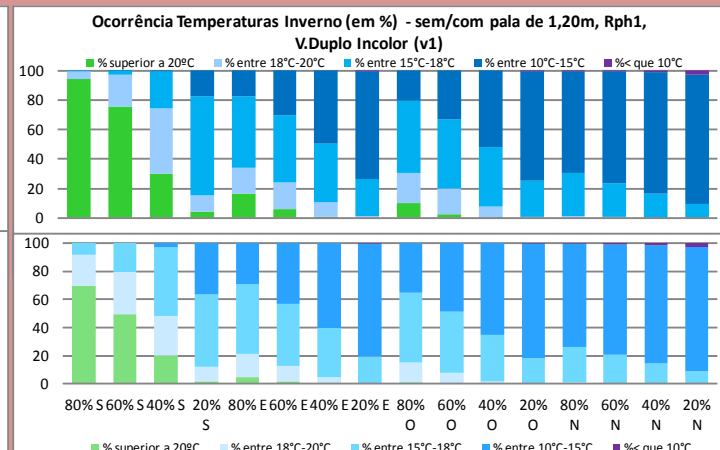
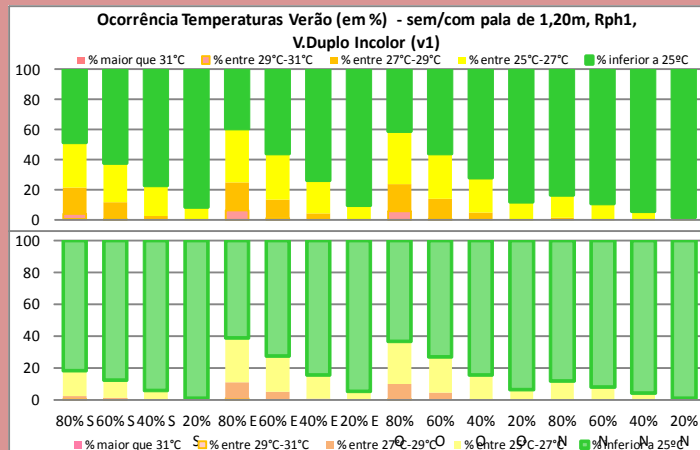
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Com Protecção Solar Interior Junto ao Envidraçado

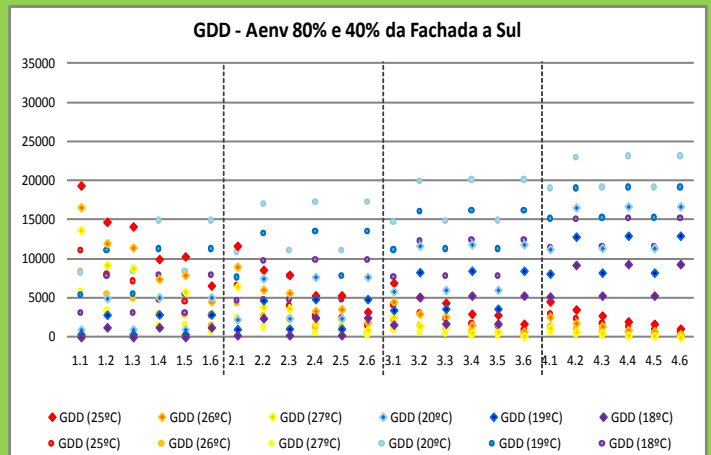
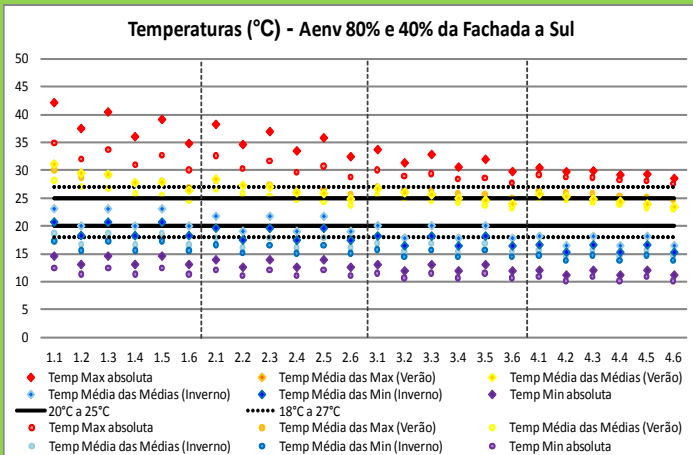


Com Protecção Solar Exterior Junto ao Envidraçado

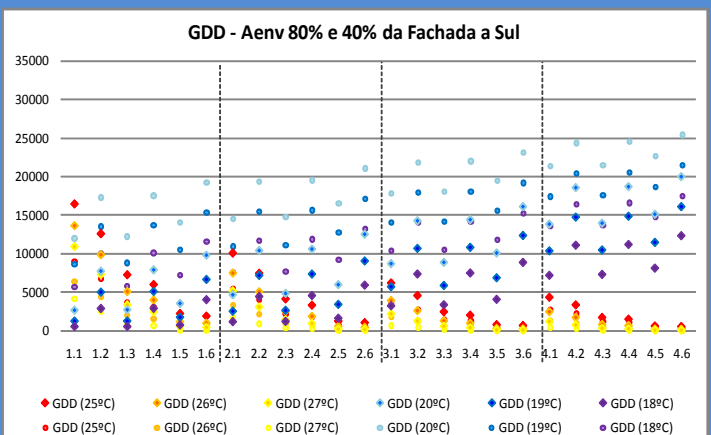
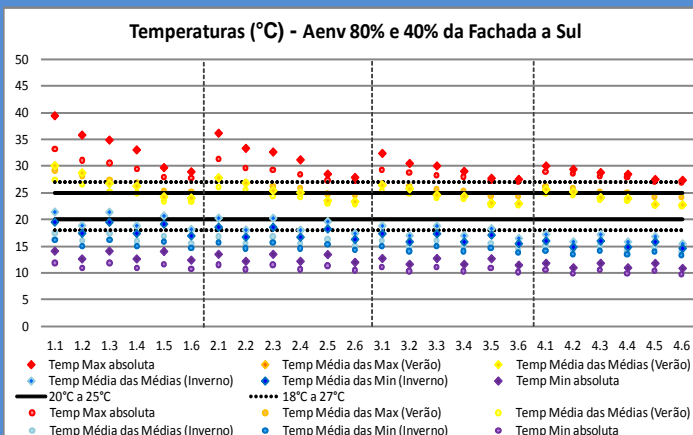


Modelo1 Cobertura: 80% e 40% Fachada Envidraçada a Sul - Massa Térmica<sup>2</sup>, isolamento 30mm

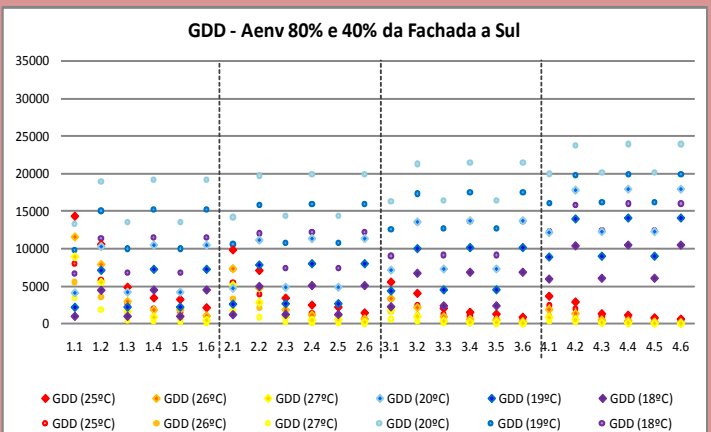
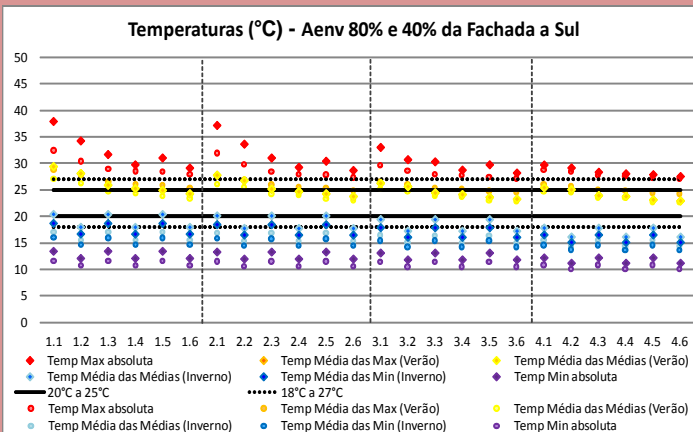
Sem Protecção Solar Junto ao Envidraçado



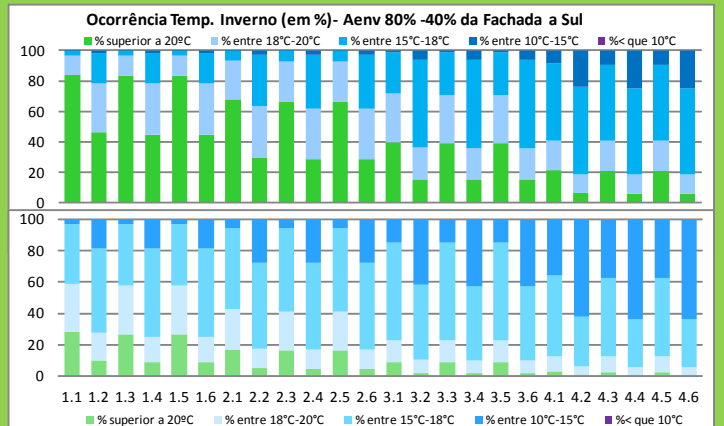
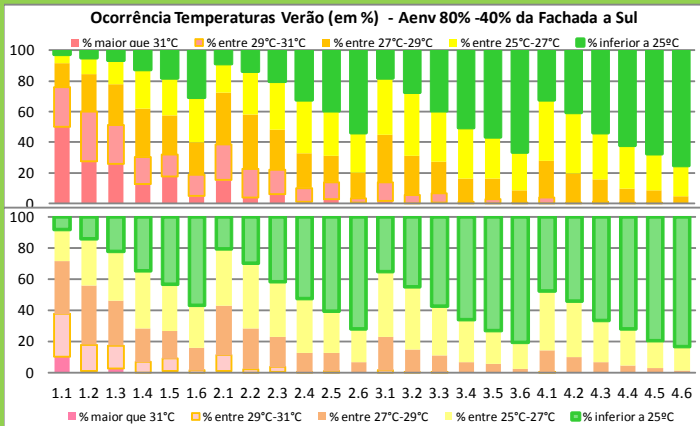
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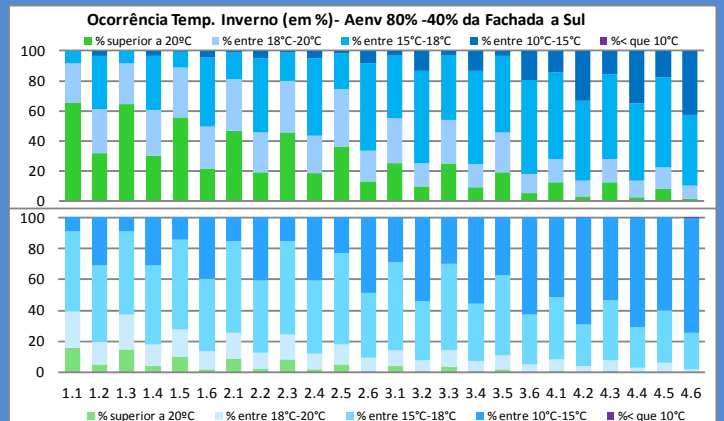
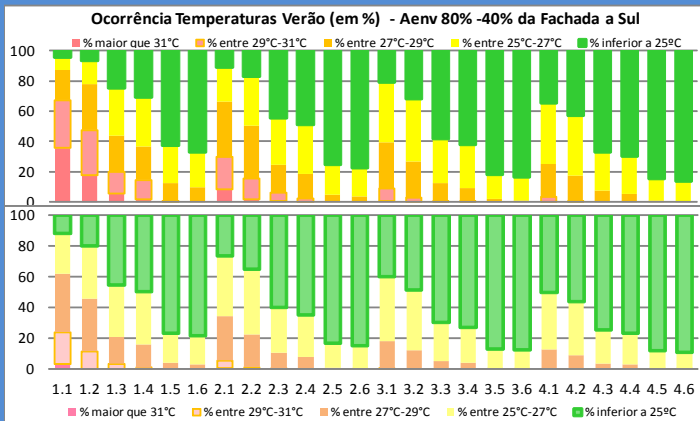
Com Protecção Solar Exterior Junto ao Envidraçado



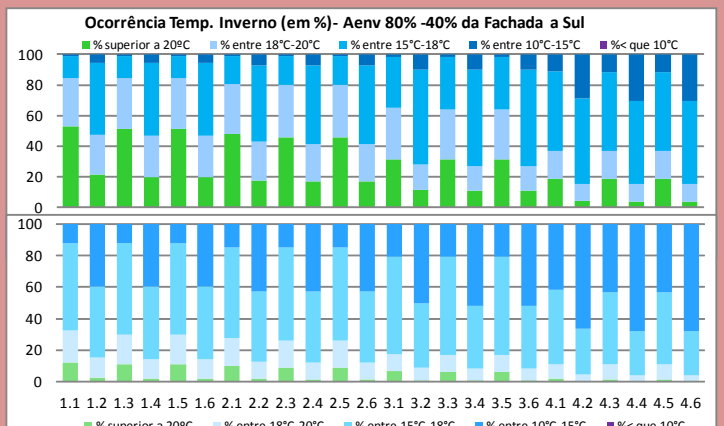
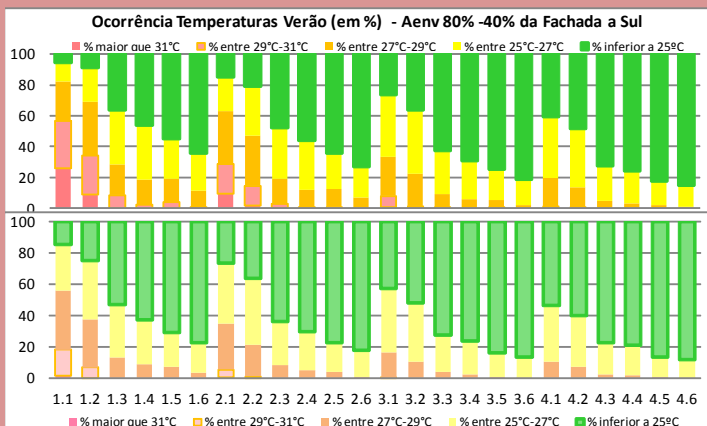
Sem Protecção Solar Junto ao Envidraçado



Com Protecção Solar Interior Junto ao Envidraçado



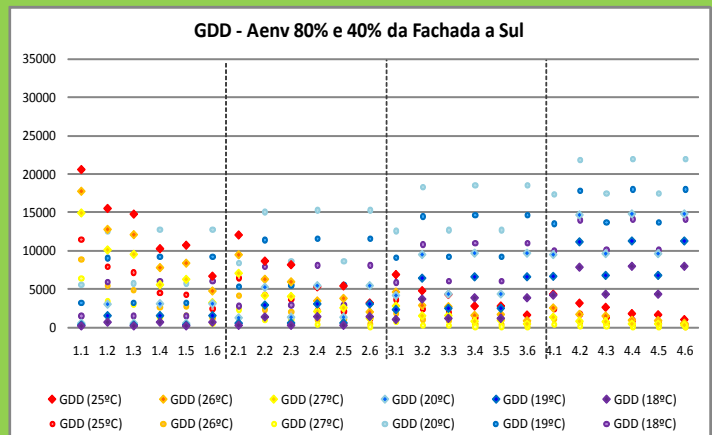
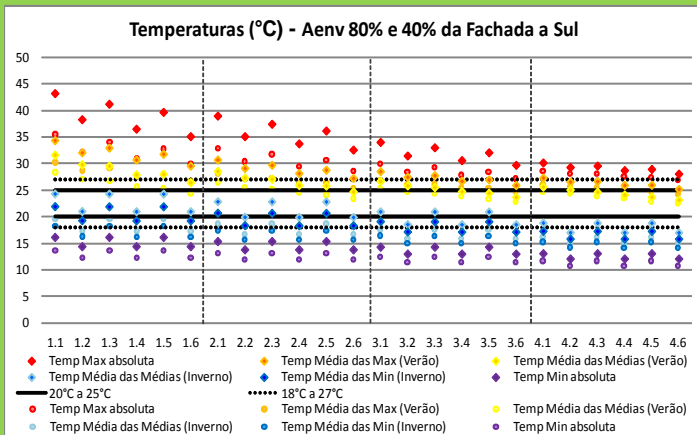
Com Protecção Solar Exterior Junto ao Envidraçado



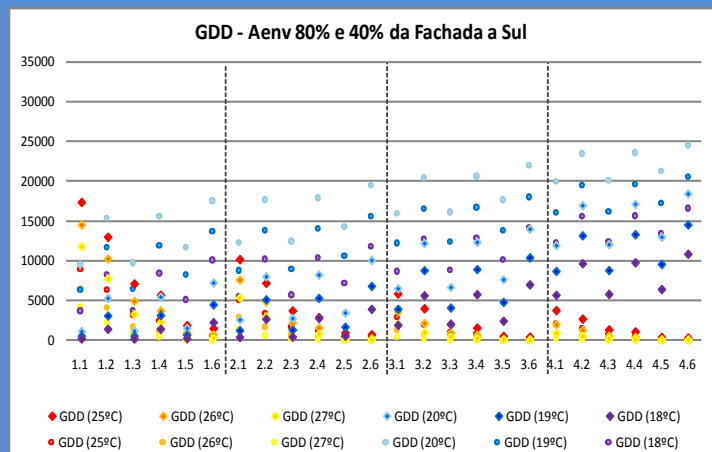
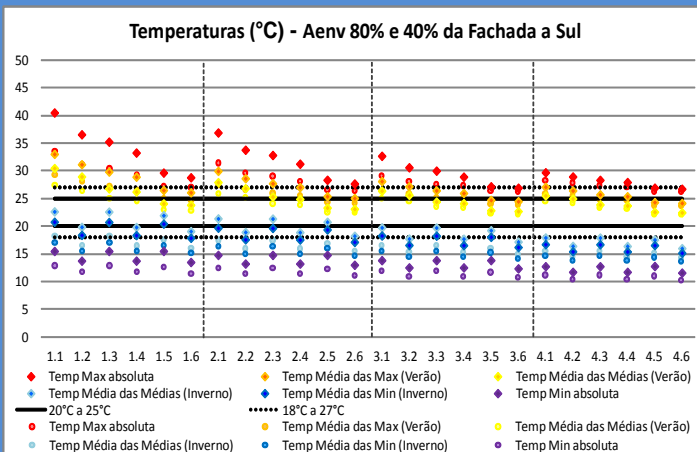


**Modelo1 Cobertura: 80% e 40% Fachada Envidraçada a Sul - Massa Térmica2, isolamento 60mm**

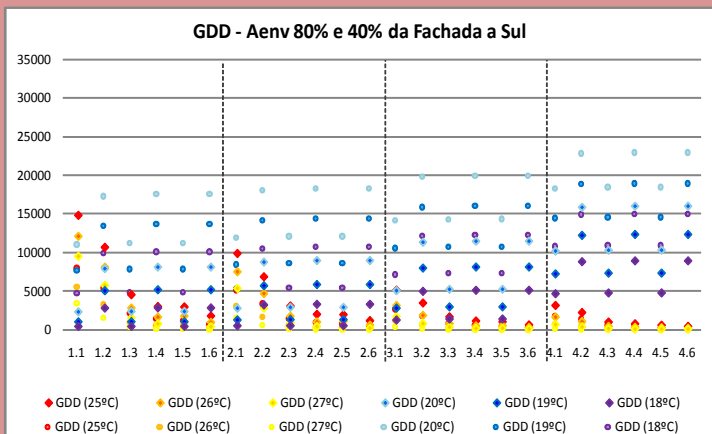
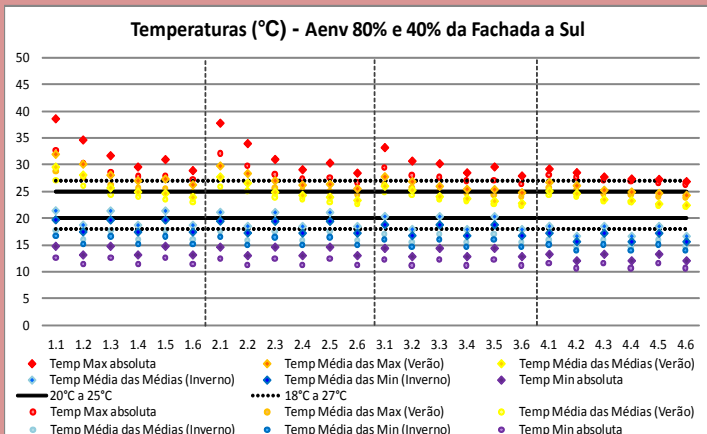
**Sem Protecção Solar Junto ao Envidraçado**



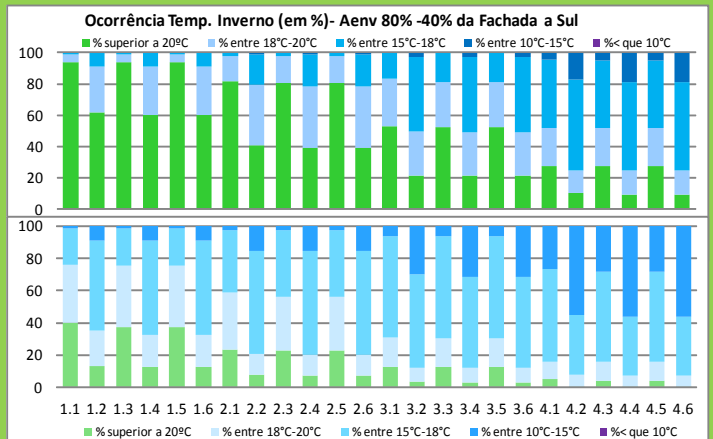
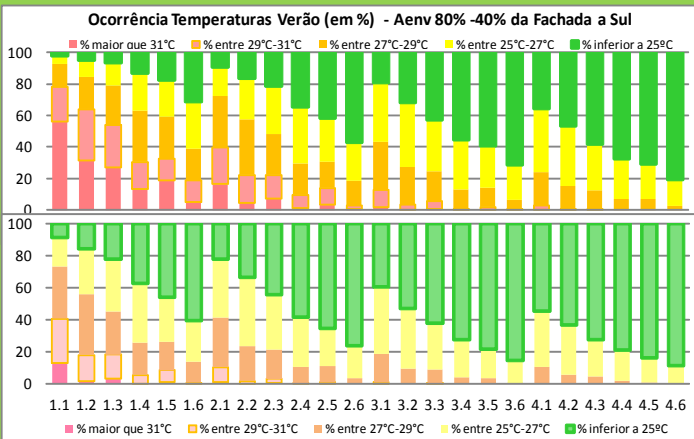
**Com Protecção Solar Interior Junto ao Envidraçado**



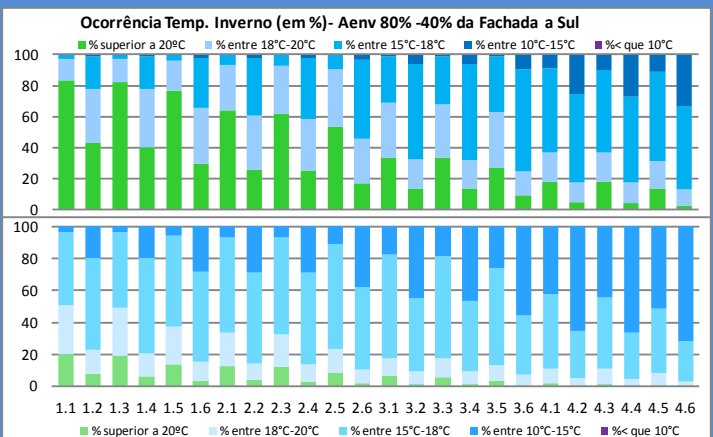
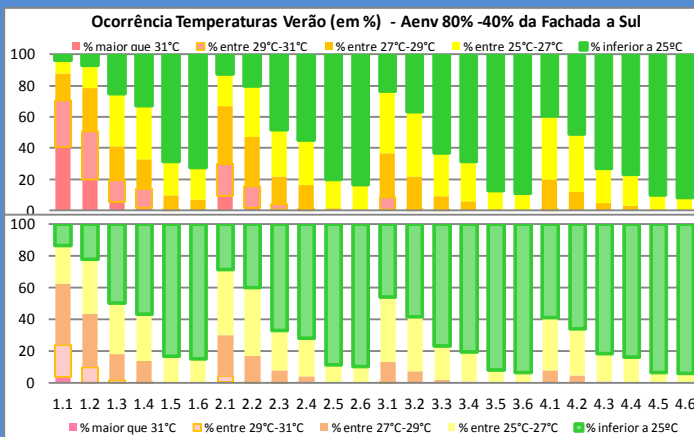
**Com Protecção Solar Exterior Junto ao Envidraçado**



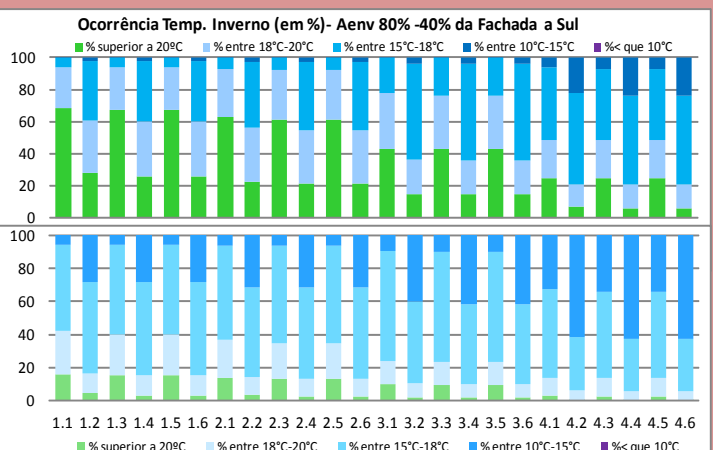
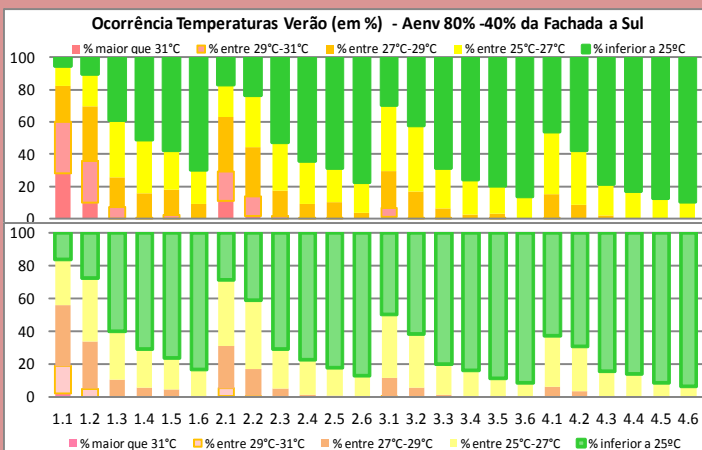
Sem Protecção Solar Junto ao Envidraçado



Com Protecção Solar Interior Junto ao Envidraçado

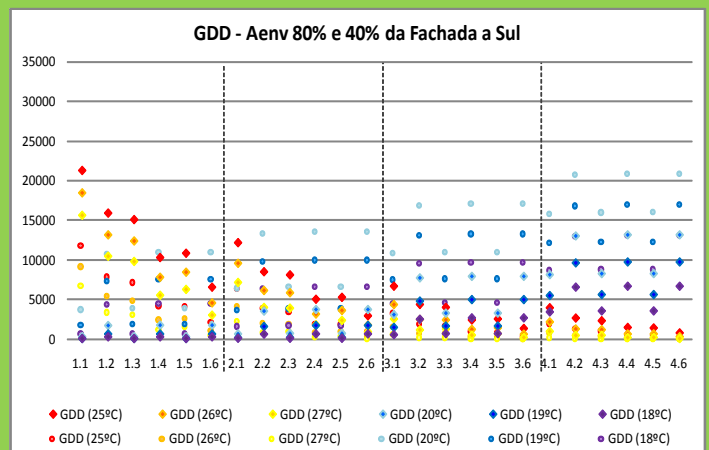
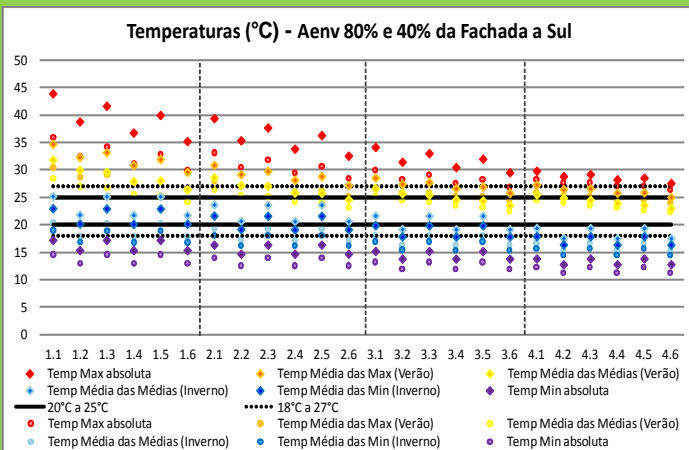


Com Protecção Solar Exterior Junto ao Envidraçado

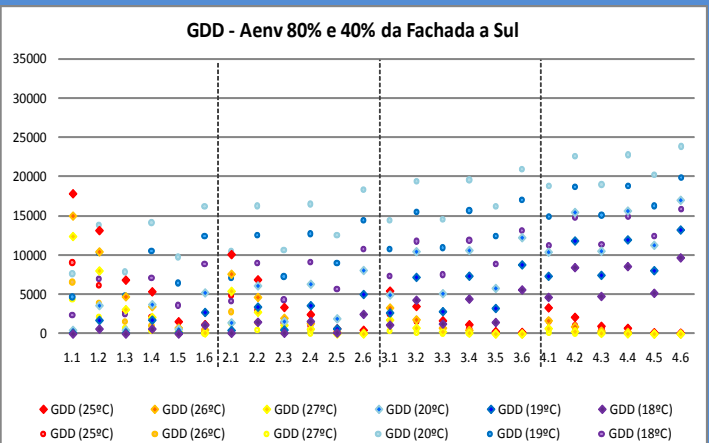
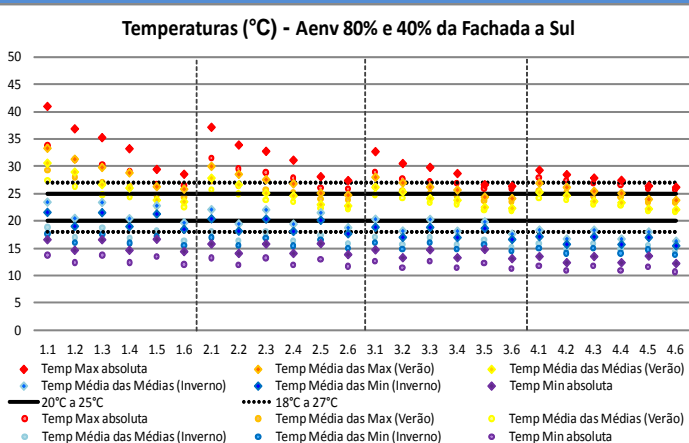


**Modelo1 Cobertura: 80% e 40% Fachada Envidraçada a Sul - Massa Térmica2, isolamento 100mm**

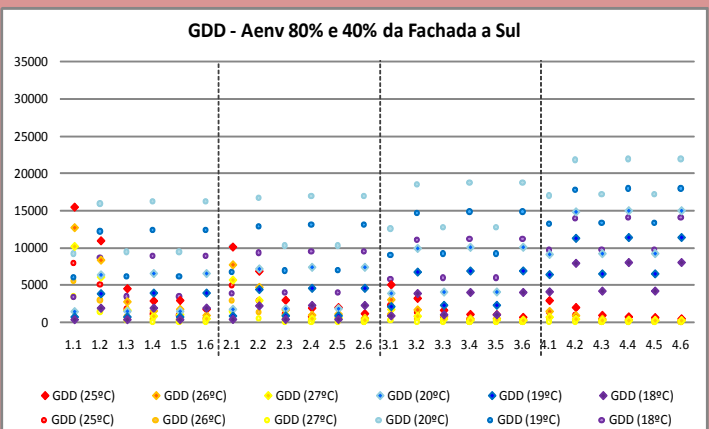
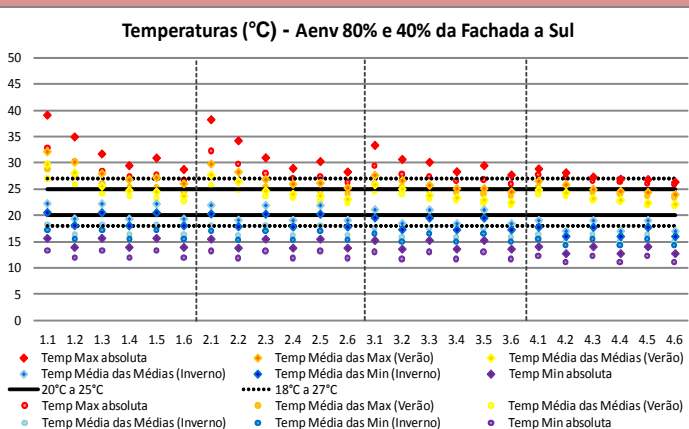
**Sem Protecção Solar Junto ao Envidraçado**



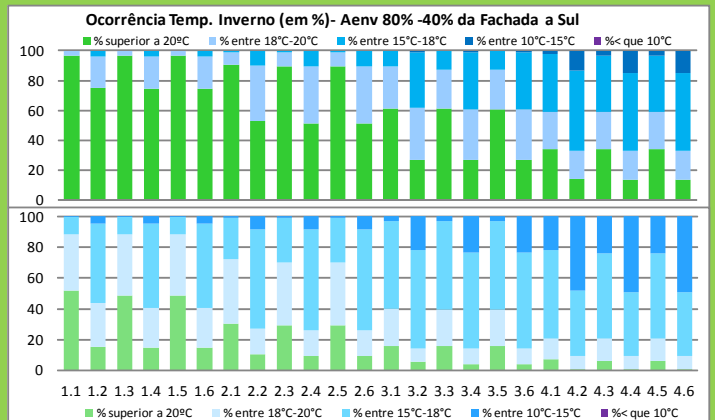
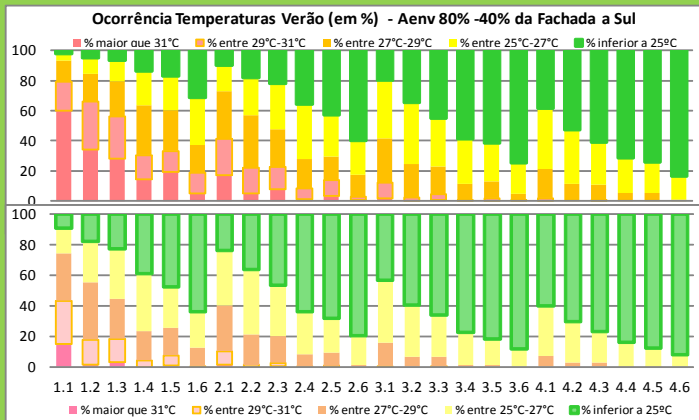
**Com Protecção Solar Interior Junto ao Envidraçado**



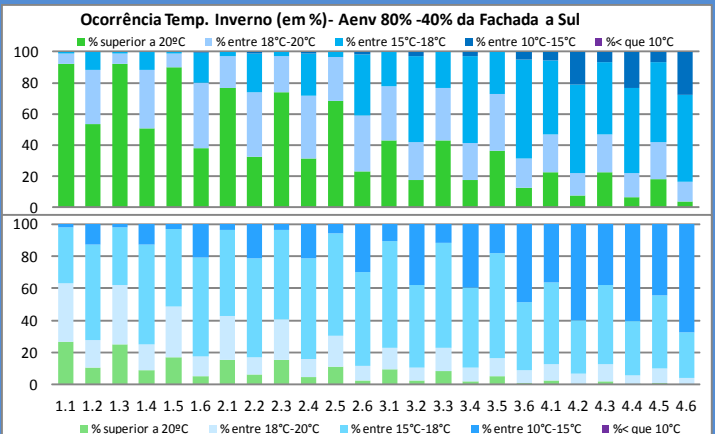
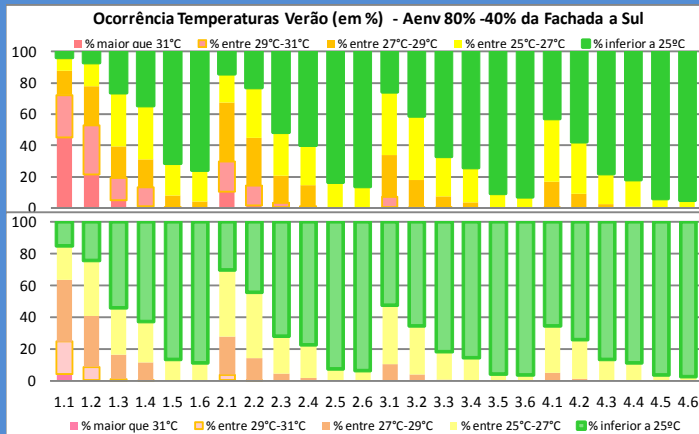
**Com Protecção Solar Exterior Junto ao Envidraçado**



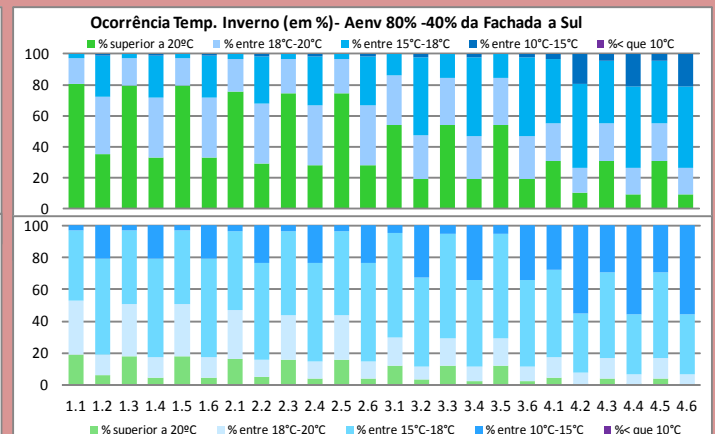
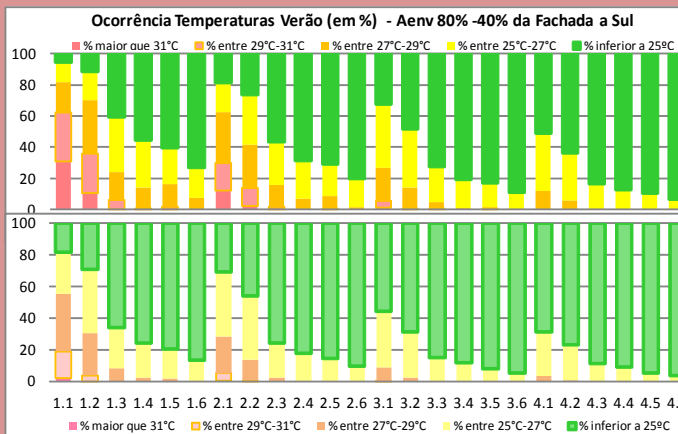
Sem Protecção Solar Junto ao Envidraçado



Com Protecção Solar Interior Junto ao Envidraçado

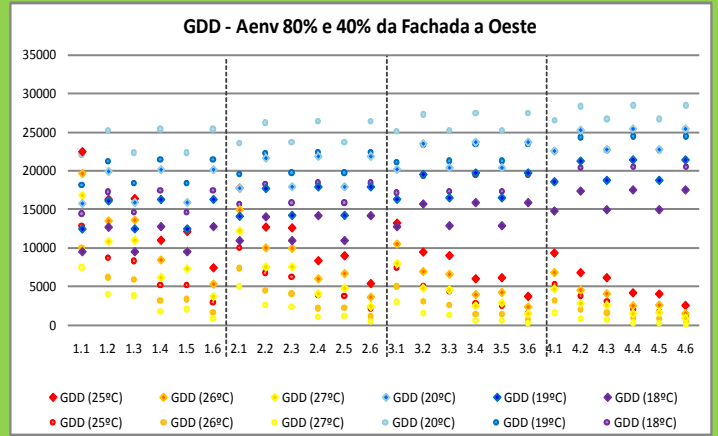
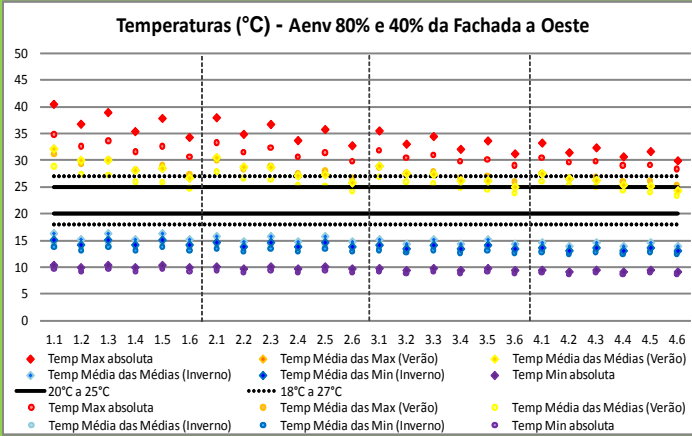


Com Protecção Solar Exterior Junto ao Envidraçado

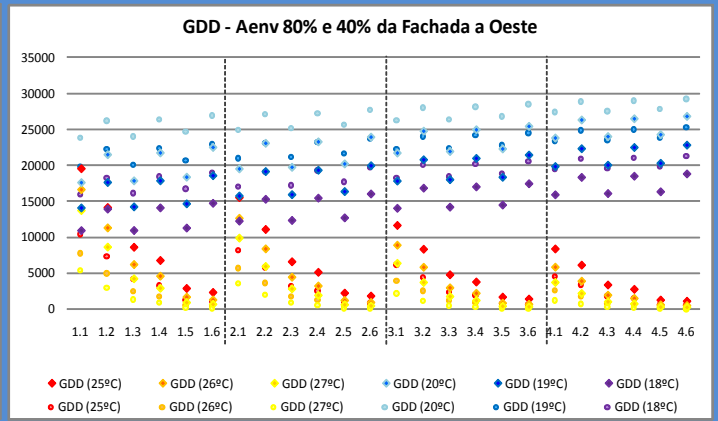
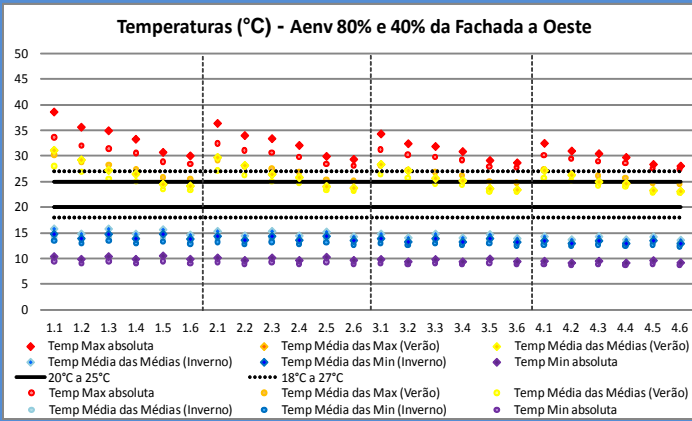


**Modelo1 Cobertura: 80% e 40% Fachada Envidraçada a Oeste - Massa Térmica2, isolamento 30mm**

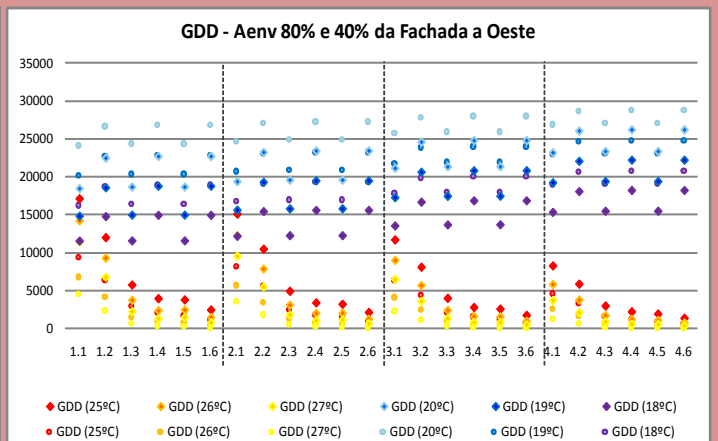
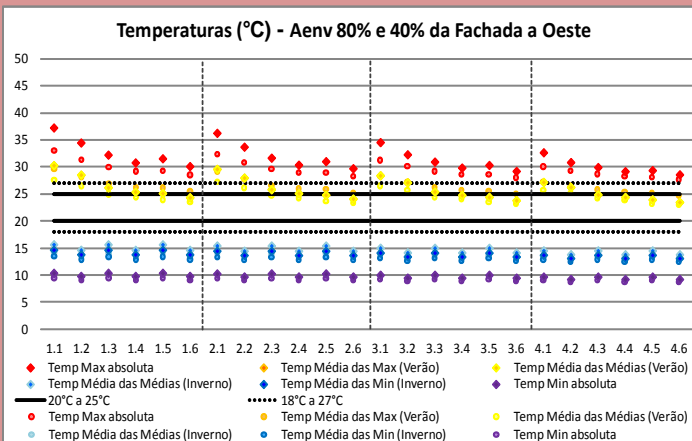
**Sem Protecção Solar Junto ao Envidraçado**



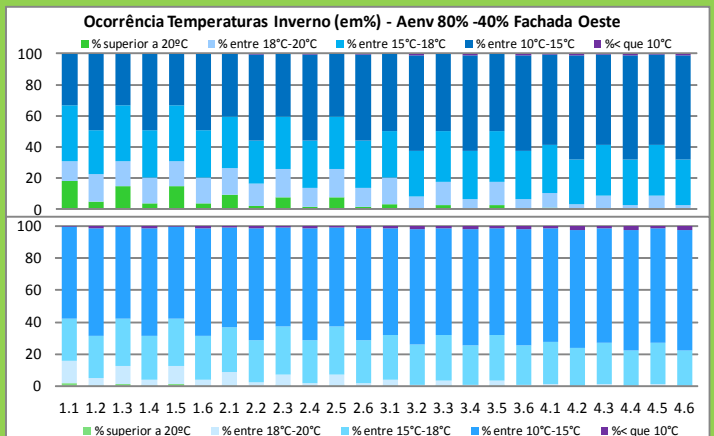
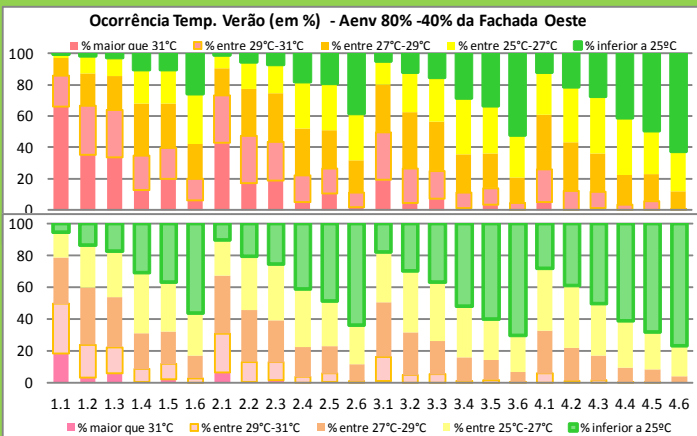
**Com Protecção Solar Interior Junto ao Envidraçado**



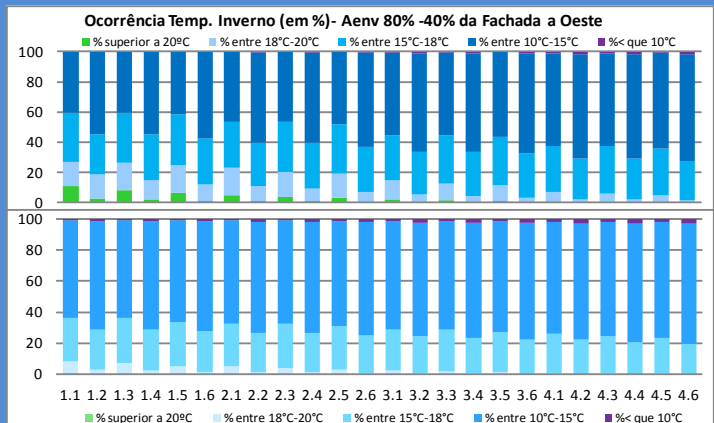
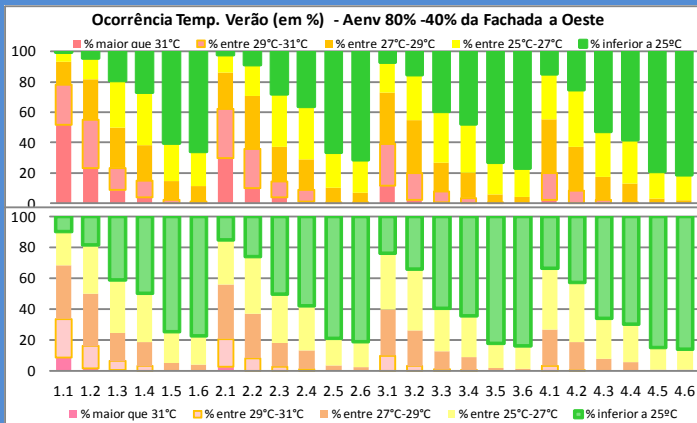
**Com Protecção Solar Exterior Junto ao Envidraçado**



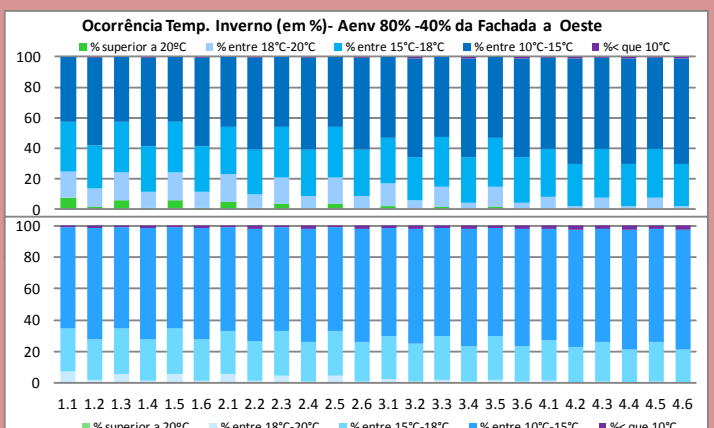
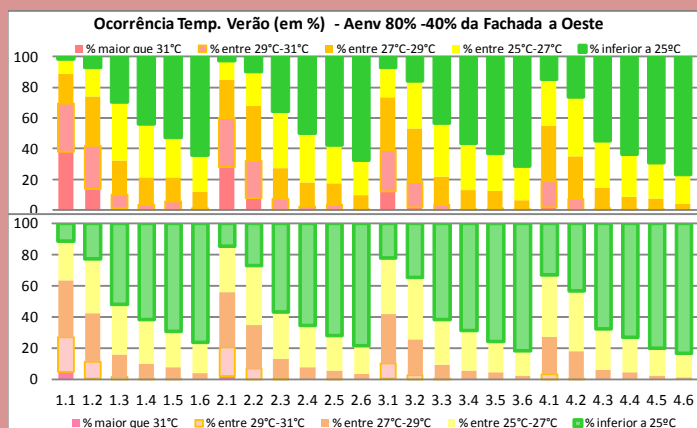
Sem Protecção Solar Junto ao Envidraçado



Com Protecção Solar Interior Junto ao Envidraçado

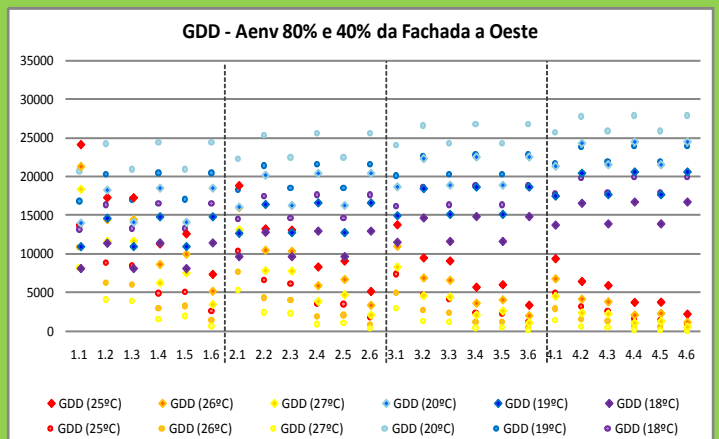
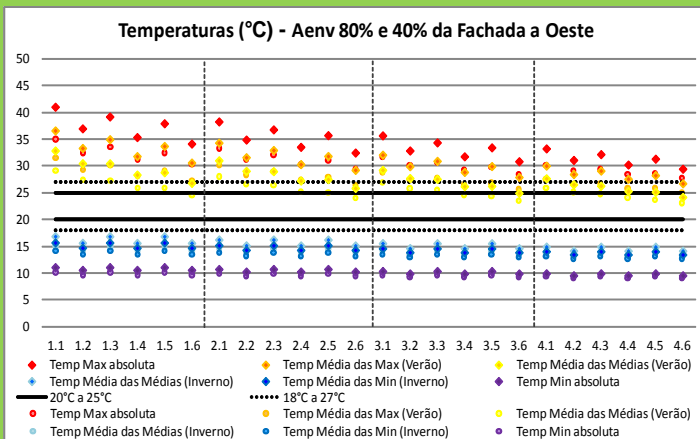


Com Protecção Solar Exterior Junto ao Envidraçado

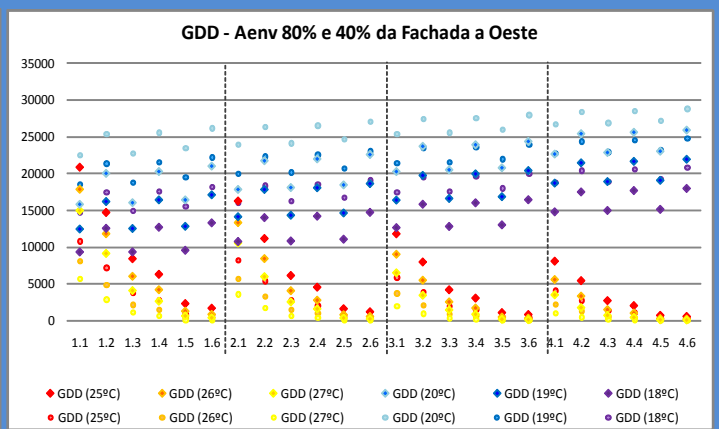
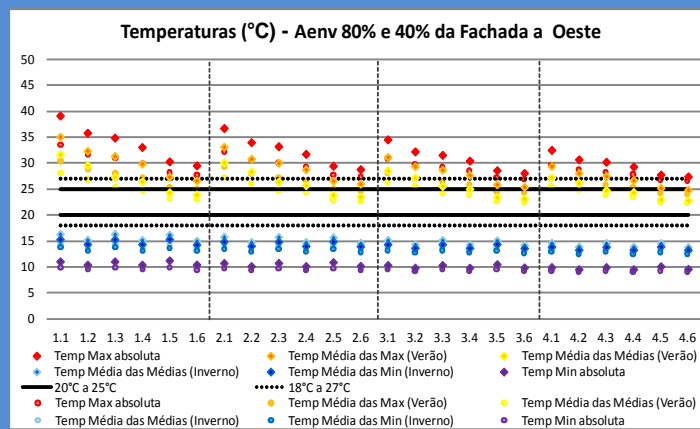


**Modelo1 Cobertura: 80% e 40% Fachada Envidraçada a Oeste - Massa Térmica2, isolamento 60mm**

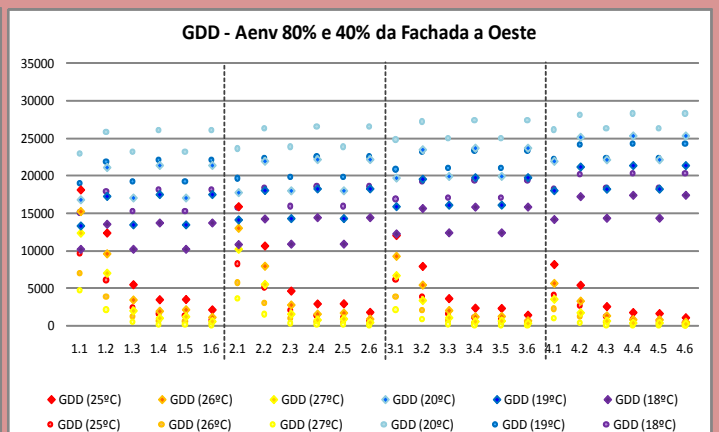
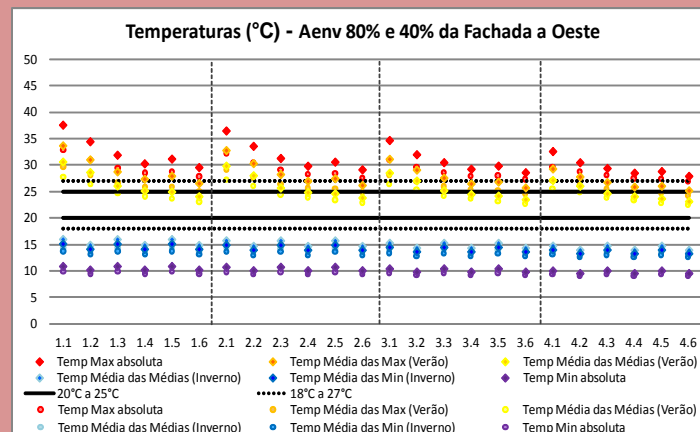
**Sem Protecção Solar Junto ao Envidraçado**



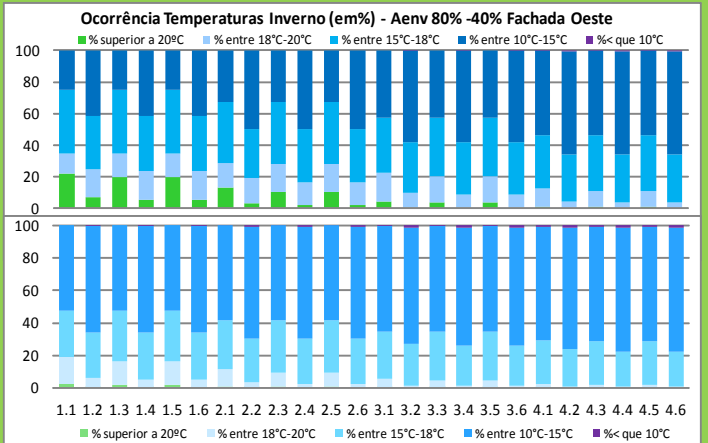
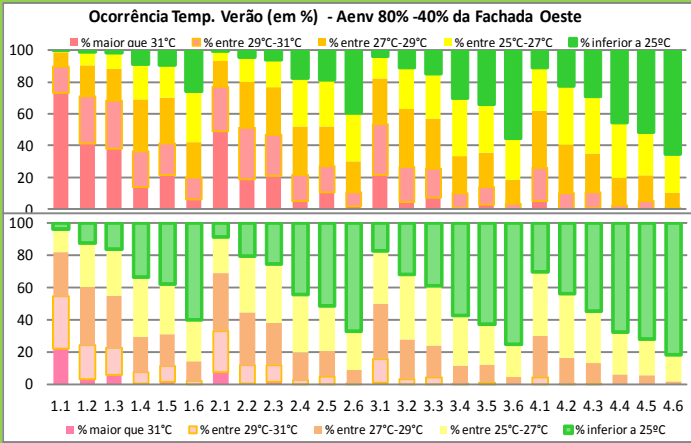
**Com Protecção Solar Interior Junto ao Envidraçado**



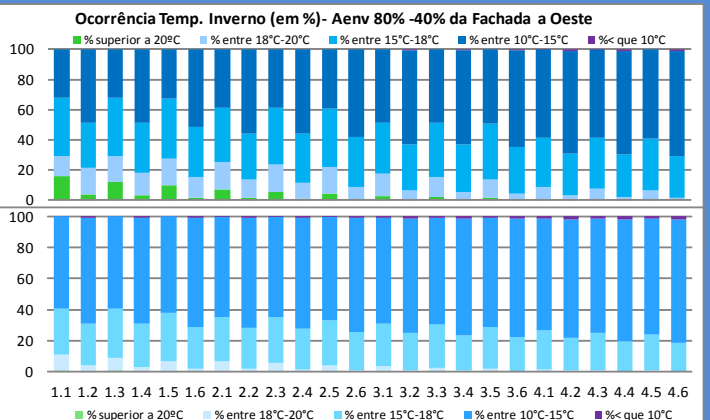
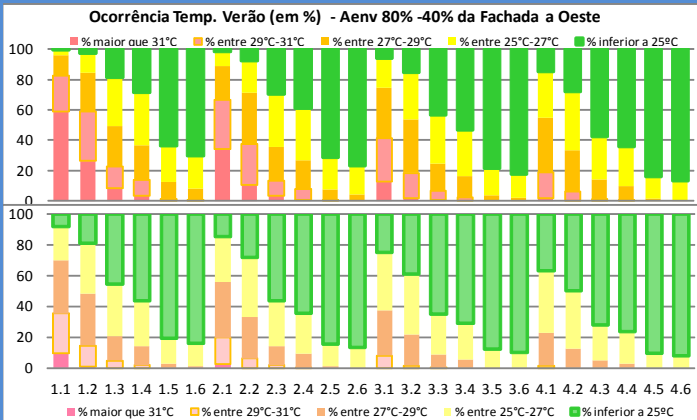
**Com Protecção Solar Exterior Junto ao Envidraçado**



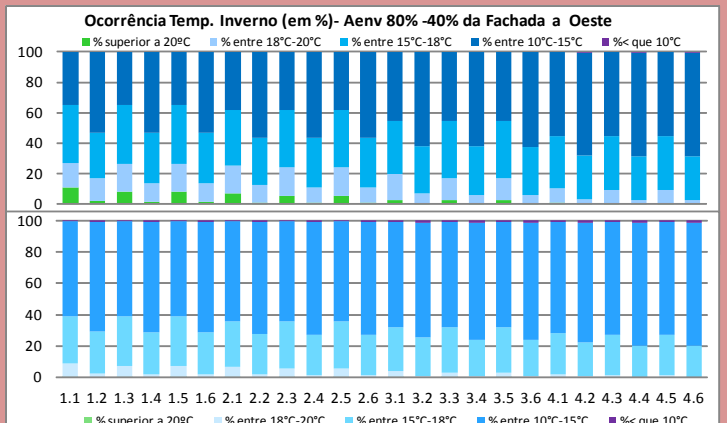
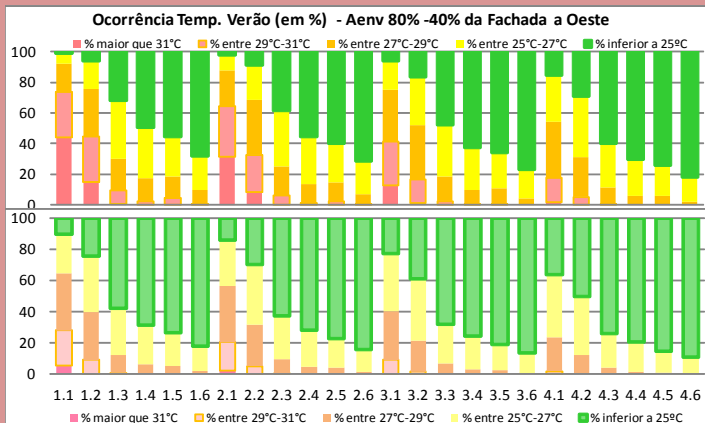
Sem Protecção Solar Junto ao Envidraçado



Com Protecção Solar Interior Junto ao Envidraçado



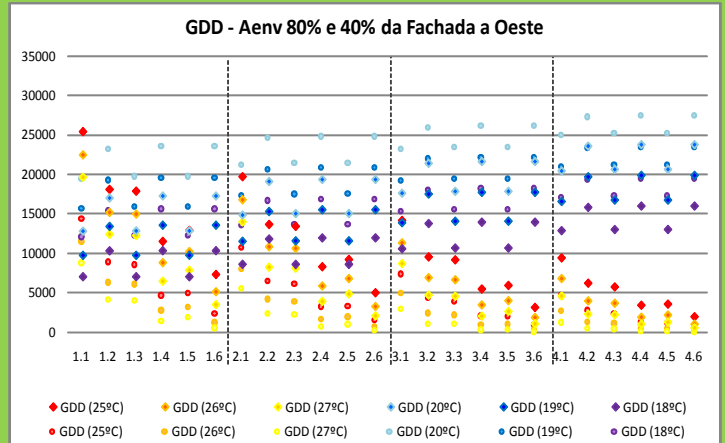
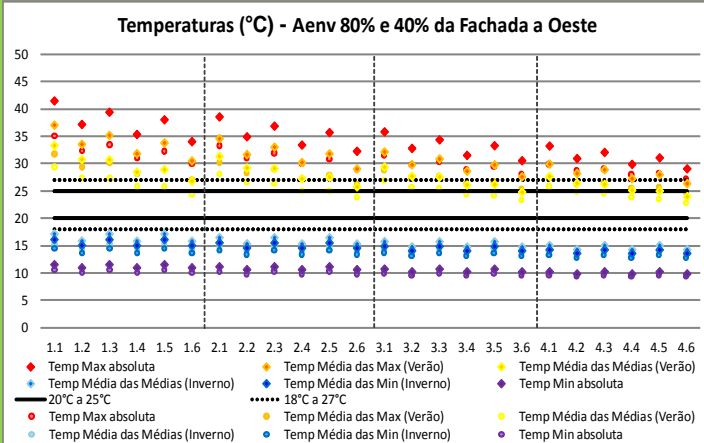
Com Protecção Solar Exterior Junto ao Envidraçado



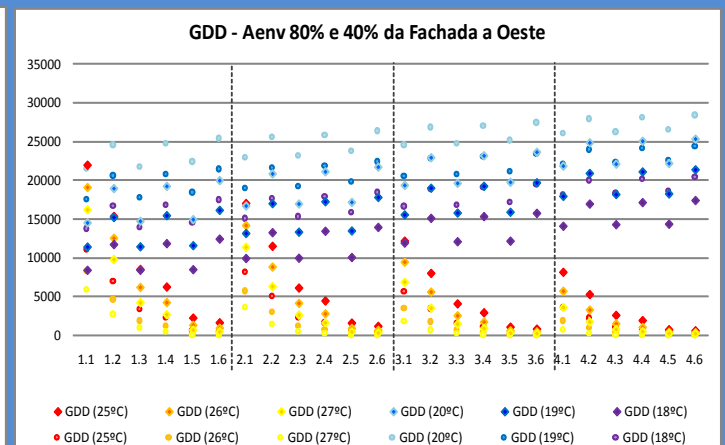
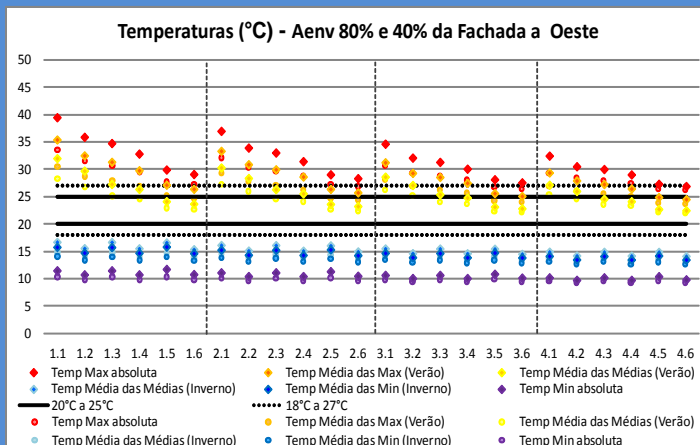


Modelo1 Cobertura: 80% e 40% Fachada Envidraçada a Oeste - Massa Térmica2, isolamento 100mm

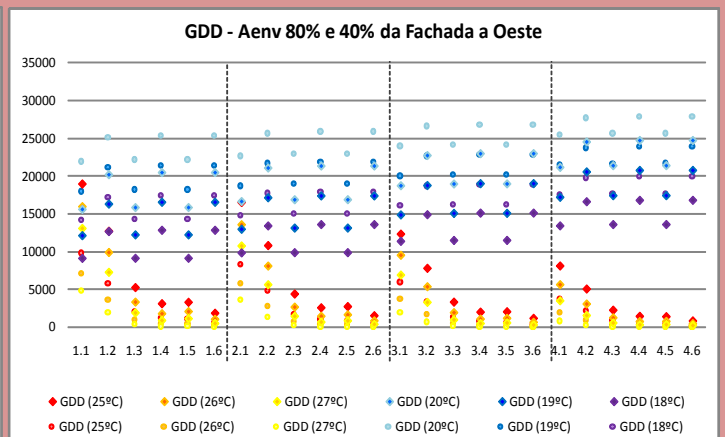
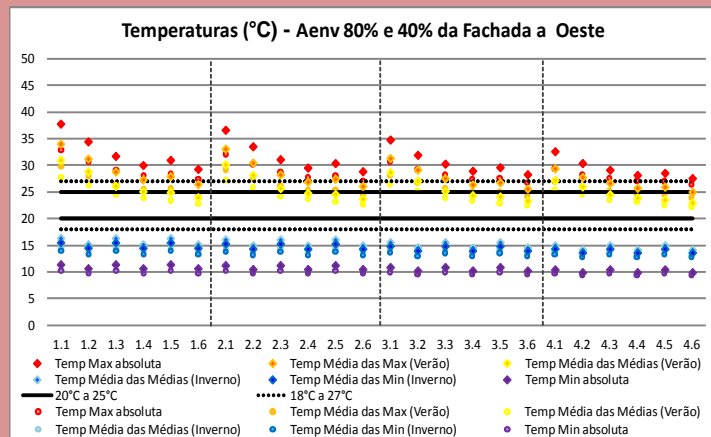
Sem Protecção Solar Junto ao Envidraçado



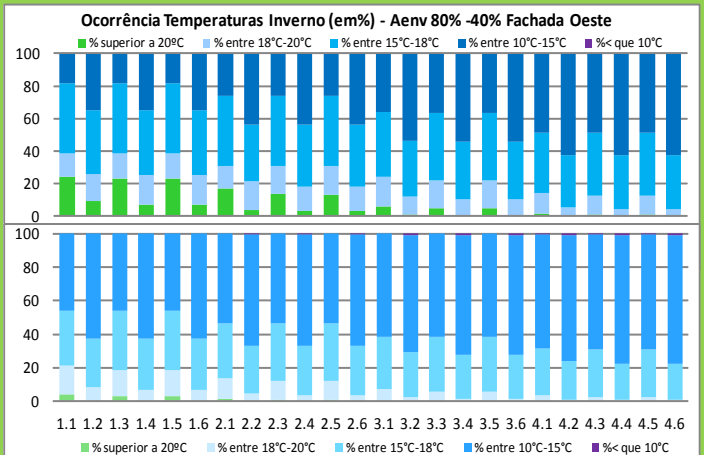
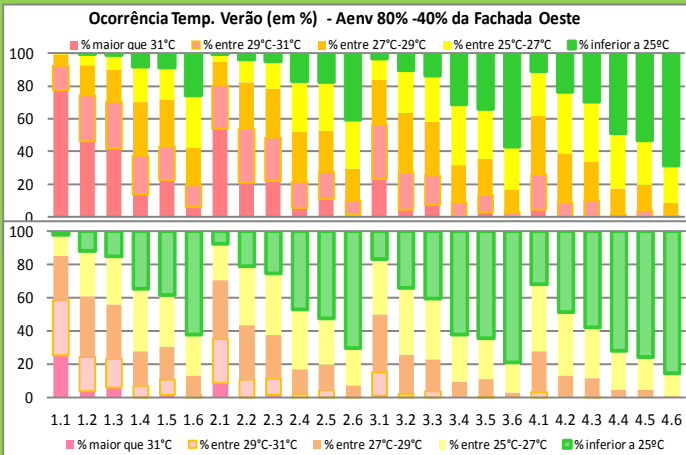
Com Protecção Solar Interior Junto ao Envidraçado



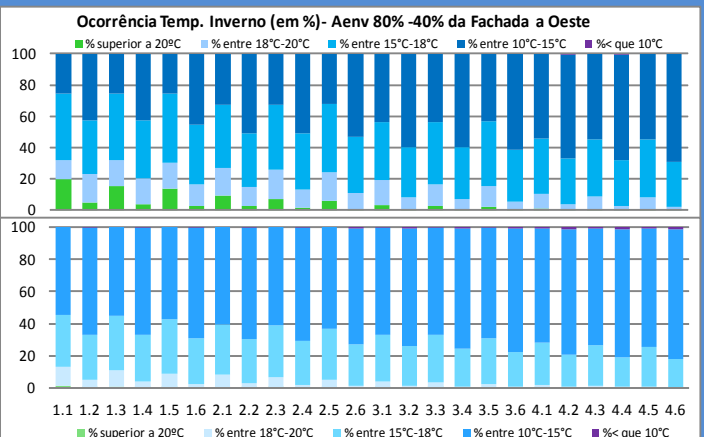
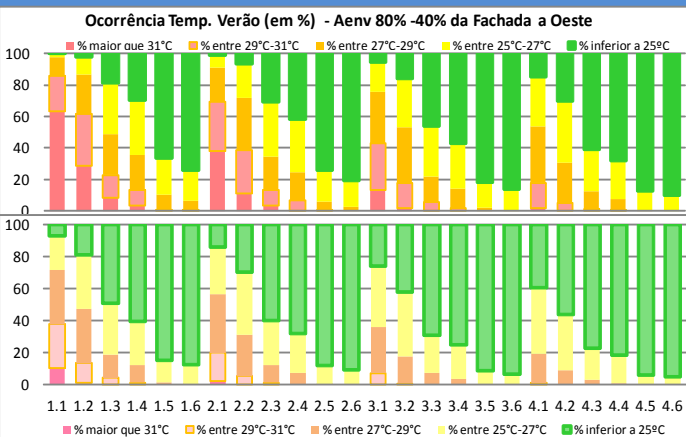
Com Protecção Solar Exterior Junto ao Envidraçado



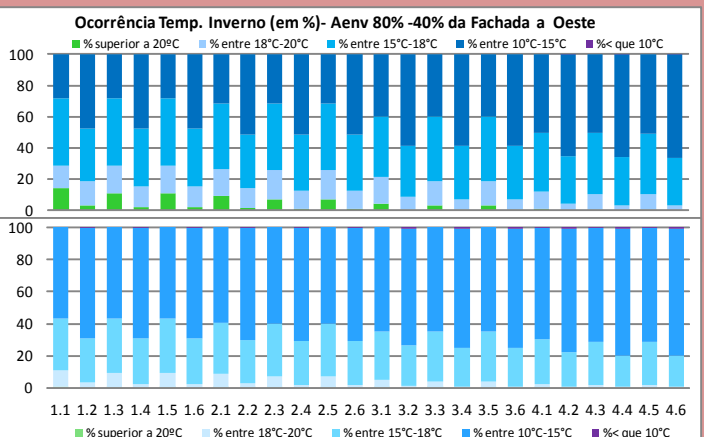
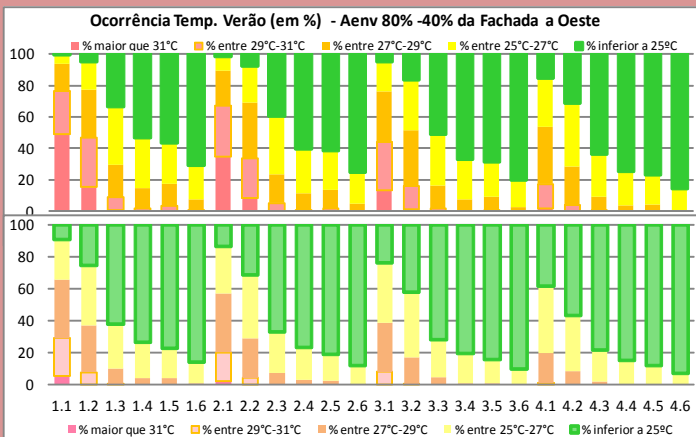
### Sem Protecção Solar Junto ao Envidraçado



### Com Protecção Solar Interior Junto ao Envidraçado

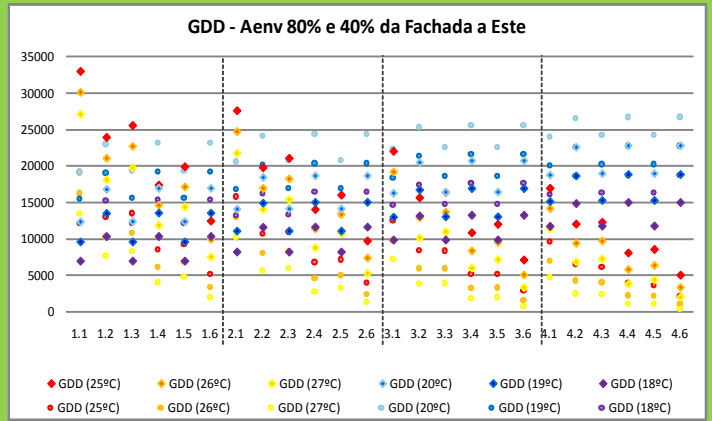
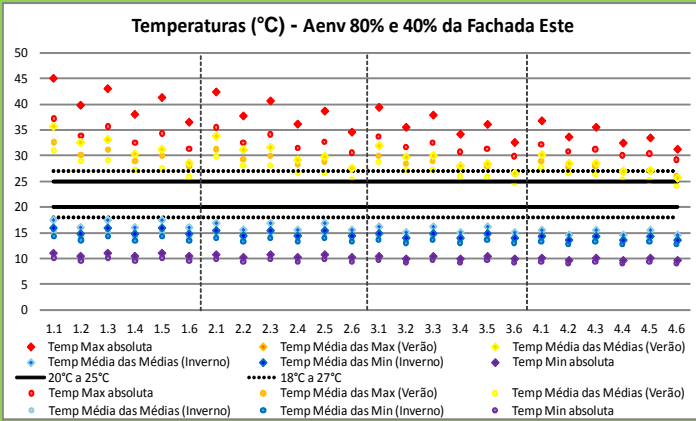


### Com Protecção Solar Exterior Junto ao Envidraçado

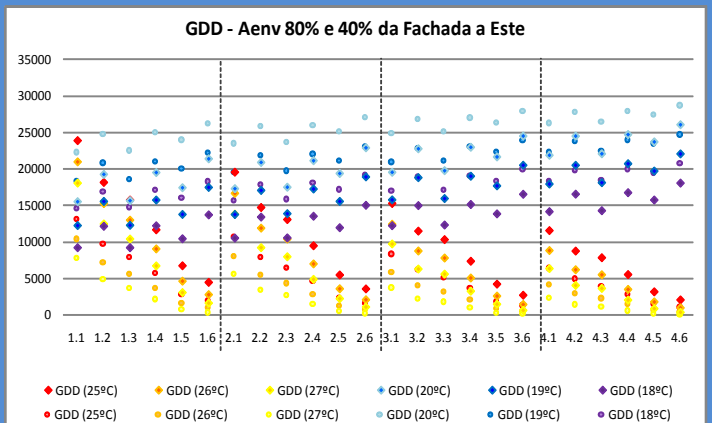
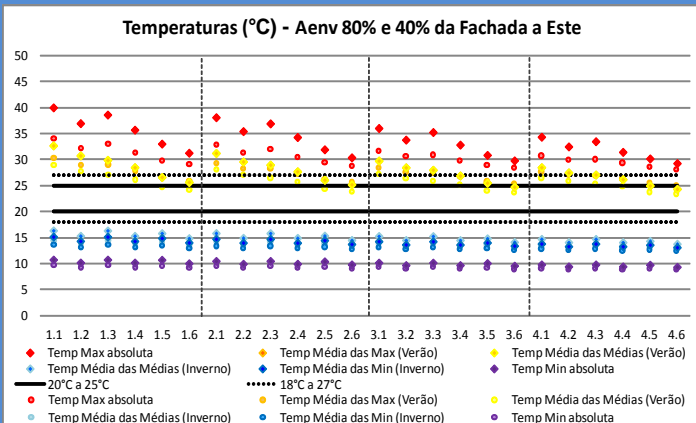


**Modelo1 Cobertura: 80% e 40% Fachada Envidraçada a Este - Massa Térmica2, isolamento 30mm**

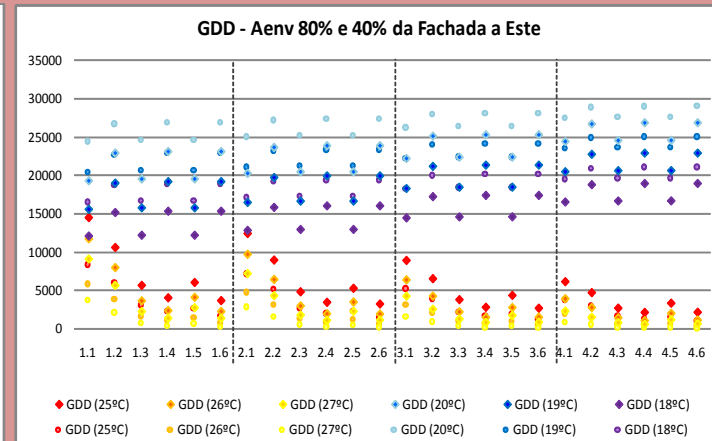
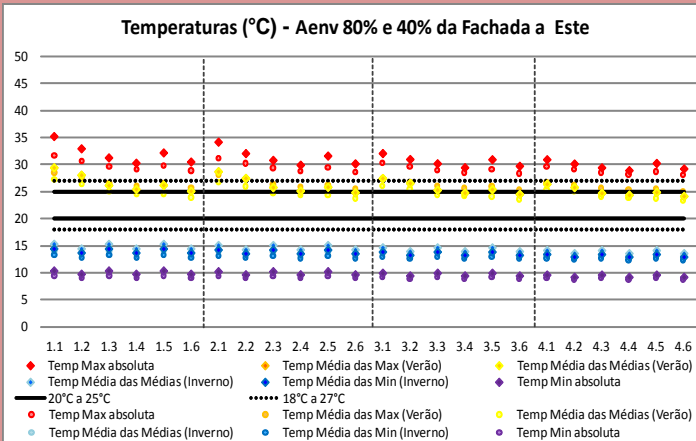
**Sem Protecção Solar Junto ao Envidraçado**



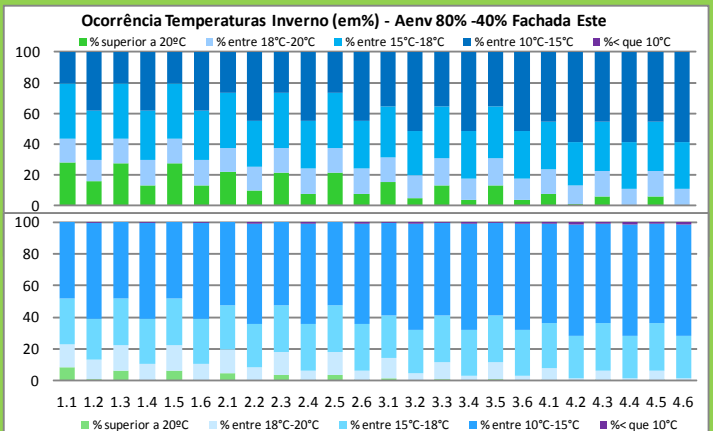
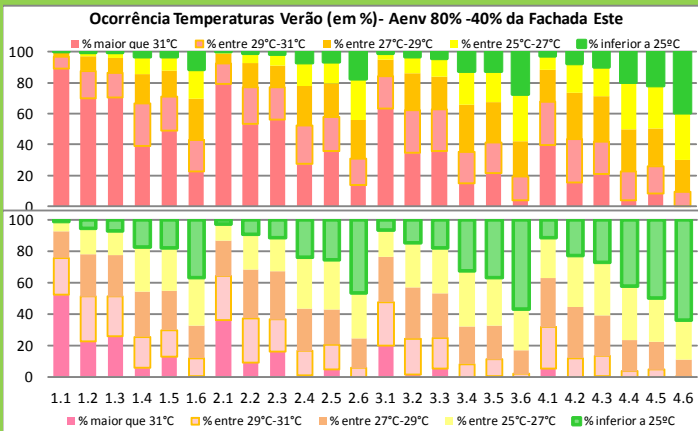
**Com Protecção Solar Interior Junto ao Envidraçado**



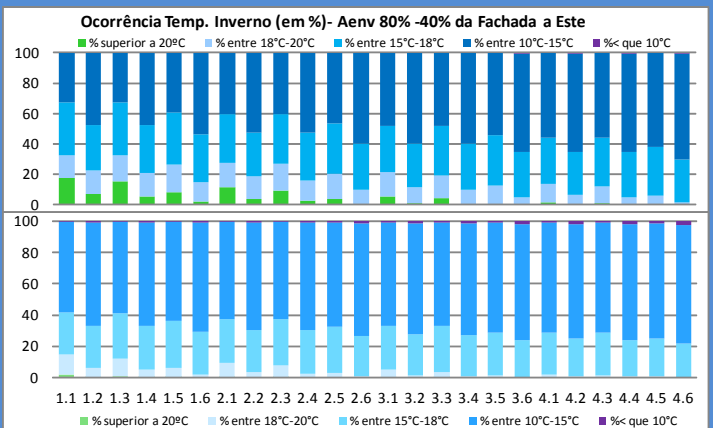
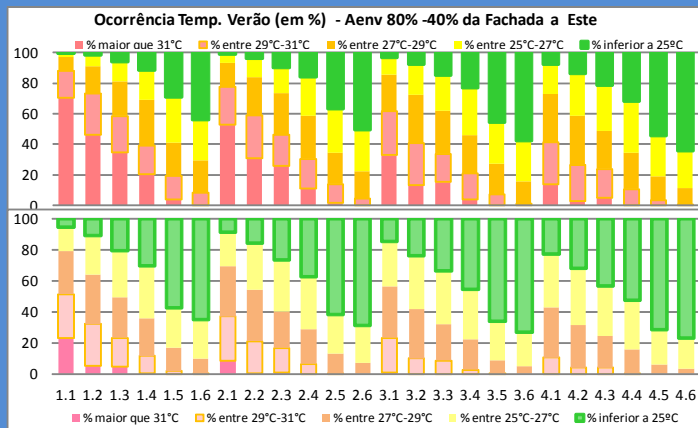
**Com Protecção Solar Exterior Junto ao Envidraçado**



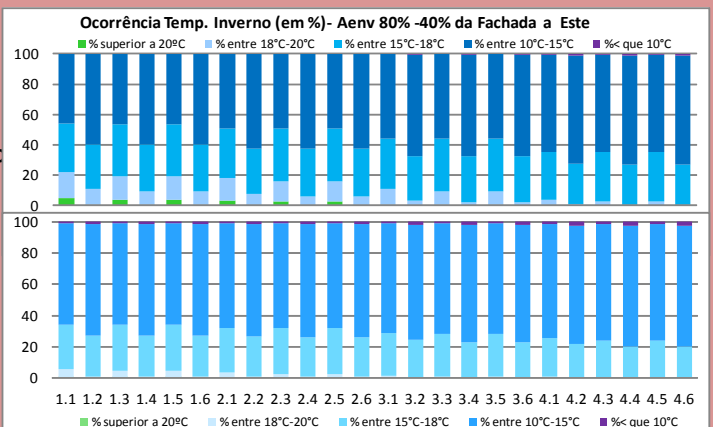
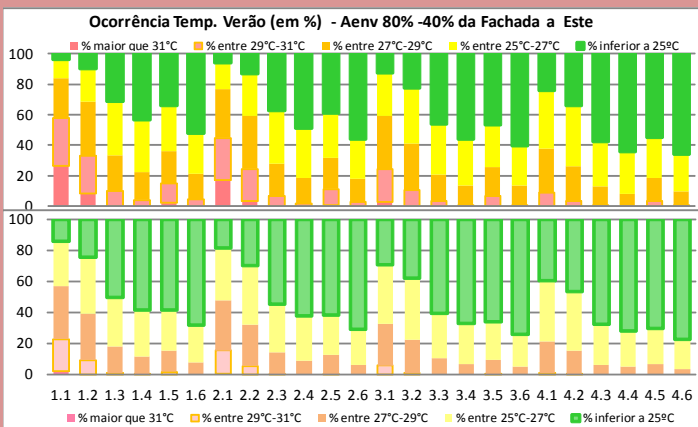
**Sem Protecção Solar Junto ao Envidraçado**



**Com Protecção Solar Interior Junto ao Envidraçado**

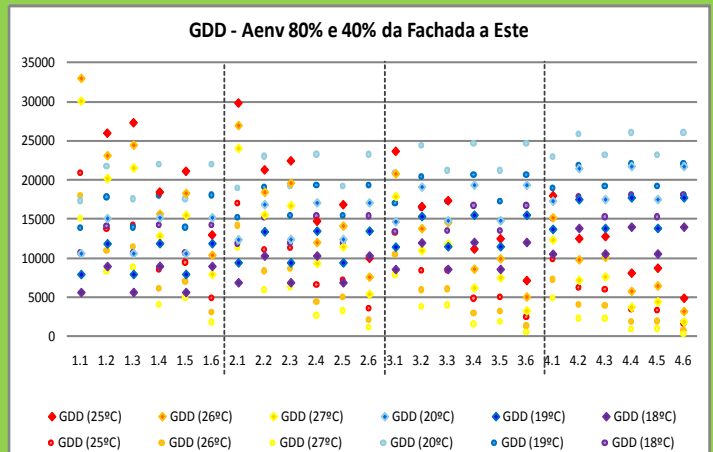
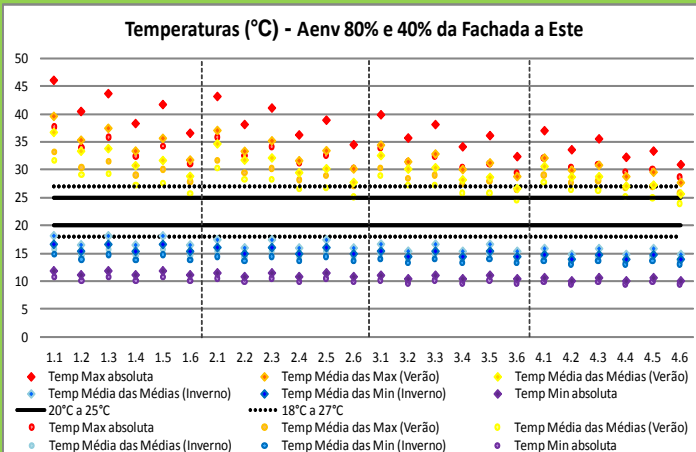


**Com Protecção Solar Exterior Junto ao Envidraçado**

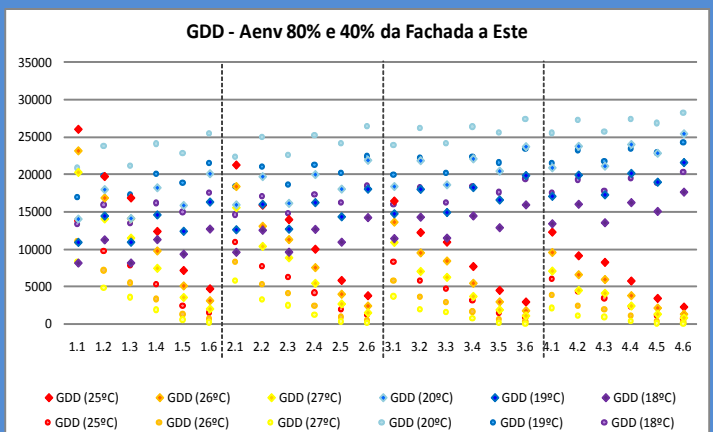
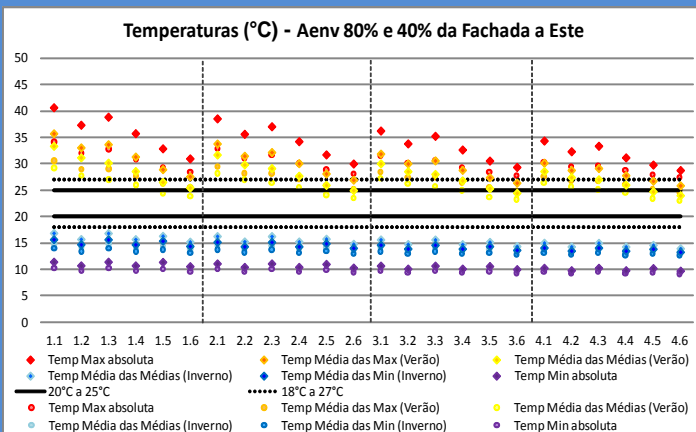


**Modelo1 Cobertura: 80% e 40% Fachada Envidraçada a Este - Massa Térmica2, isolamento 60mm**

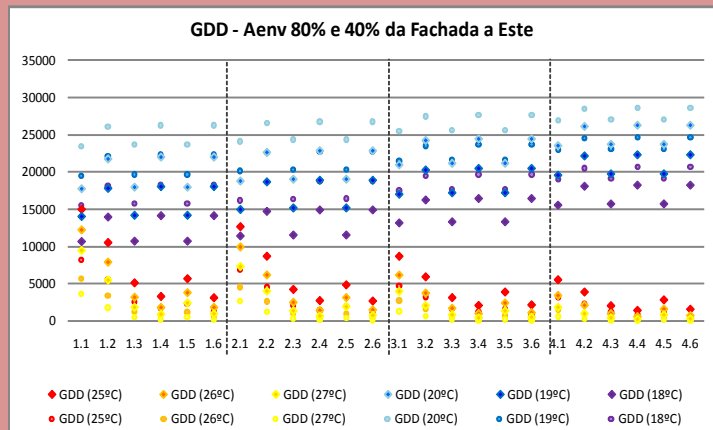
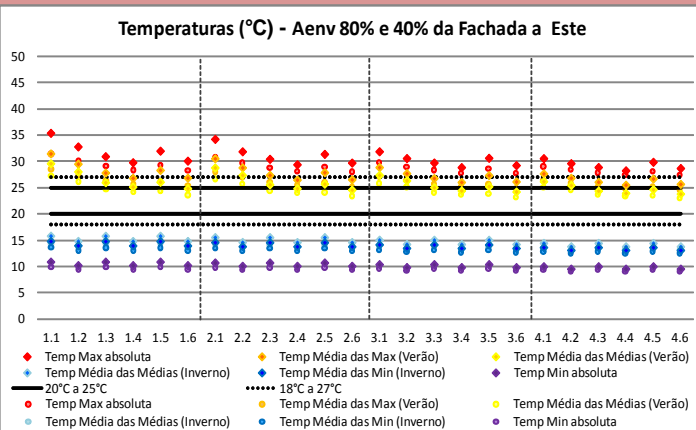
**Sem Protecção Solar Junto ao Envidraçado**



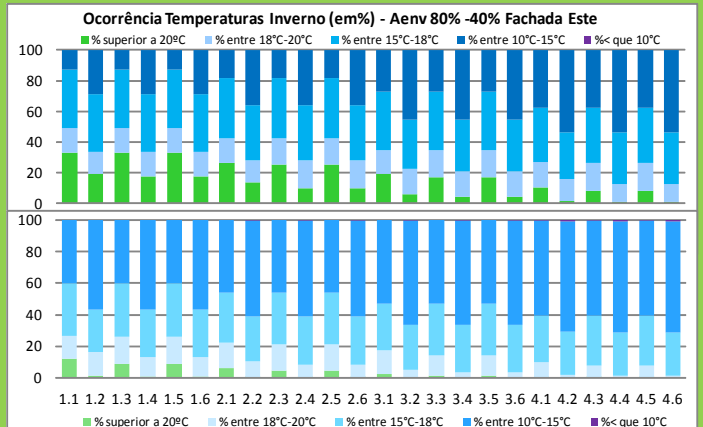
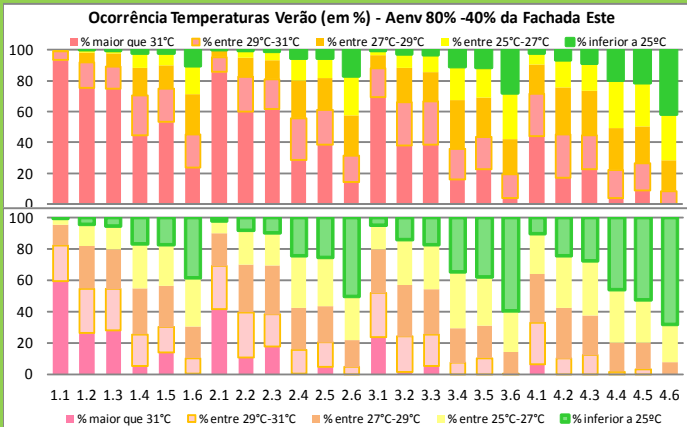
**Com Protecção Solar Interior Junto ao Envidraçado**



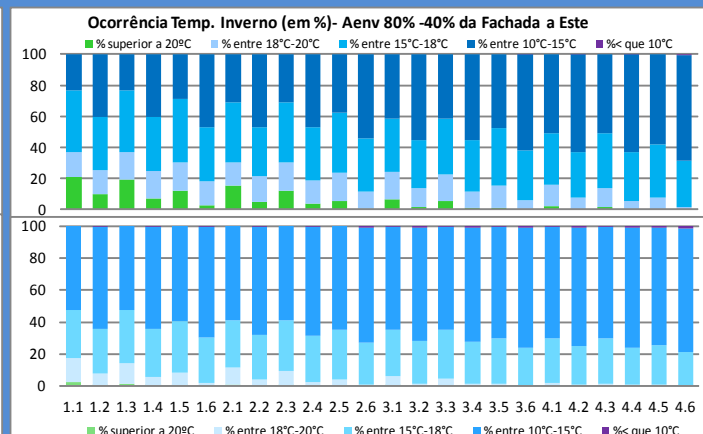
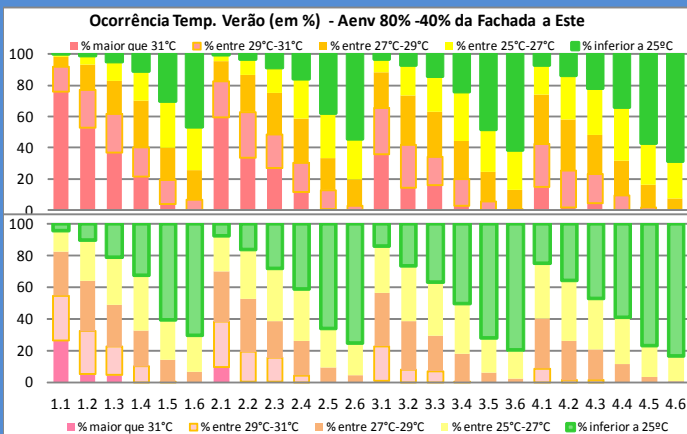
**Com Protecção Solar Exterior Junto ao Envidraçado**



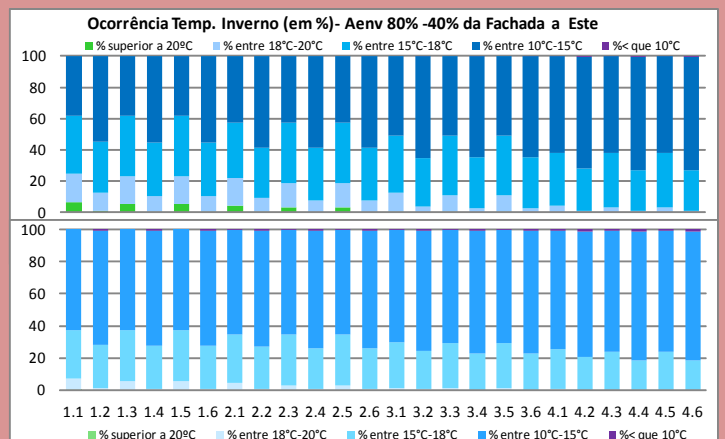
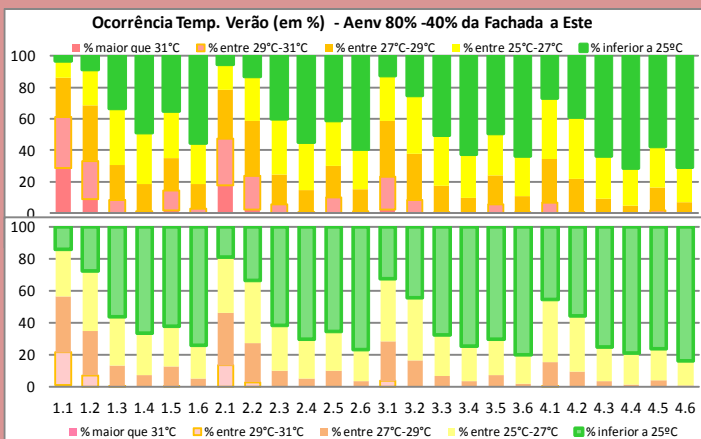
Sem Protecção Solar Junto ao Envidraçado



Com Protecção Solar Interior Junto ao Envidraçado

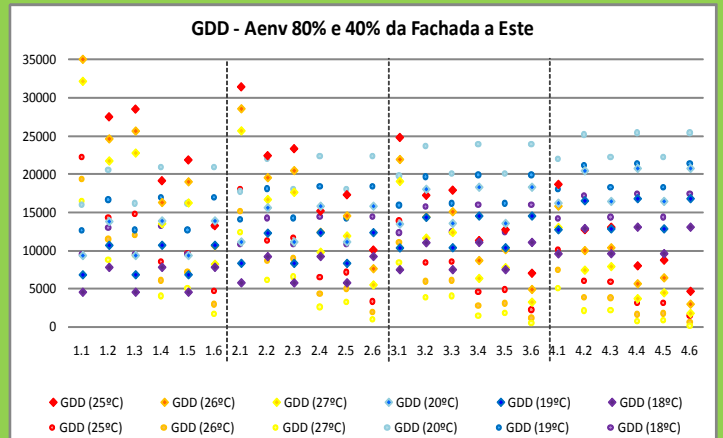
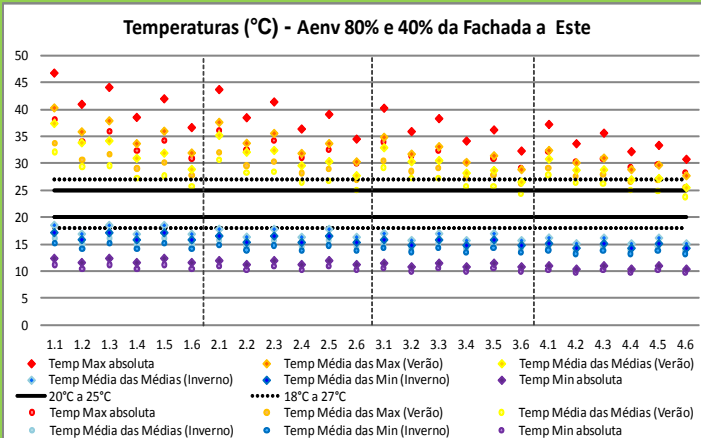


Com Protecção Solar Exterior Junto ao Envidraçado

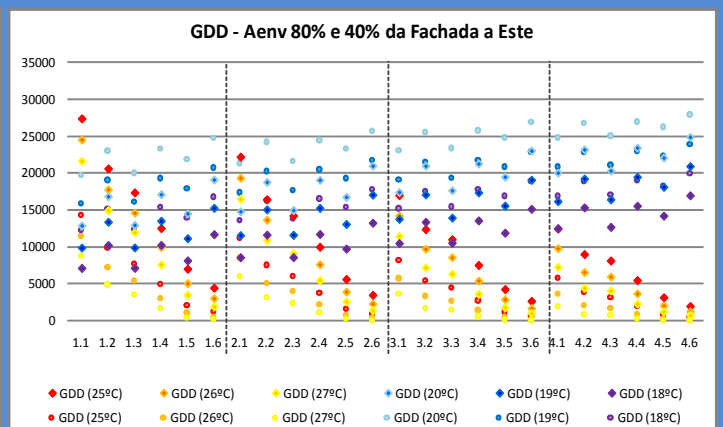
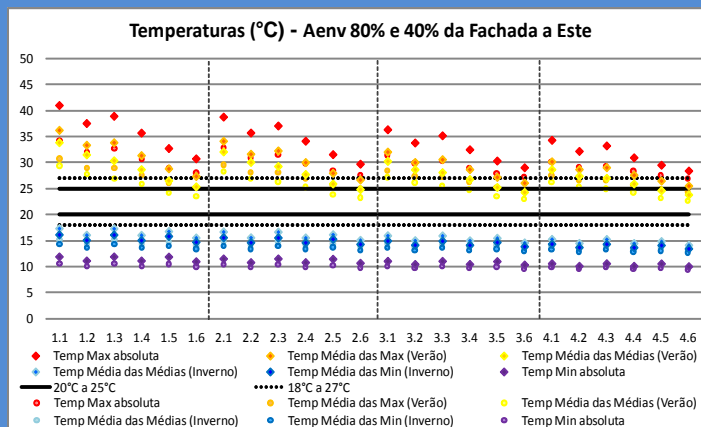


**Modelo1 Cobertura: 80% e 40% Fachada Envidraçada a Este - Massa Térmica2, isolamento 100mm**

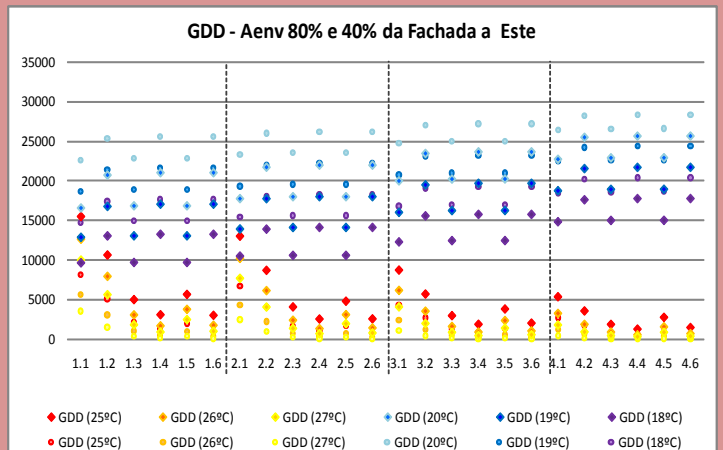
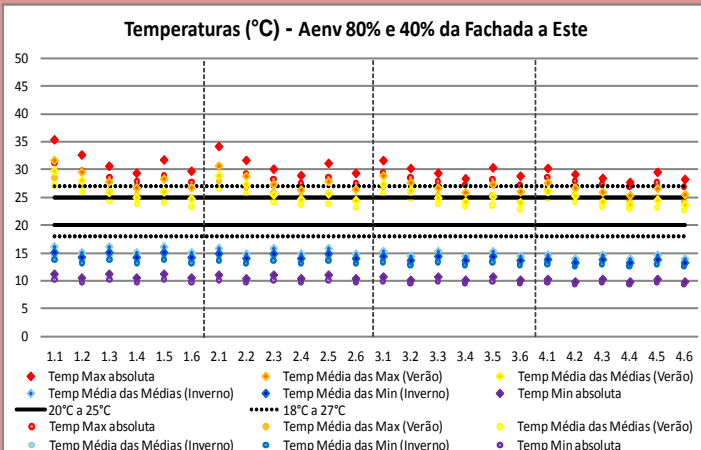
**Sem Protecção Solar Junto ao Envidraçado**



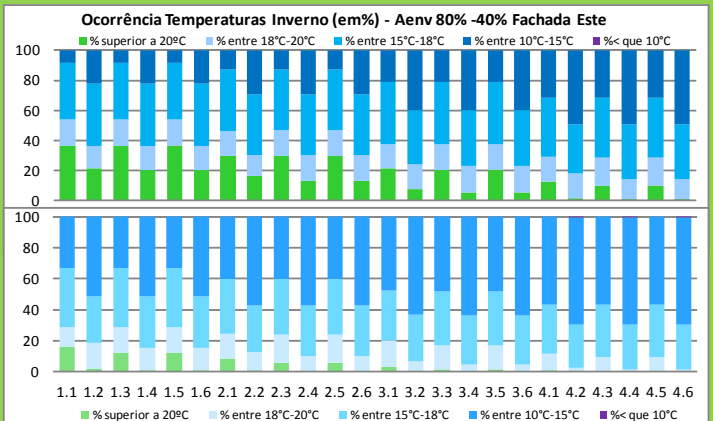
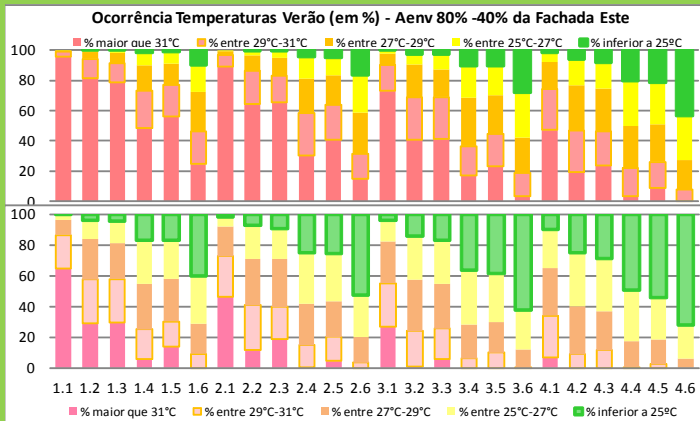
**Com Protecção Solar Interior Junto ao Envidraçado**



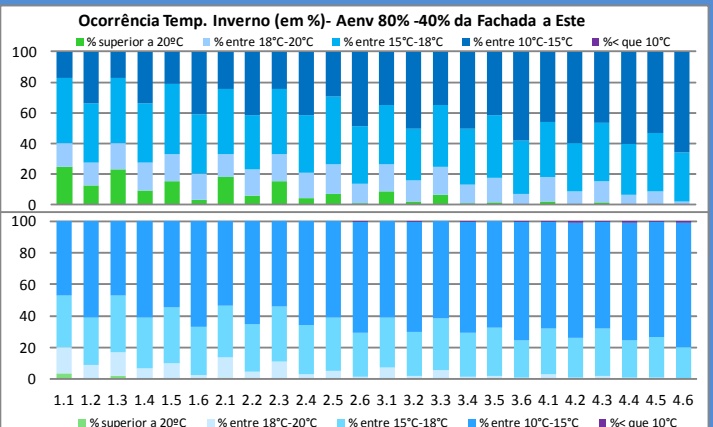
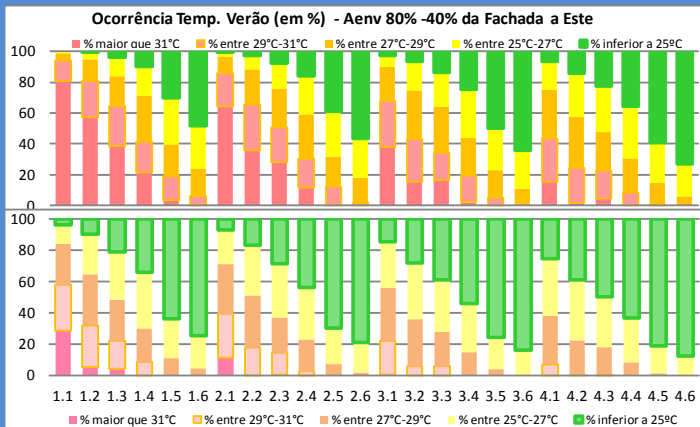
**Com Protecção Solar Exterior Junto ao Envidraçado**



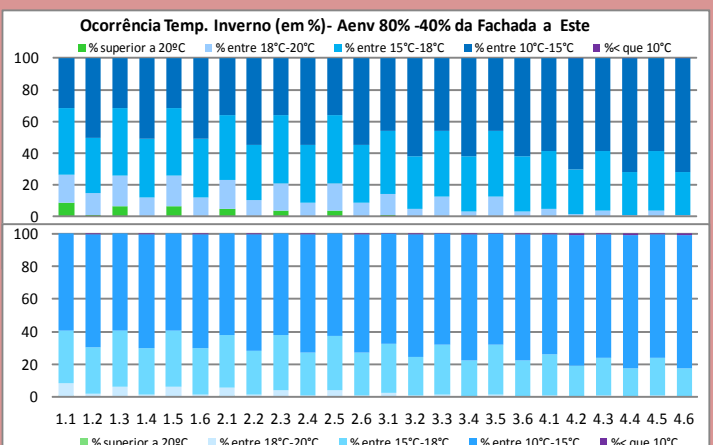
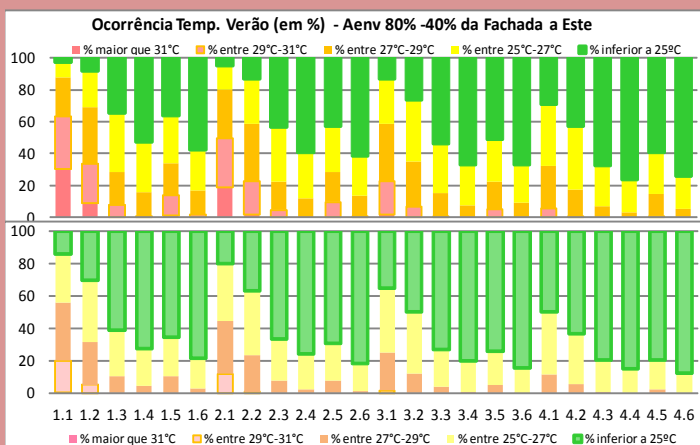
Sem Protecção Solar Junto ao Envidraçado



Com Protecção Solar Interior Junto ao Envidraçado



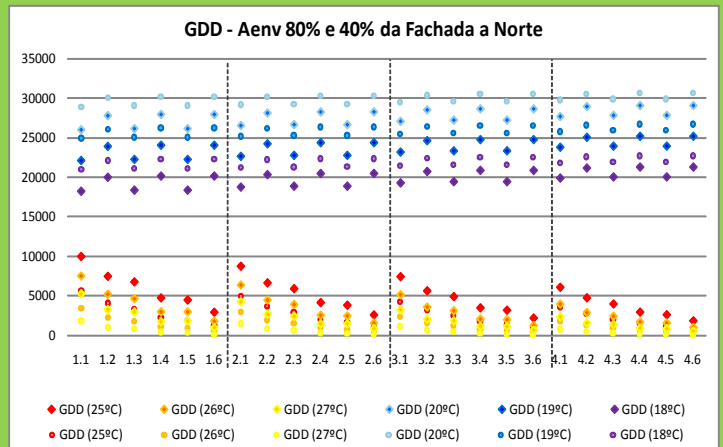
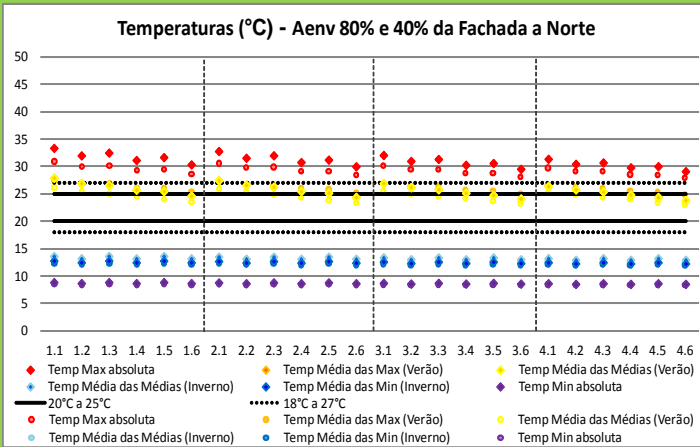
Com Protecção Solar Exterior Junto ao Envidraçado



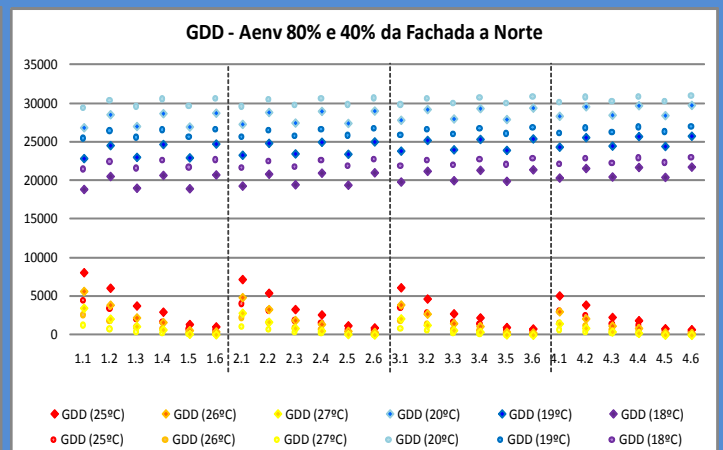
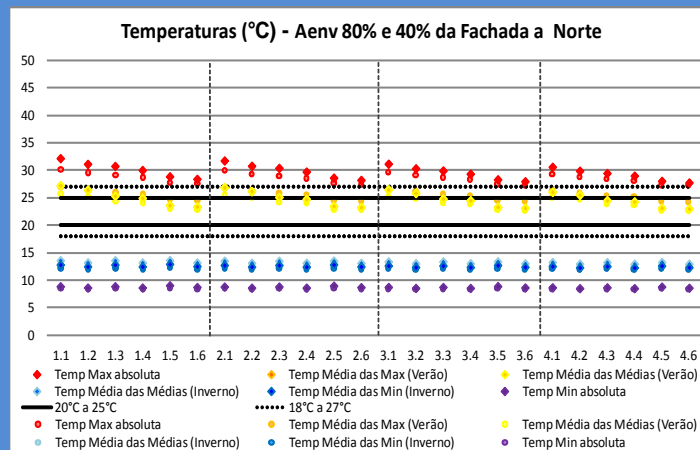


Modelo1 Cobertura: 80% e 40% Fachada Envidraçada a Norte - Massa Térmica2, isolamento 30mm

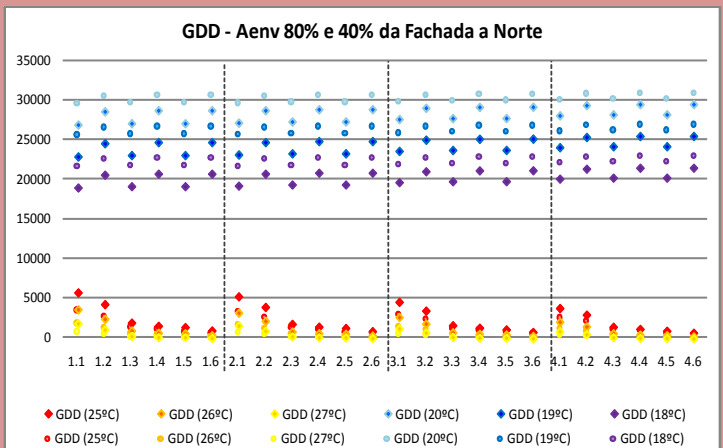
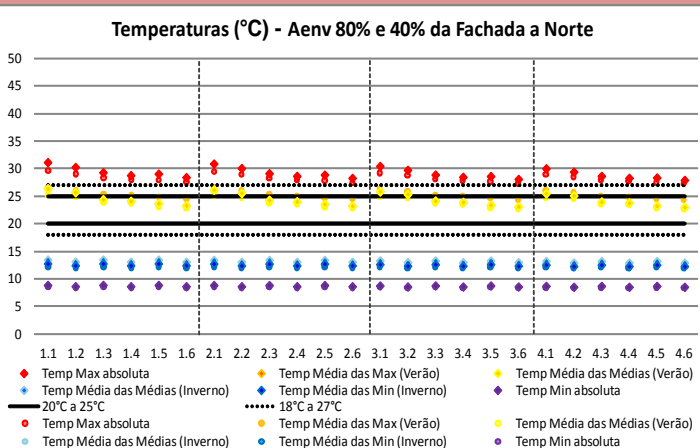
Sem Protecção Solar Junto ao Envidraçado



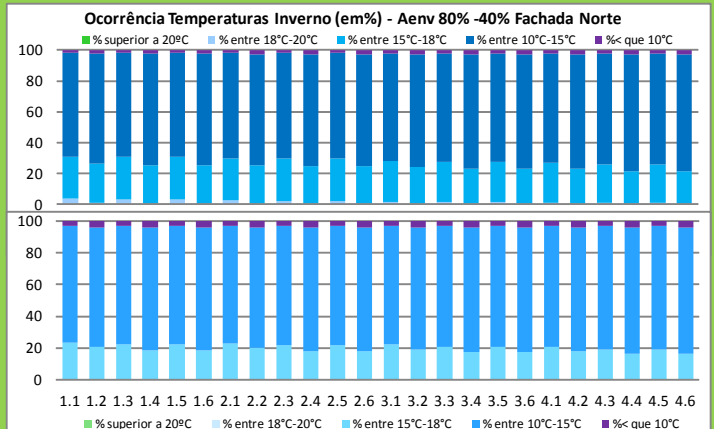
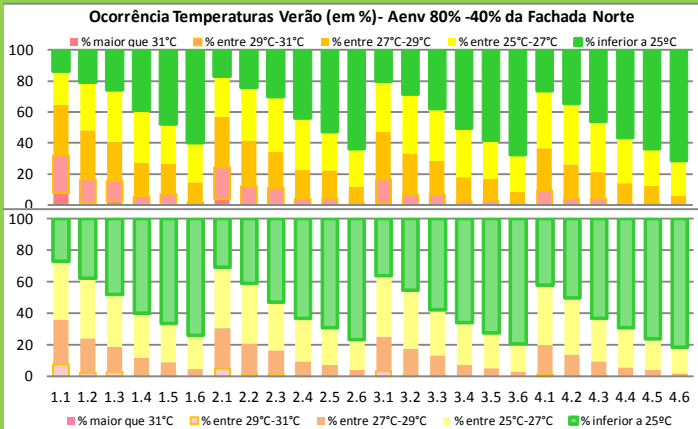
Com Protecção Solar Interior Junto ao Envidraçado



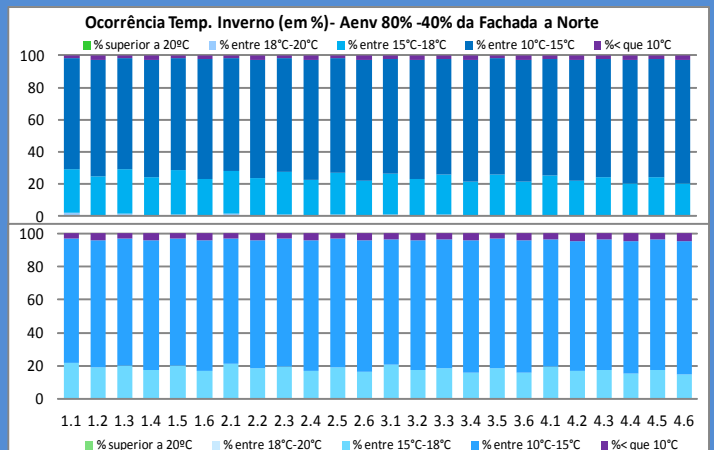
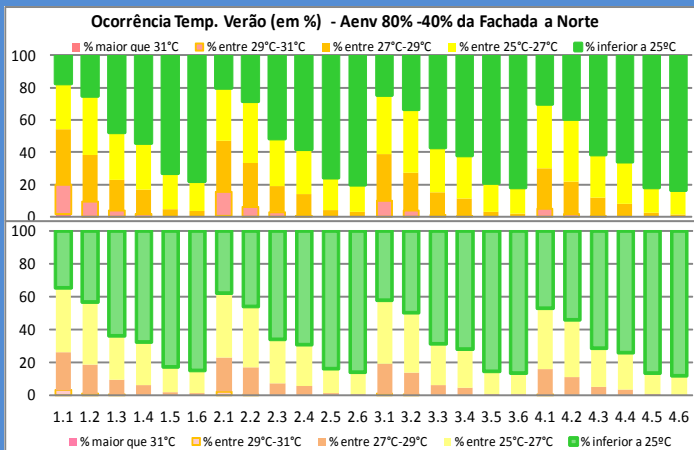
Com Protecção Solar Exterior Junto ao Envidraçado



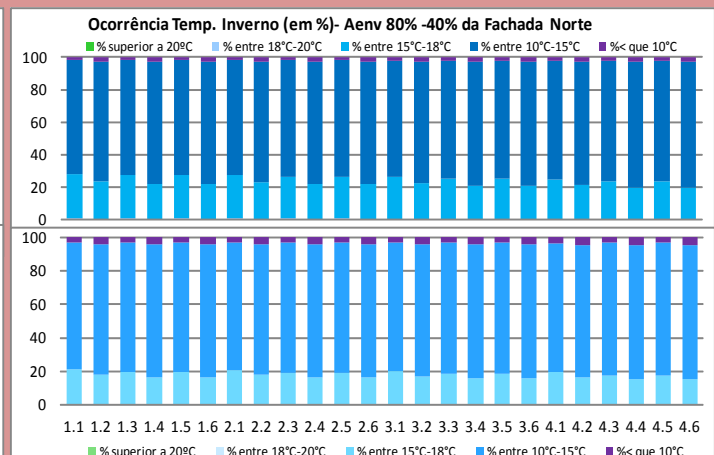
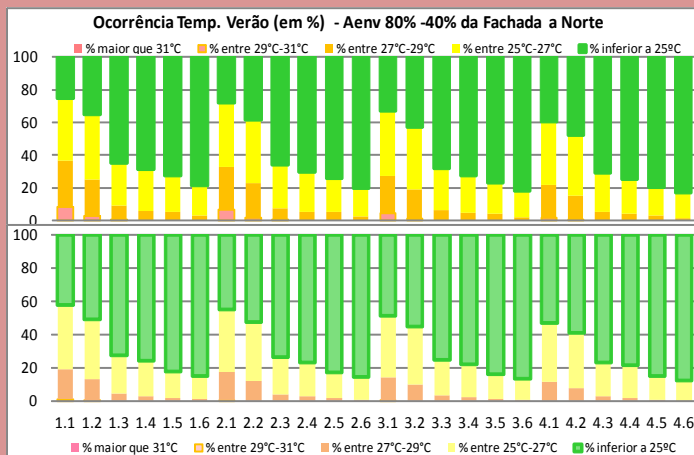
**Sem Protecção Solar Junto ao Envidraçado**



**Com Protecção Solar Interior Junto ao Envidraçado**

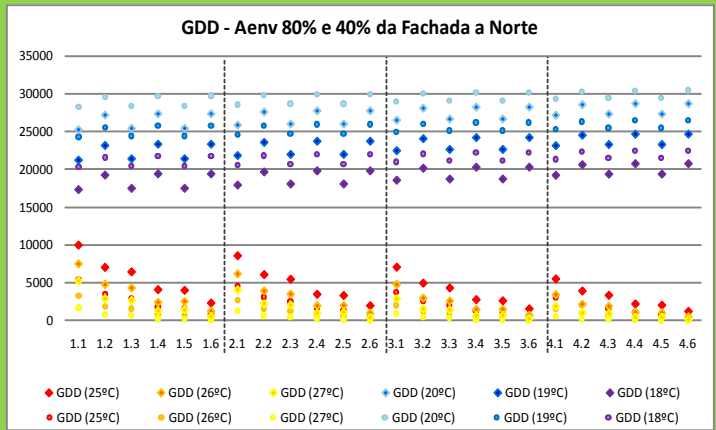
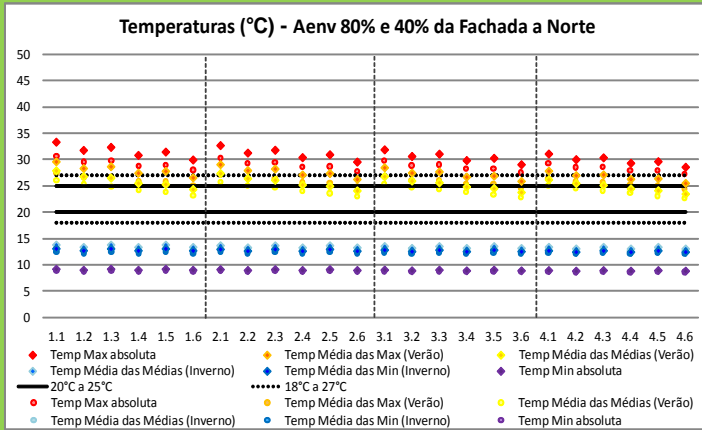


**Com Protecção Solar Exterior Junto ao Envidraçado**

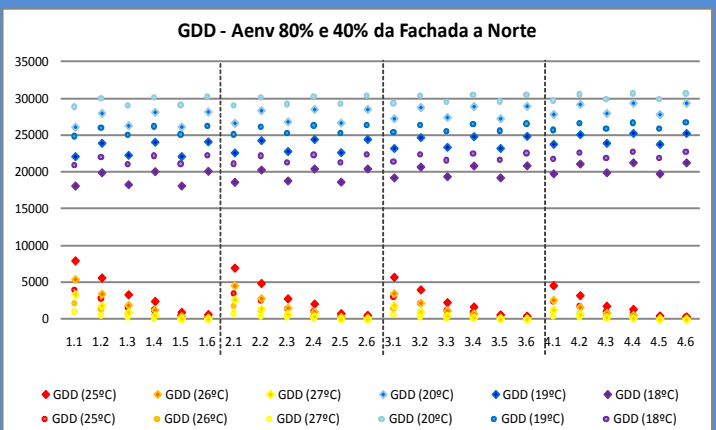
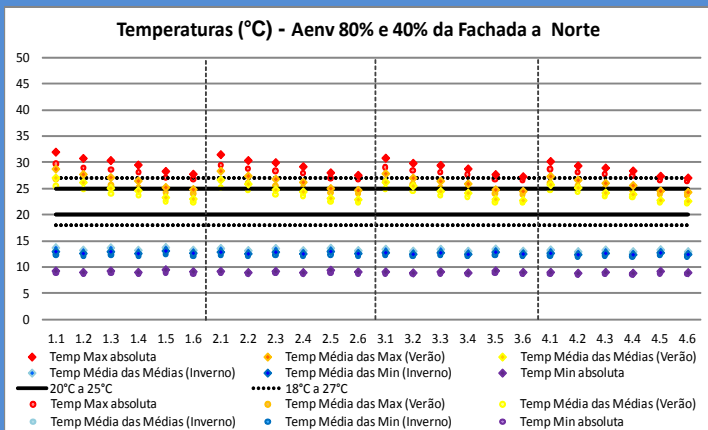


**Modelo1 Cobertura: 80% e 40% Fachada Envidraçada a Norte - Massa Térmica2, isolamento 60mm**

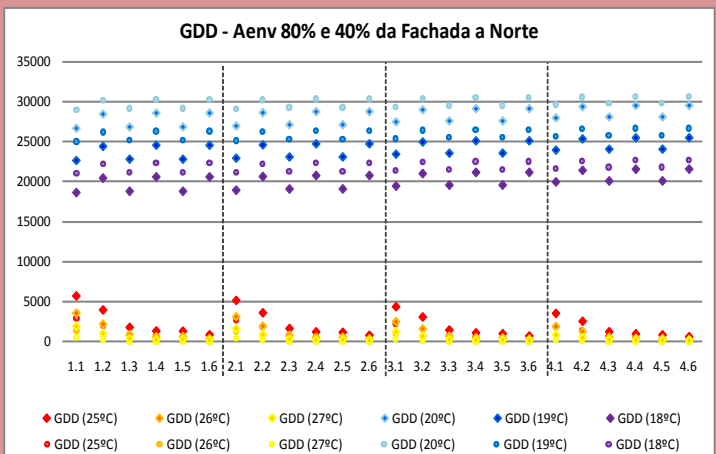
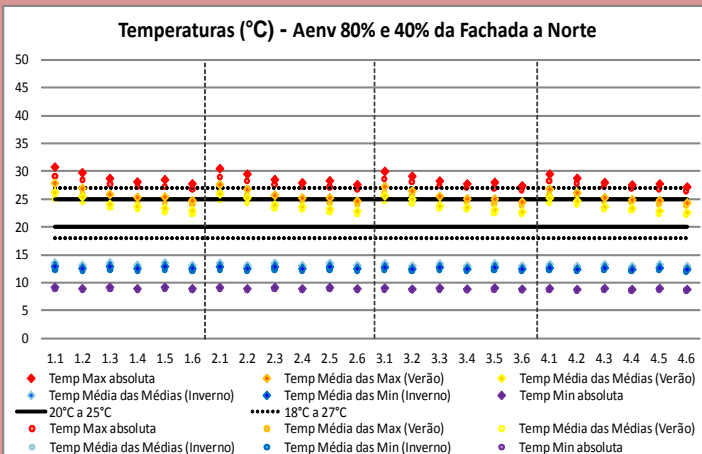
**Sem Protecção Solar Junto ao Envidraçado**



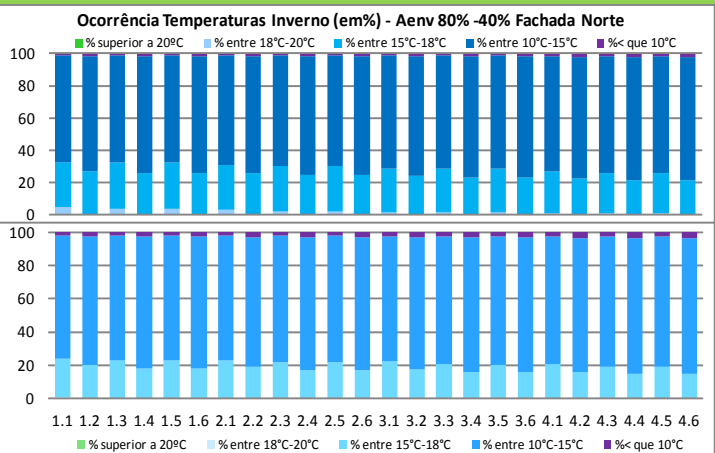
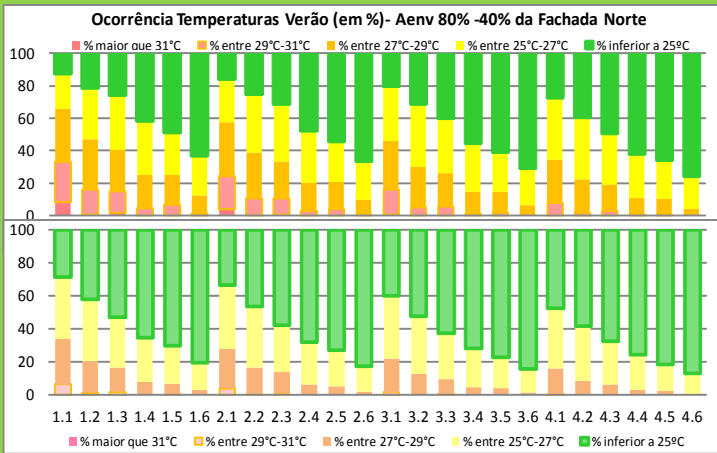
**Com Protecção Solar Interior Junto ao Envidraçado**



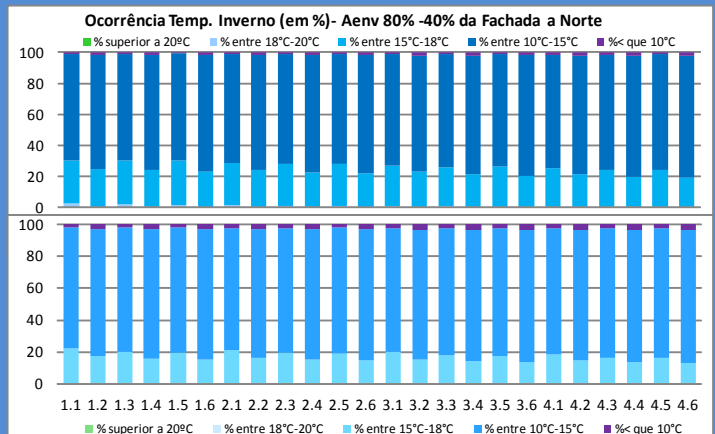
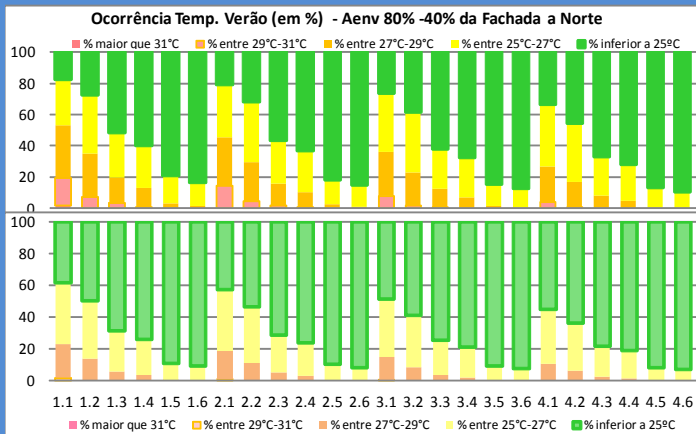
**Com Protecção Solar Exterior Junto ao Envidraçado**



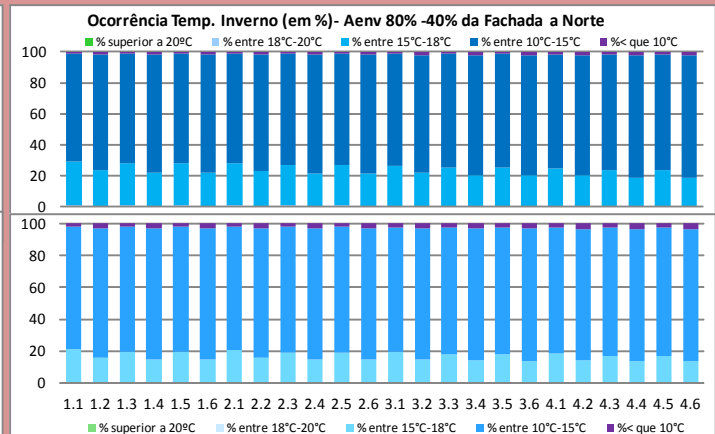
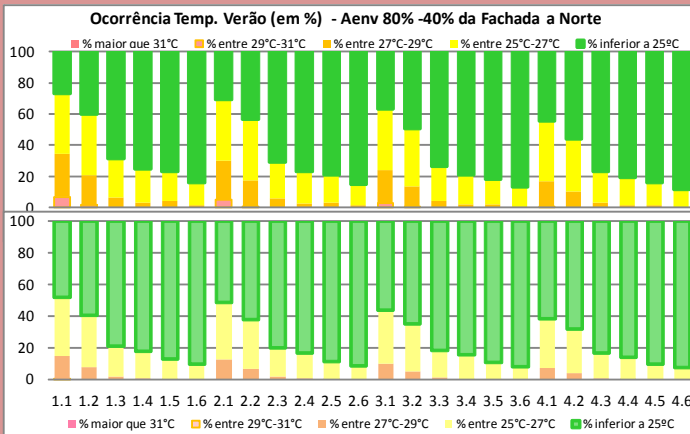
**Sem Protecção Solar Junto ao Envidraçado**



**Com Protecção Solar Interior Junto ao Envidraçado**

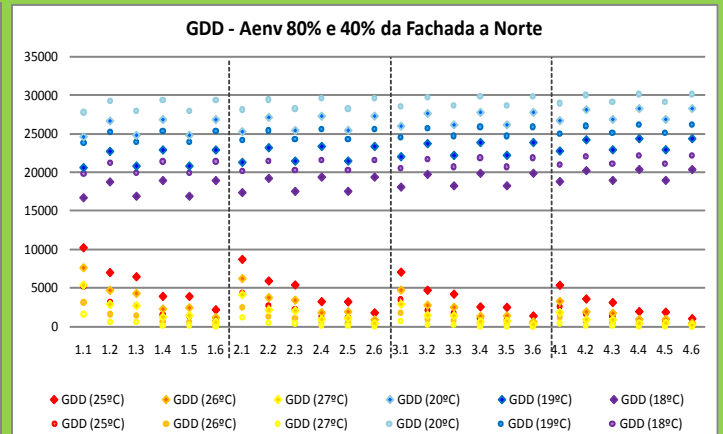
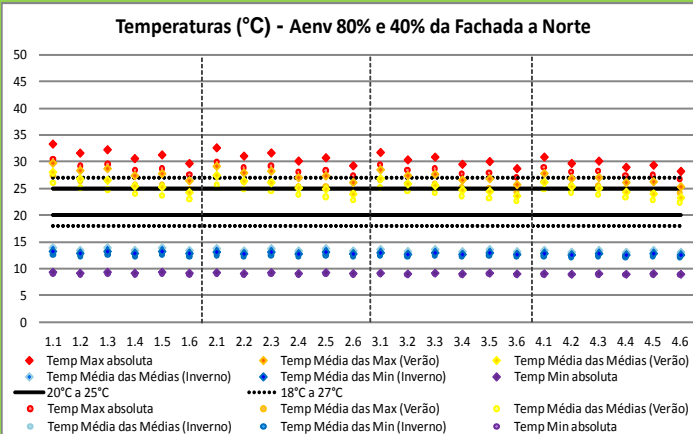


**Com Protecção Solar Exterior Junto ao Envidraçado**

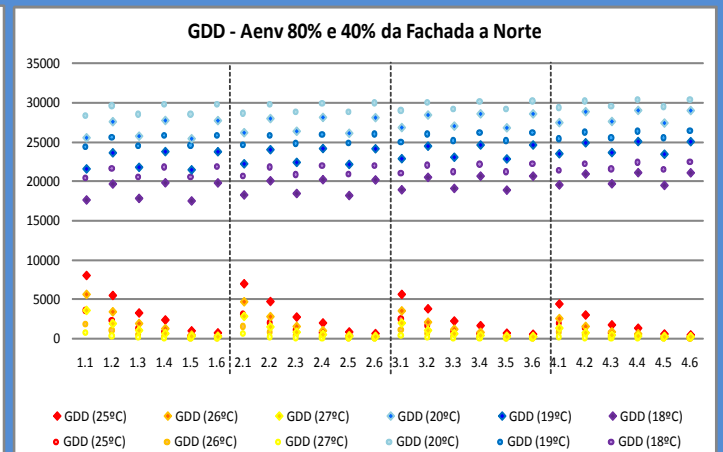
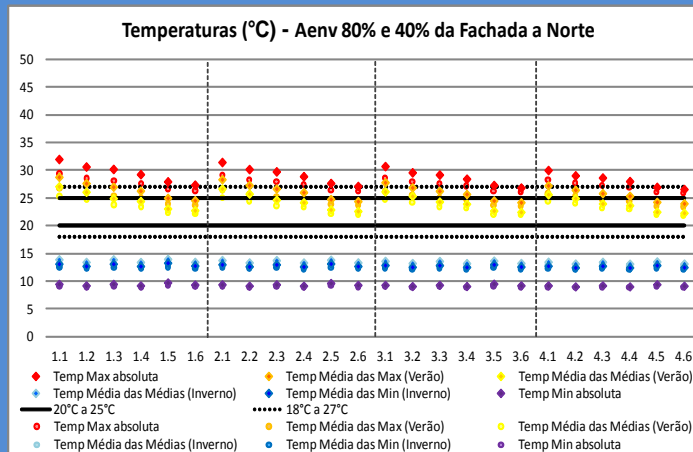


Modelo1 Cobertura: 80% e 40% Fachada Envidraçada a Norte - Massa Térmica<sup>2</sup>, isolamento 100mm

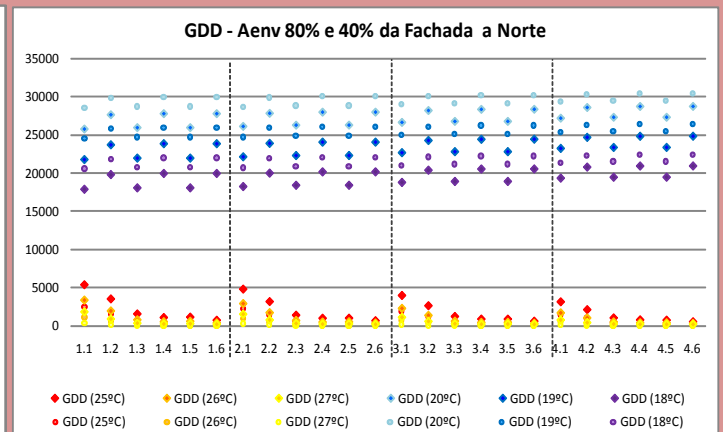
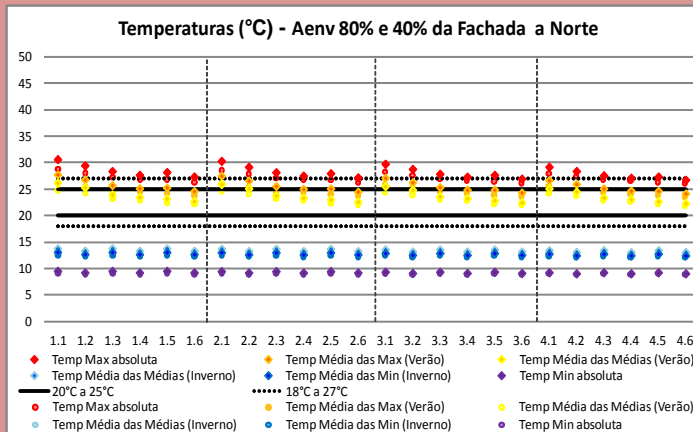
Sem Protecção Solar Junto ao Envidraçado



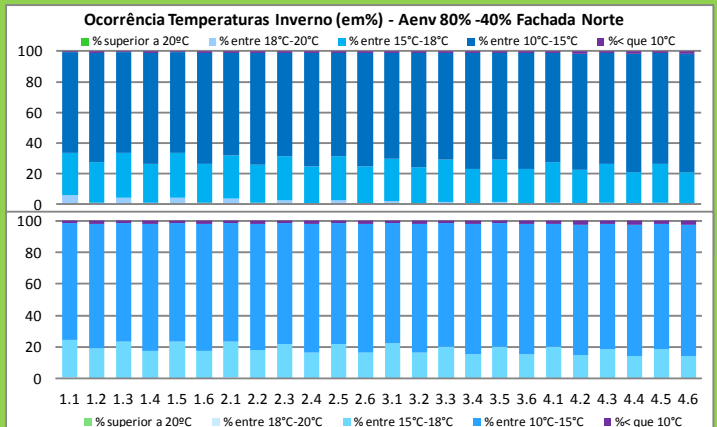
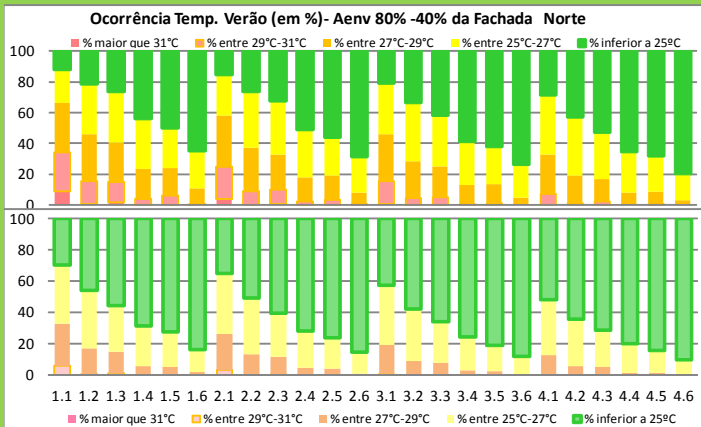
Com Protecção Solar Interior Junto ao Envidraçado



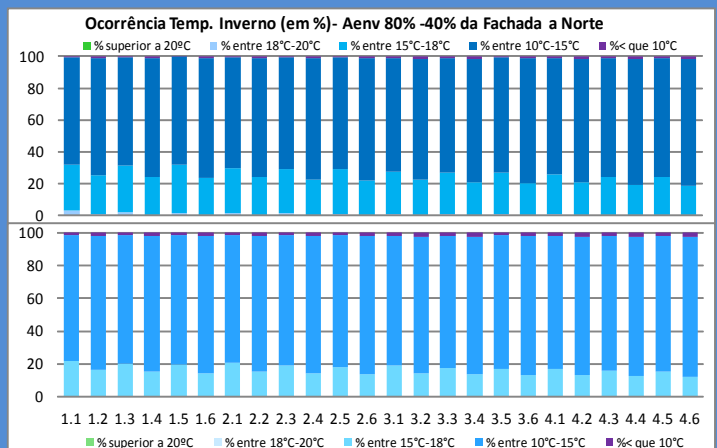
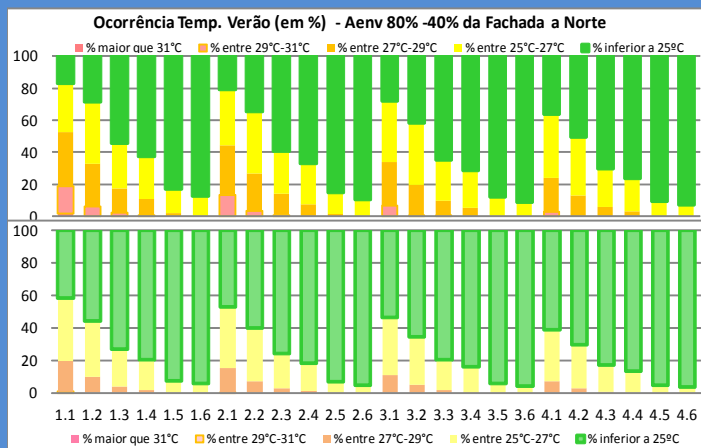
Com Protecção Solar Exterior Junto ao Envidraçado



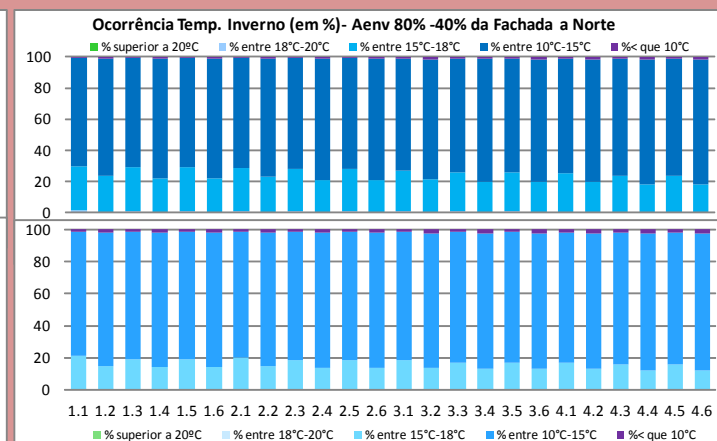
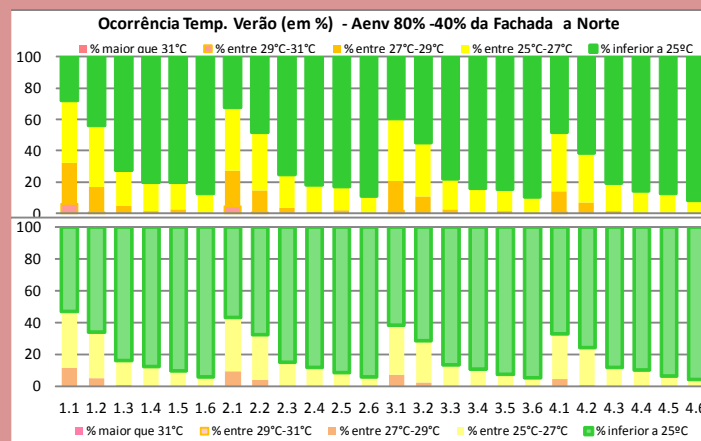
Sem Protecção Solar Junto ao Envidraçado



Com Protecção Solar Interior Junto ao Envidraçado

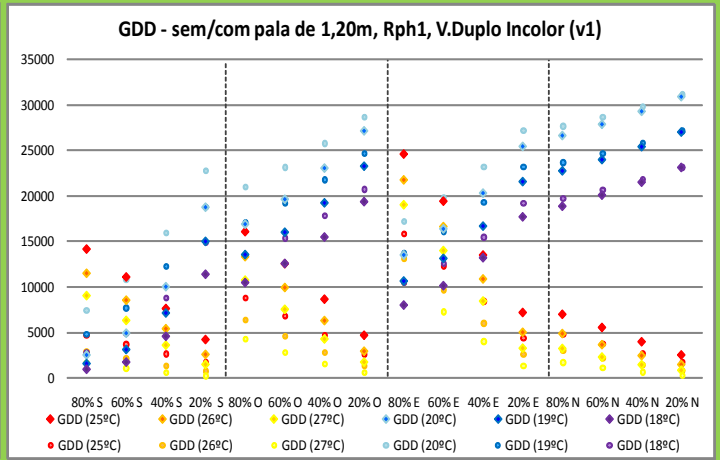
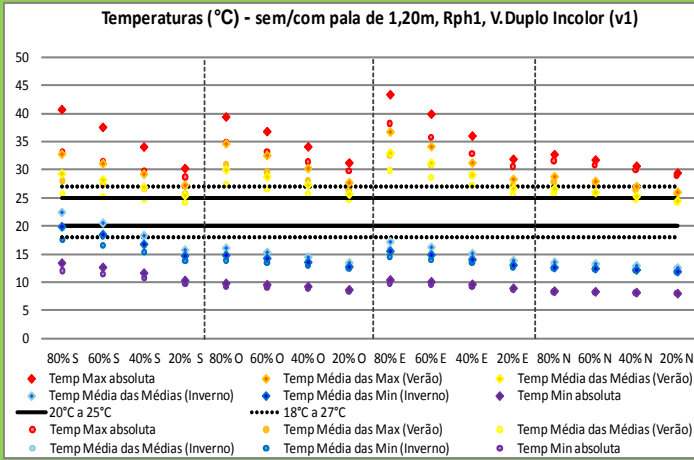


Com Protecção Solar Exterior Junto ao Envidraçado

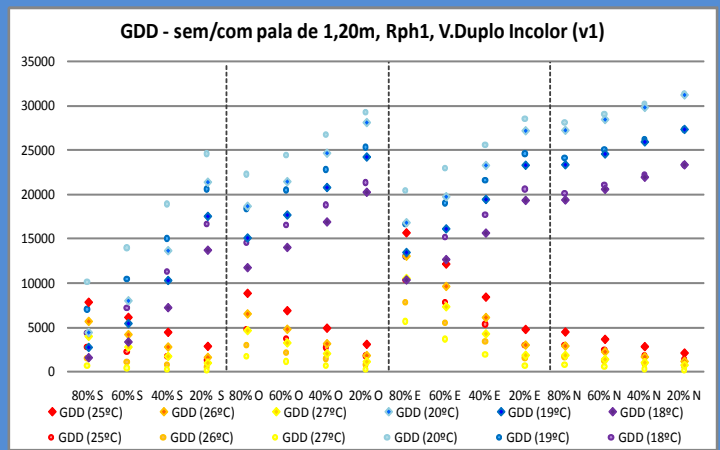
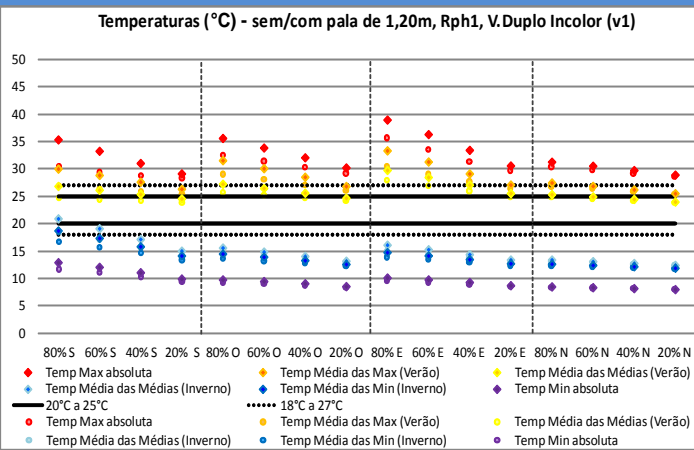


**Modelo1 Cobertura: Sem e com Pala de 1,20 m - Massa Térmica1, isolamento 30mm**

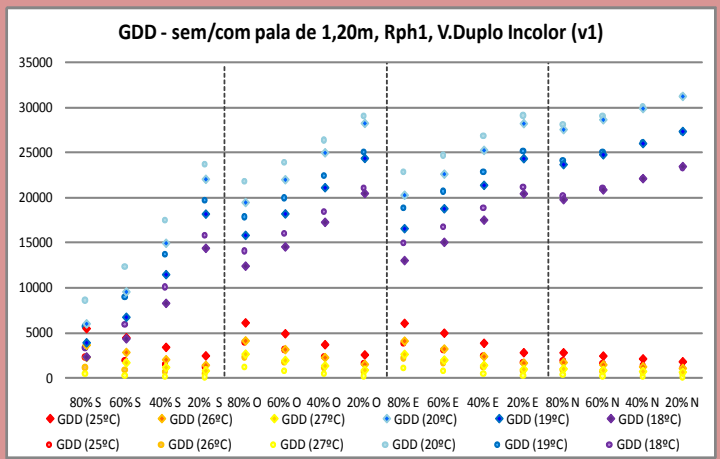
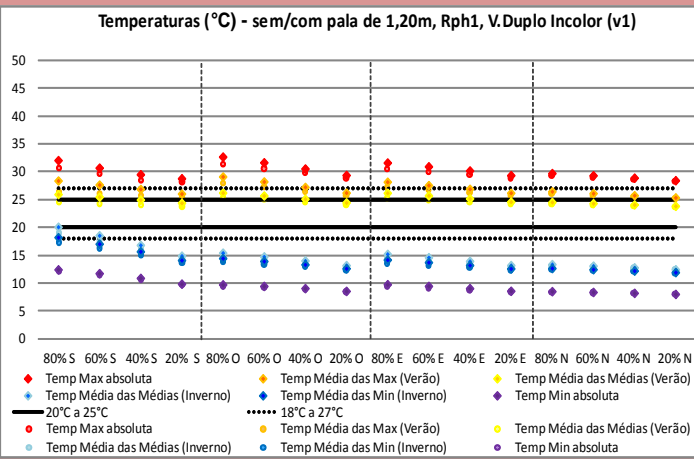
**Sem Protecção Solar Junto ao Envidraçado**



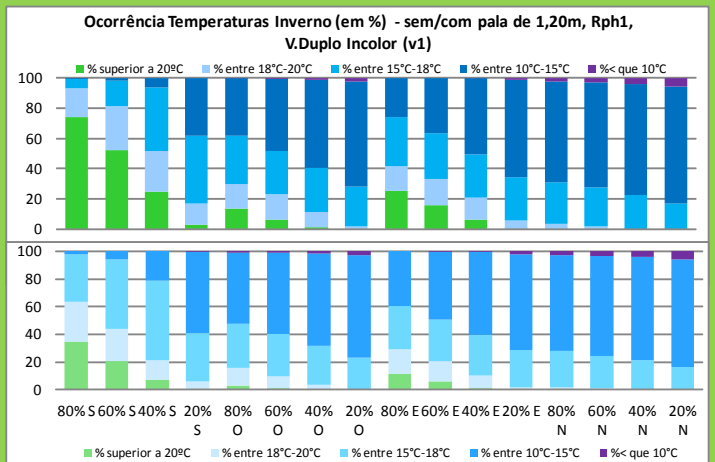
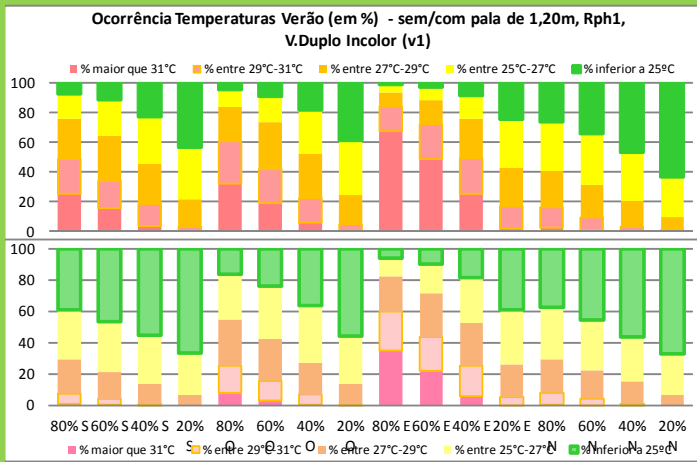
**Com Protecção Solar Interior Junto ao Envidraçado**



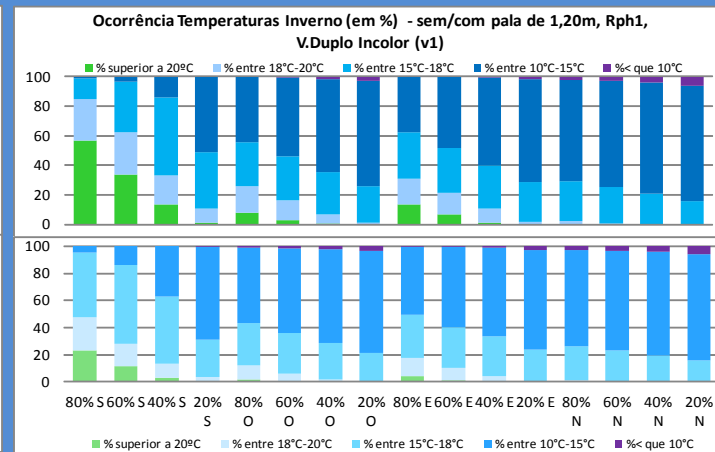
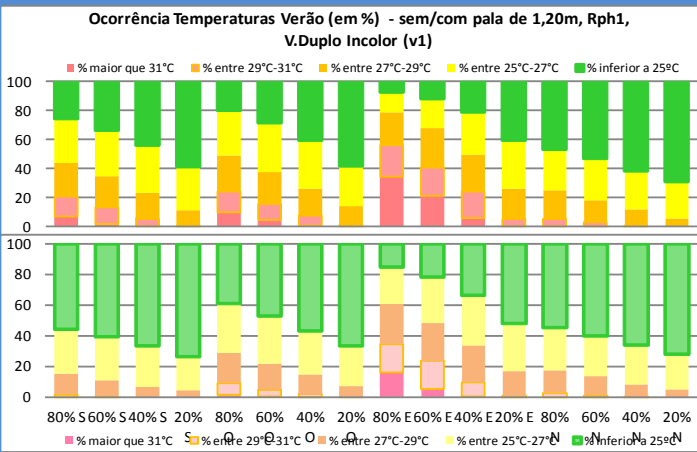
**Com Protecção Solar Exterior Junto ao Envidraçado**



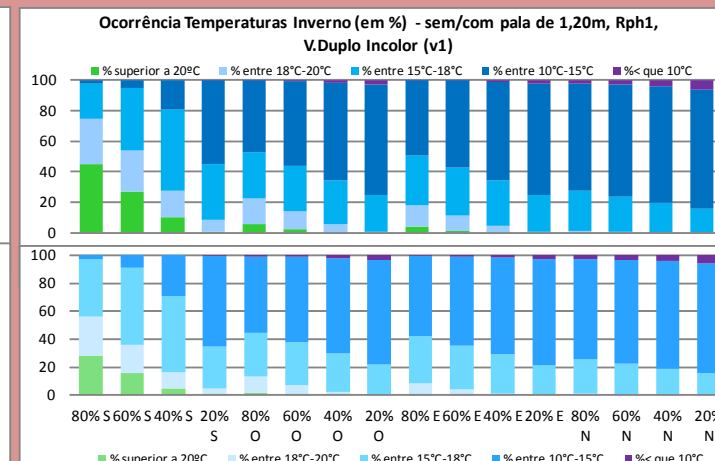
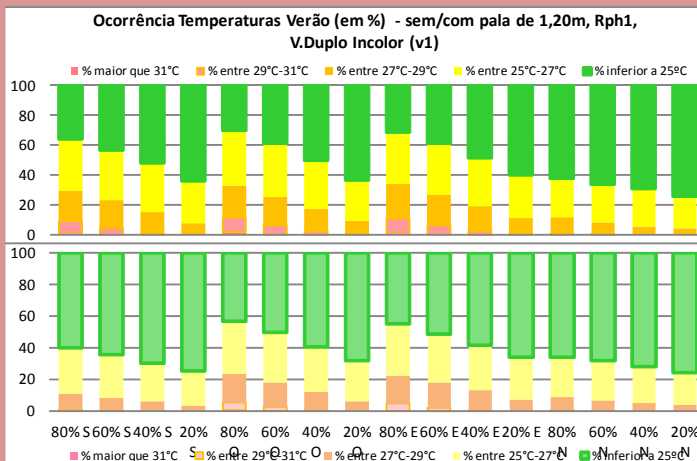
Sem Protecção Solar Junto ao Envidraçado



Com Protecção Solar Interior Junto ao Envidraçado



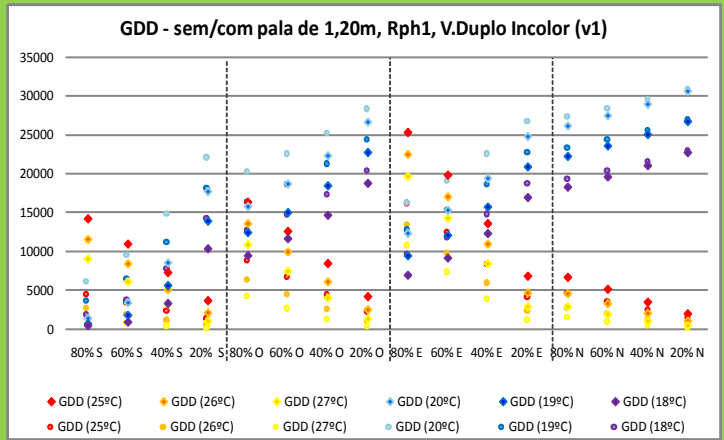
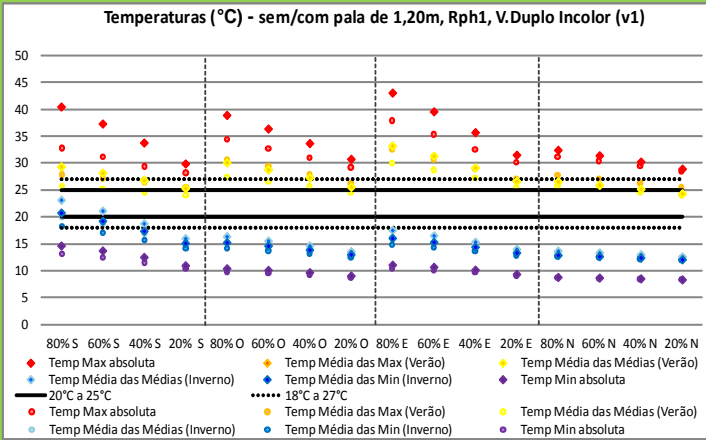
Com Protecção Solar Exterior Junto ao Envidraçado



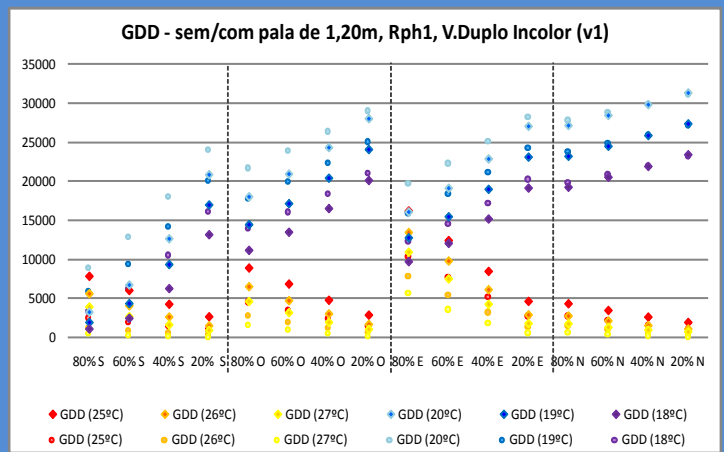
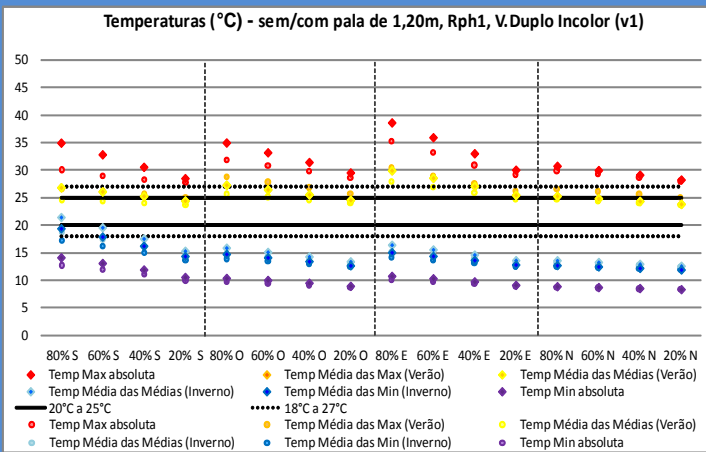


Modelo1 Cobertura: Sem e com Pala de 1,20 m - Massa Térmica2, isolamento 30mm

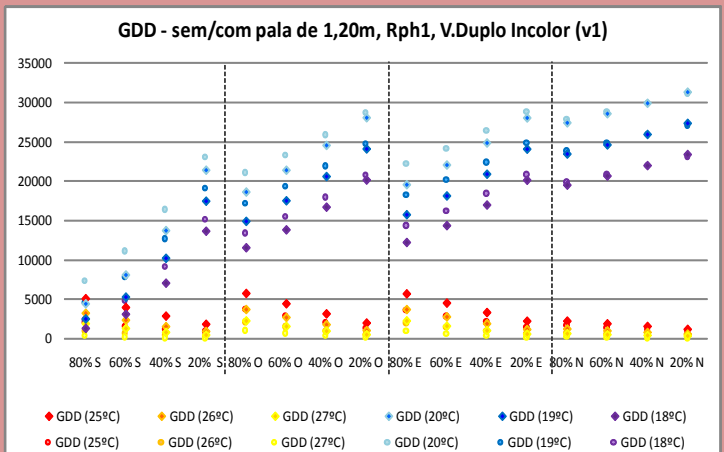
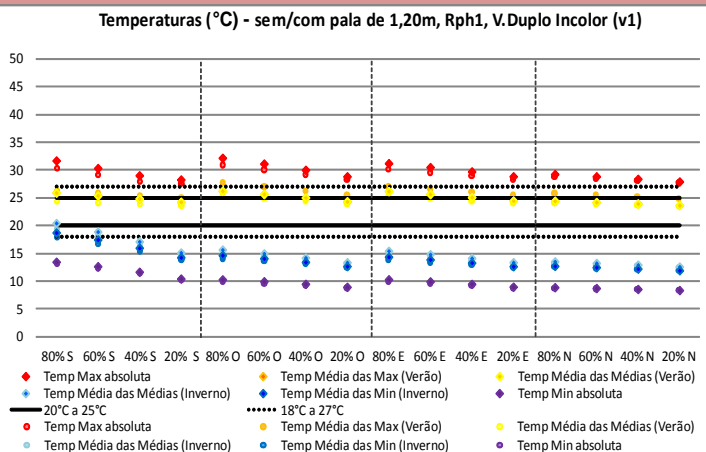
Sem Protecção Solar Junto ao Envidraçado



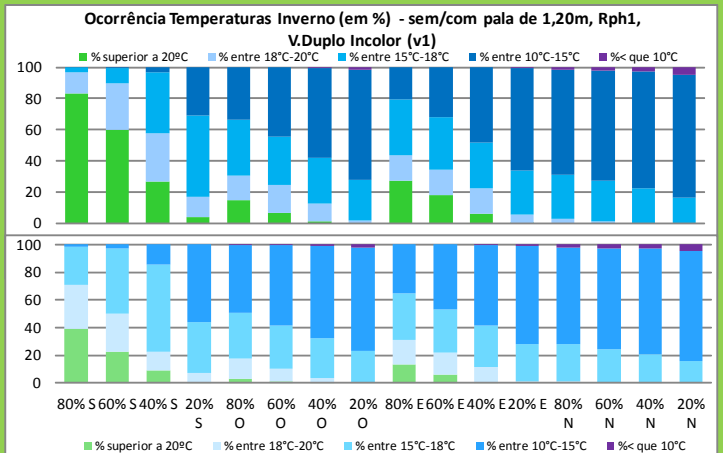
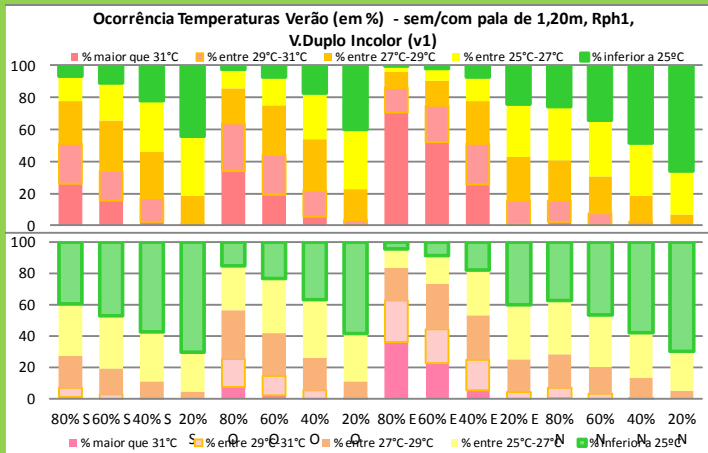
Com Protecção Solar Interior Junto ao Envidraçado



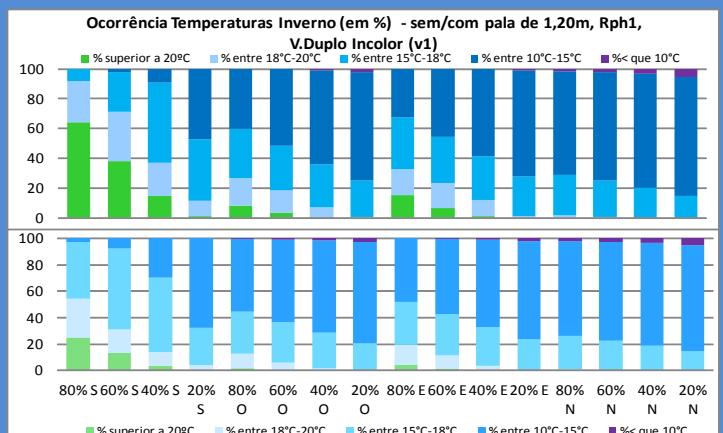
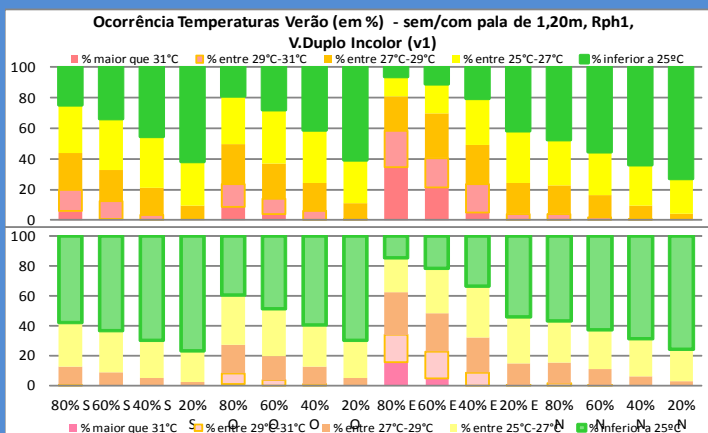
Com Protecção Solar Exterior Junto ao Envidraçado



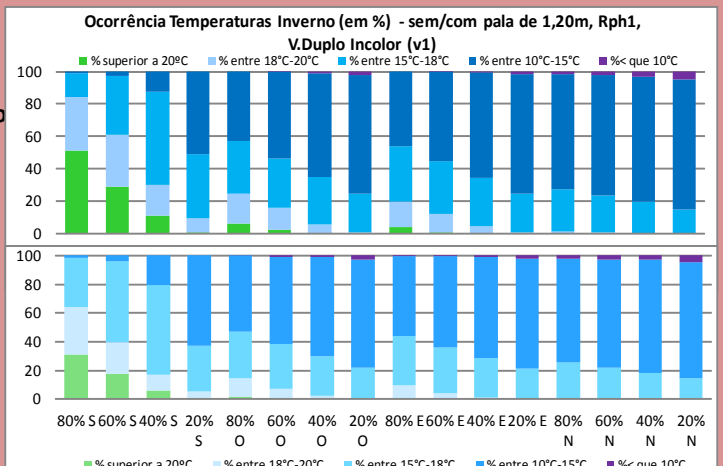
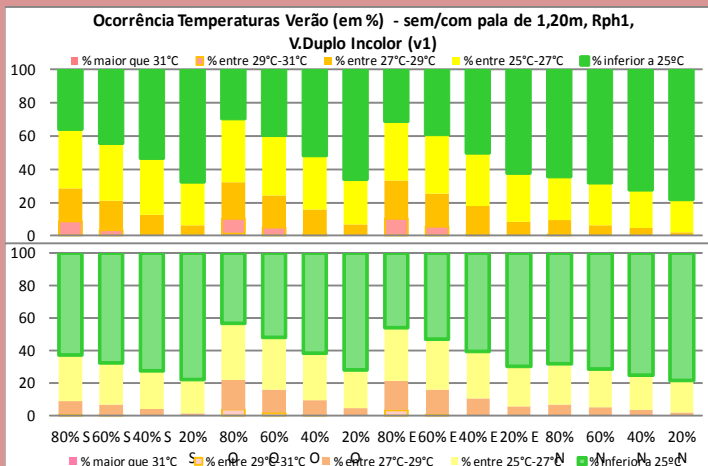
Sem Protecção Solar Junto ao Envidraçado



Com Protecção Solar Interior Junto ao Envidraçado

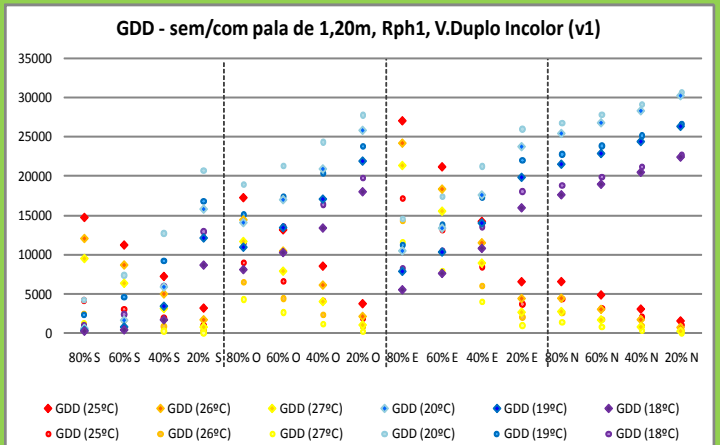
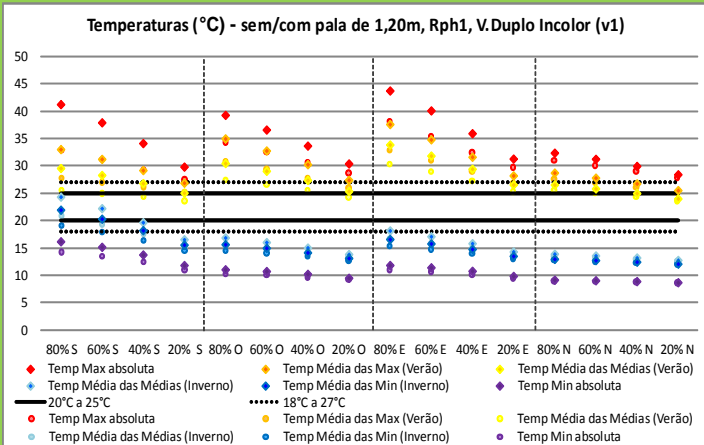


Com Protecção Solar Exterior Junto ao Envidraçado

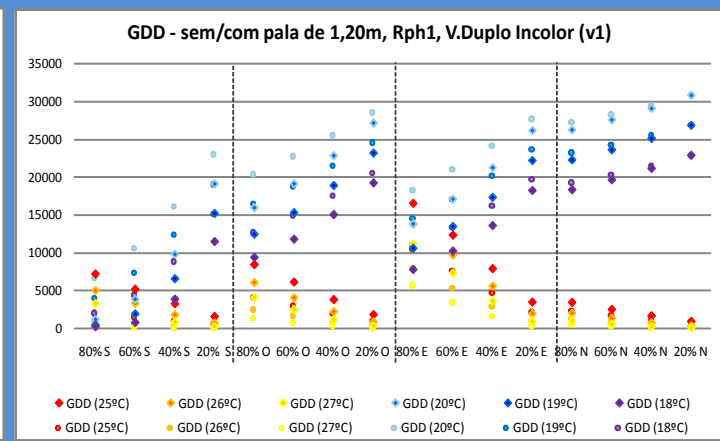
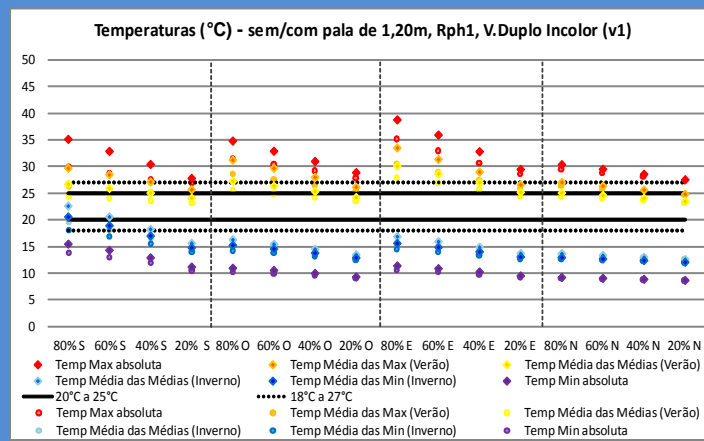


Modelo1 Cobertura: Sem e com Pala de 1,20 m - Massa Térmica2, isolamento 60mm

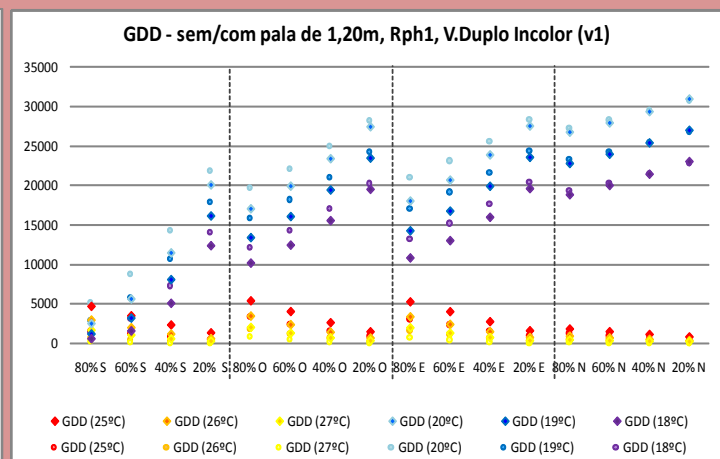
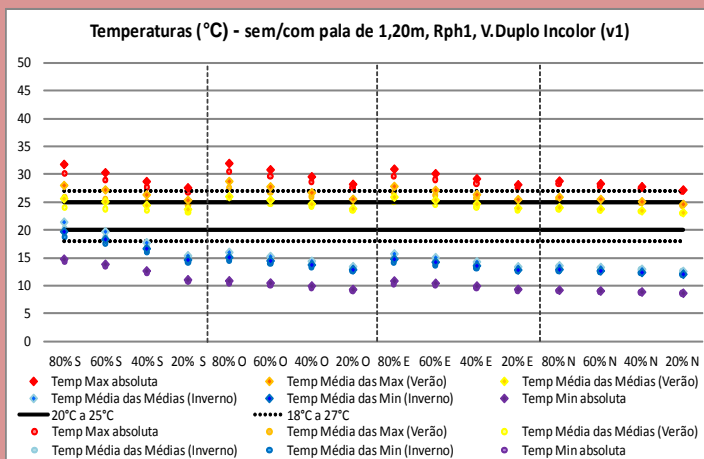
Sem Protecção Solar Junto ao Envidraçado



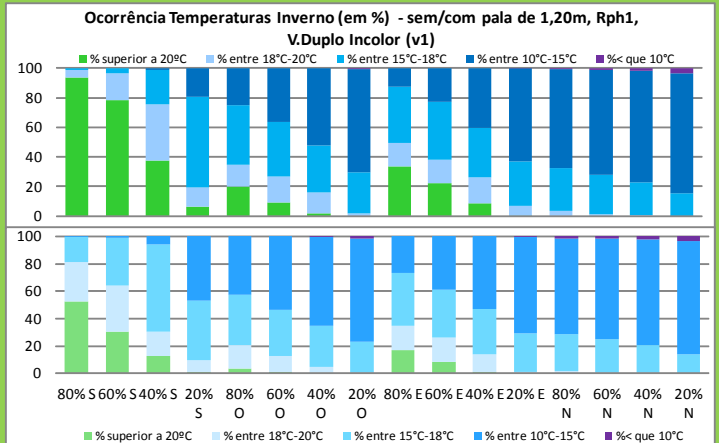
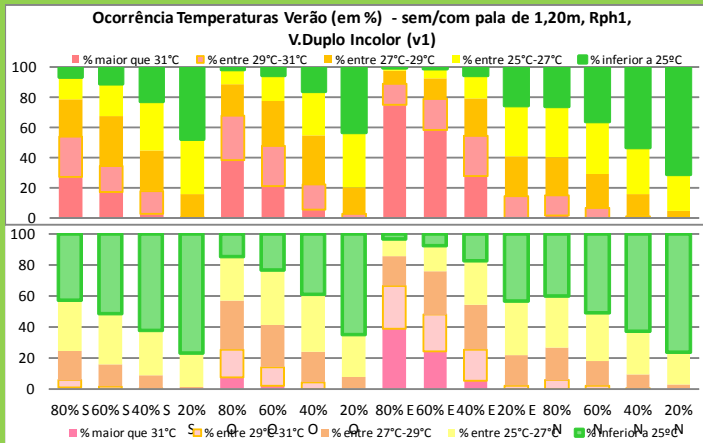
Com Protecção Solar Interior Junto ao Envidraçado



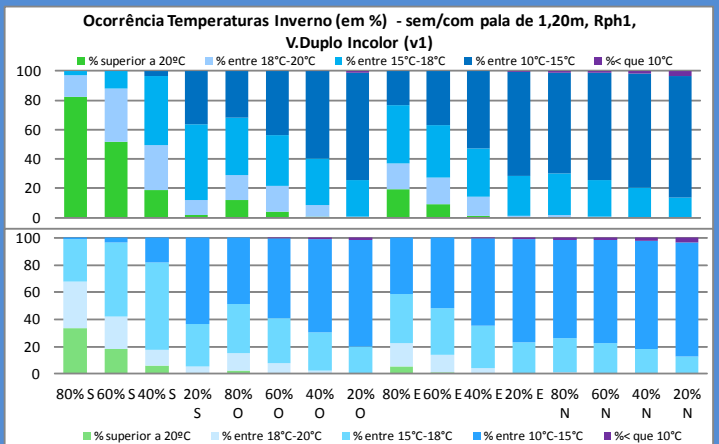
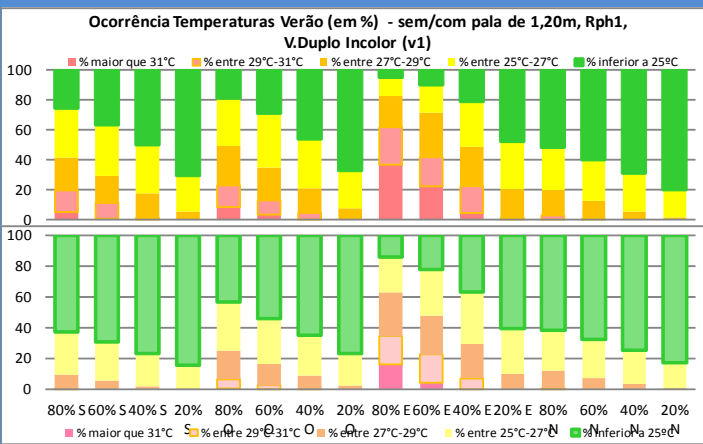
Com Protecção Solar Exterior Junto ao Envidraçado



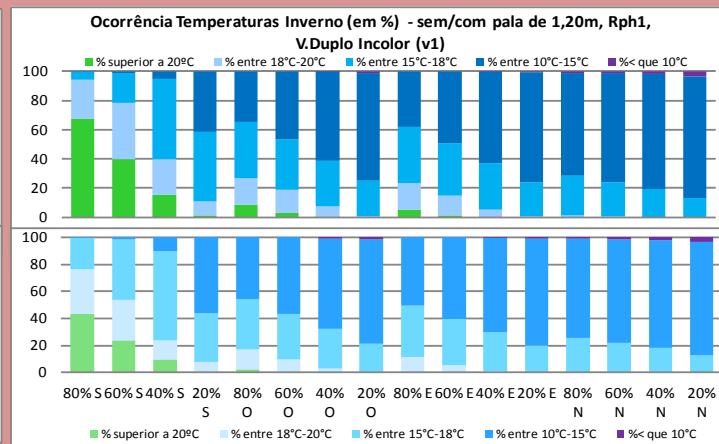
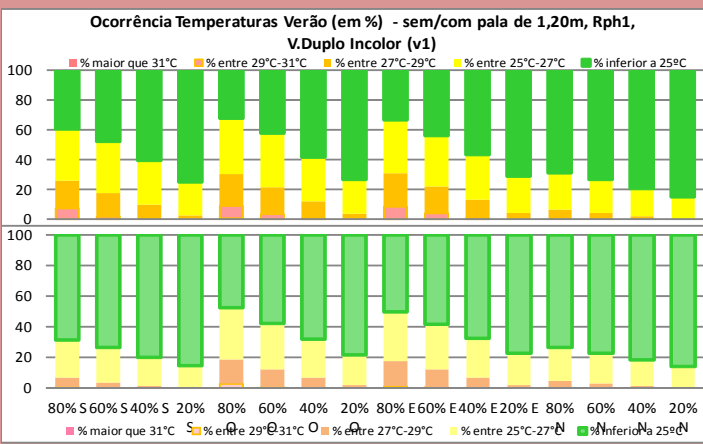
Sem Protecção Solar Junto ao Envidraçado



Com Protecção Solar Interior Junto ao Envidraçado

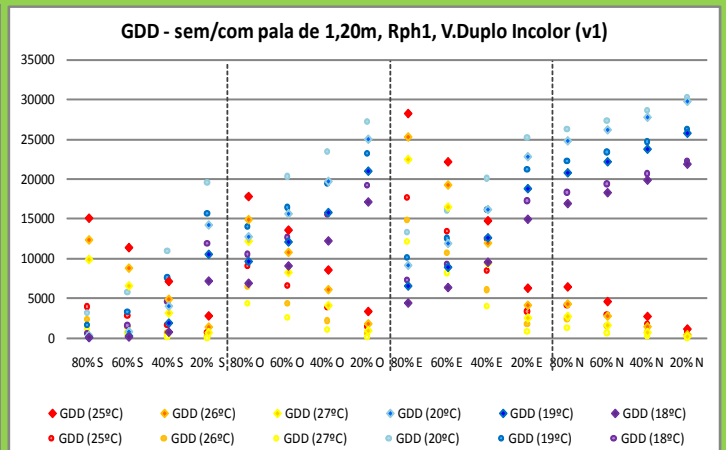
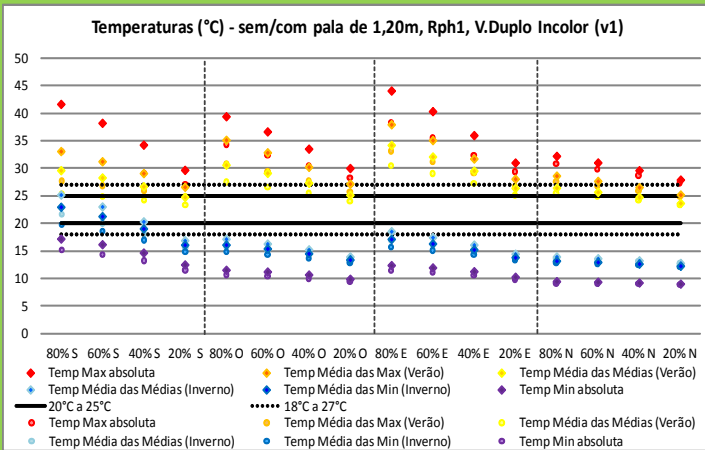


Com Protecção Solar Exterior Junto ao Envidraçado

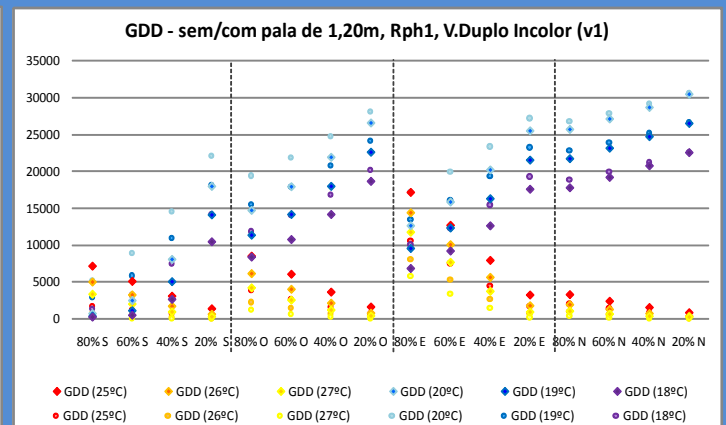
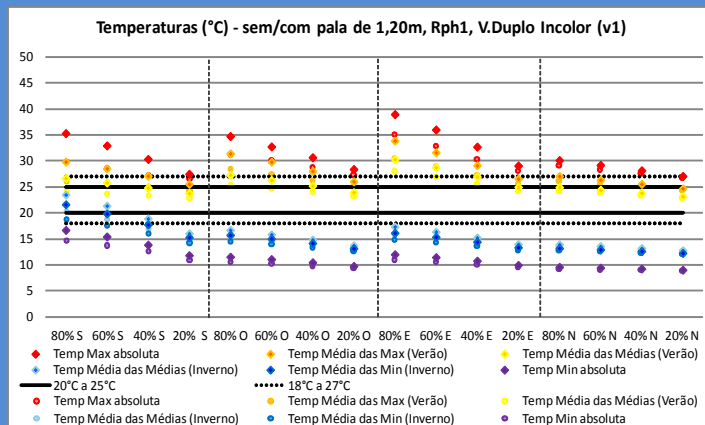


Modelo1 Cobertura: Sem e com Pala de 1,20 m - Massa Térmica2, isolamento 100mm

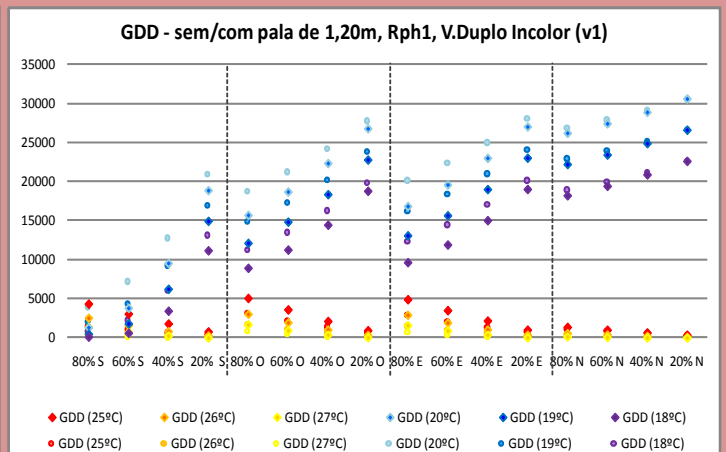
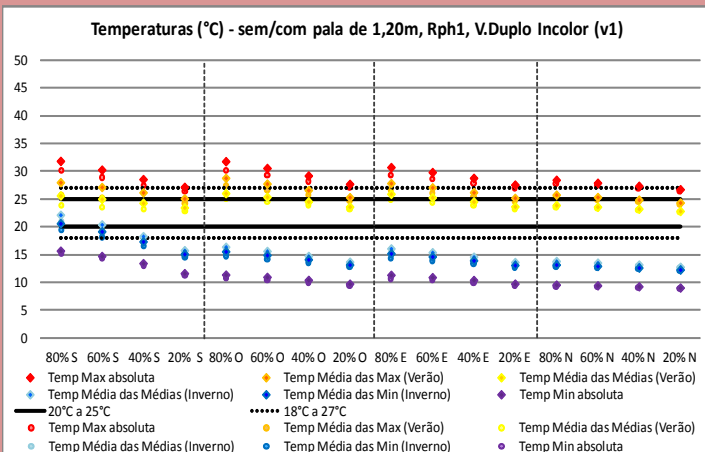
Sem Protecção Solar Junto ao Envidraçado



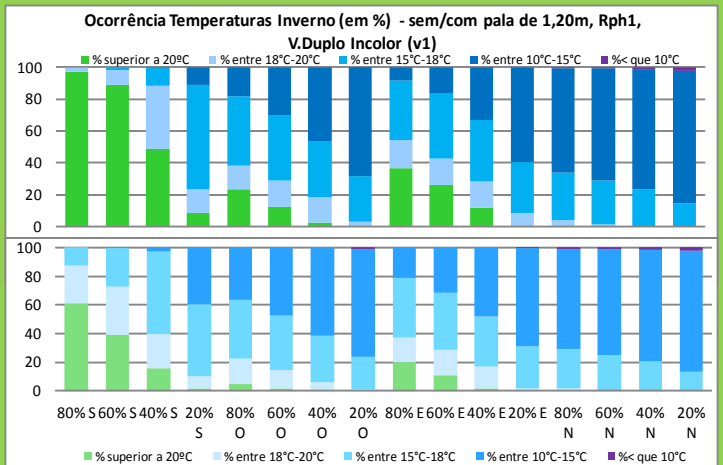
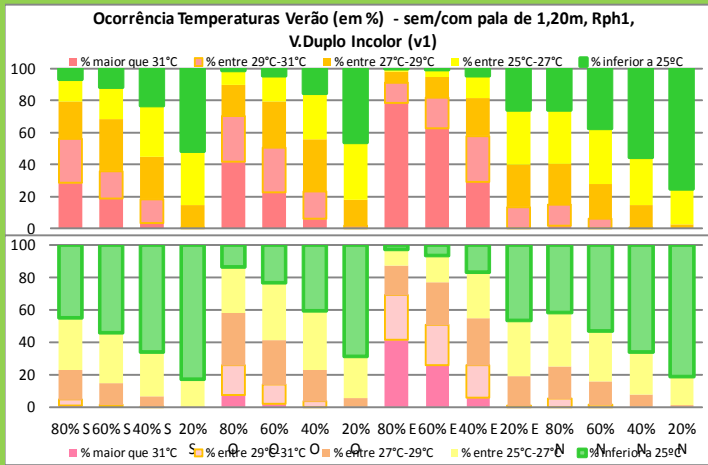
Com Protecção Solar Interior Junto ao Envidraçado



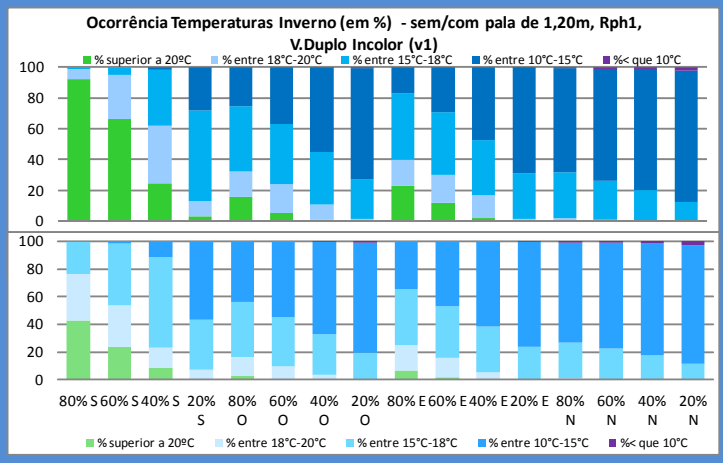
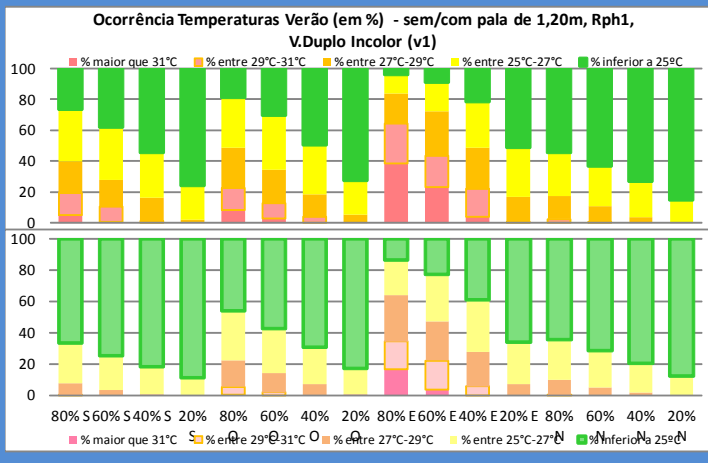
Com Protecção Solar Exterior Junto ao Envidraçado



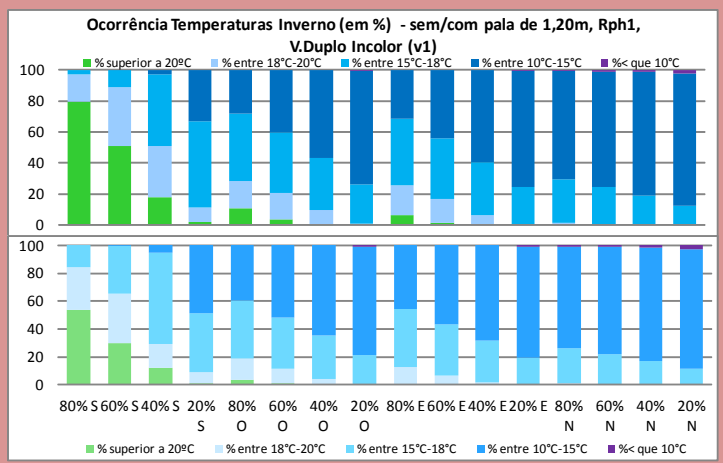
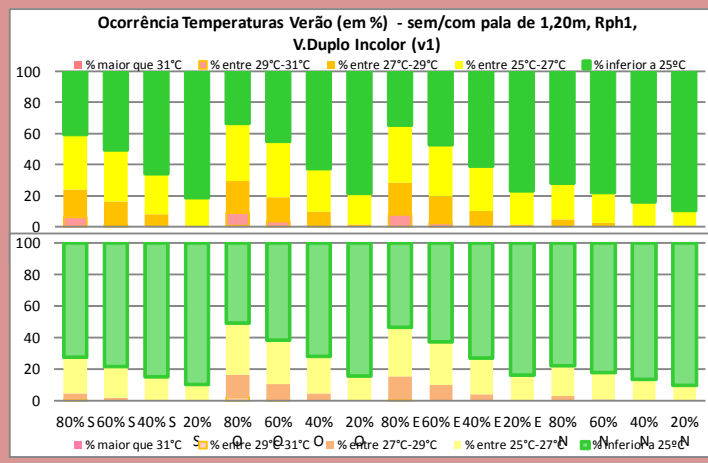
Sem Protecção Solar Junto ao Envidraçado



Com Protecção Solar Interior Junto ao Envidraçado

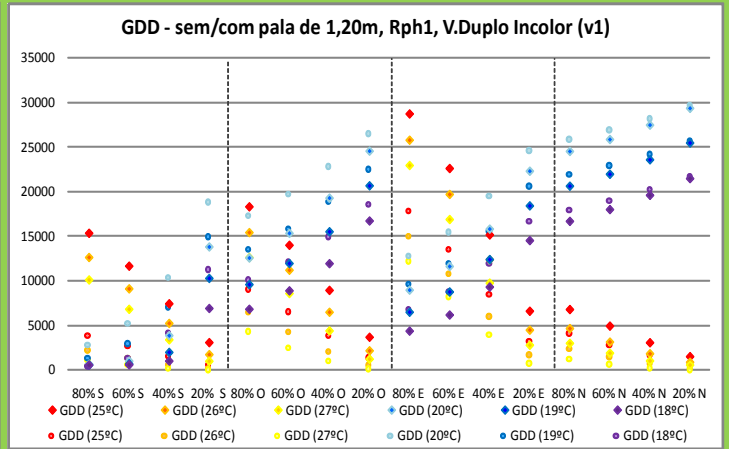
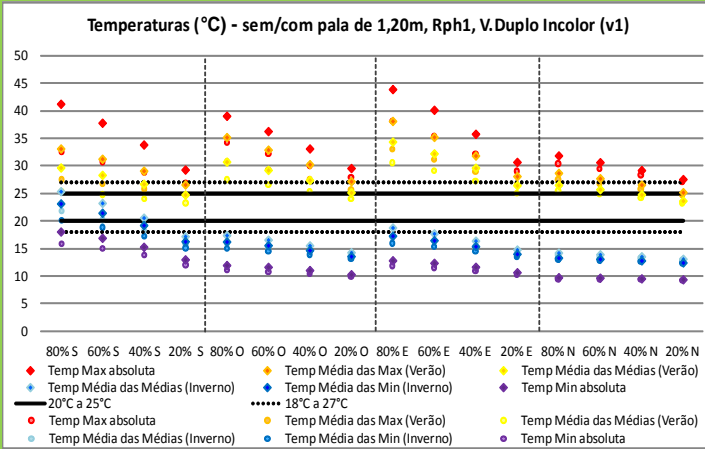


Com Protecção Solar Exterior Junto ao Envidraçado

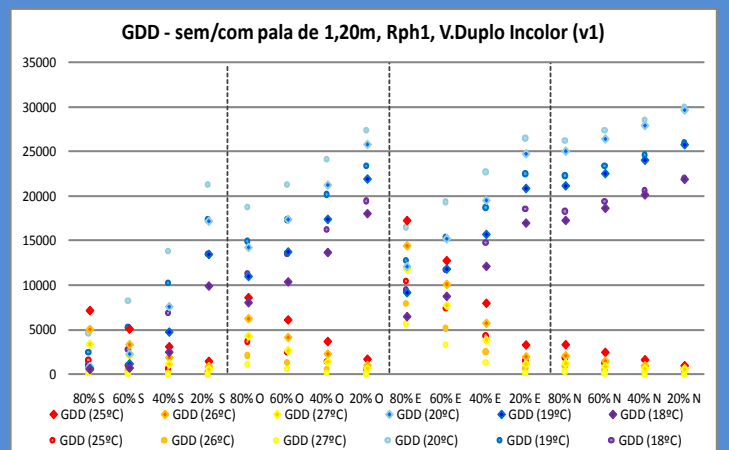
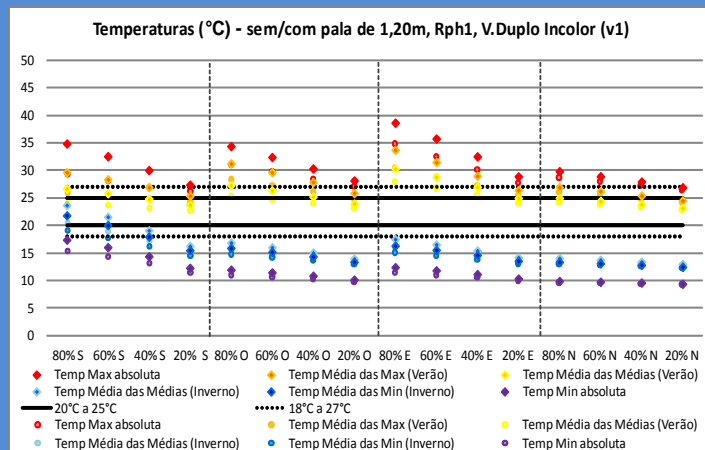


**Modelo1 Cobertura: Sem e com Pala de 1,20 m - Massa Térmica2, isolamento 30mm**

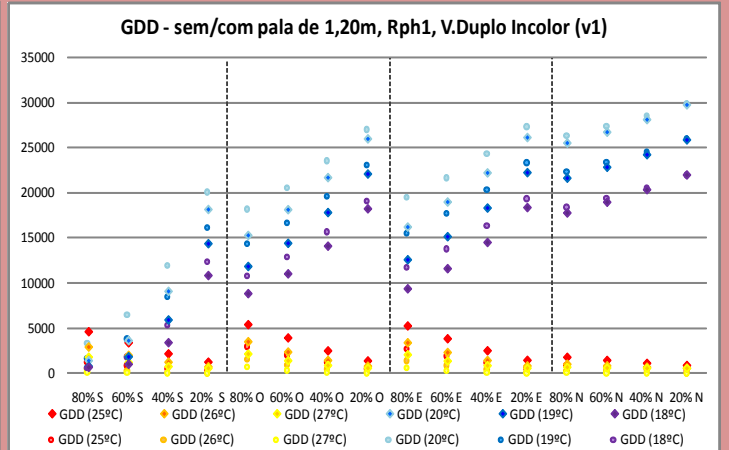
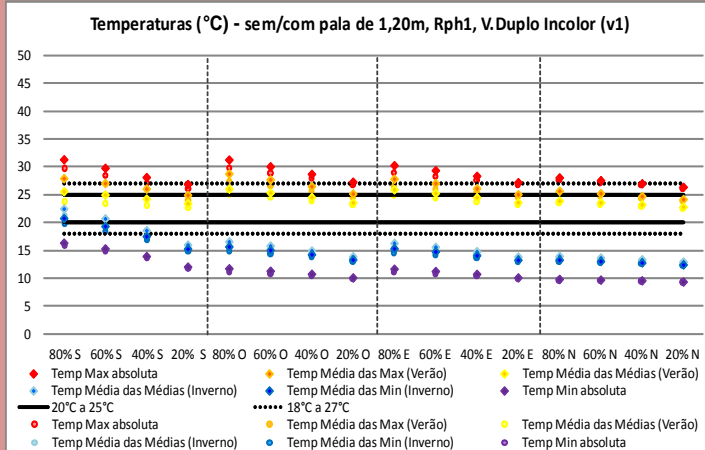
**Sem Protecção Solar Junto ao Envidraçado**



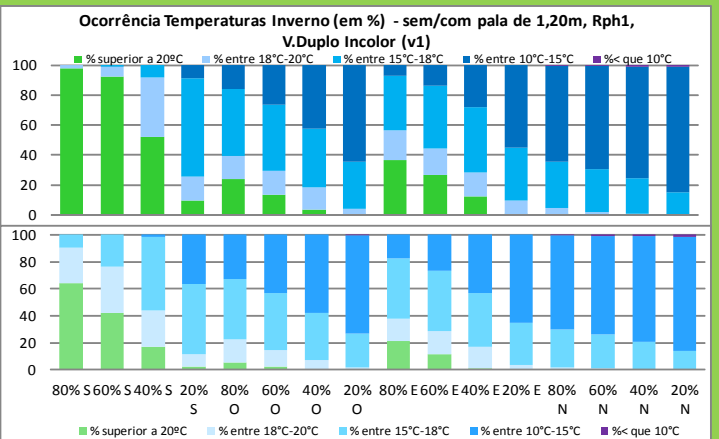
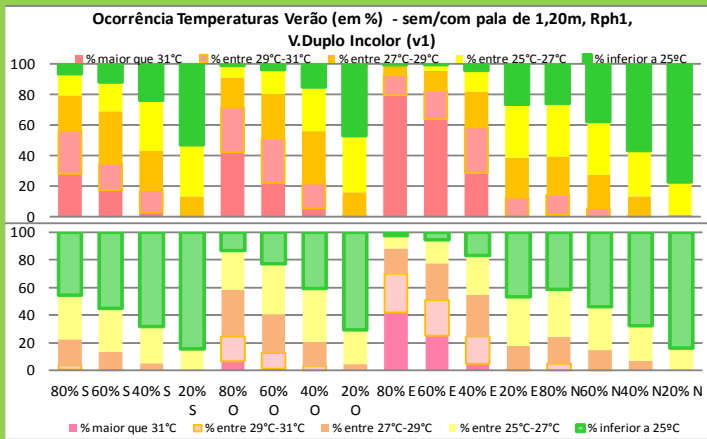
**Com Protecção Solar Interior Junto ao Envidraçado**



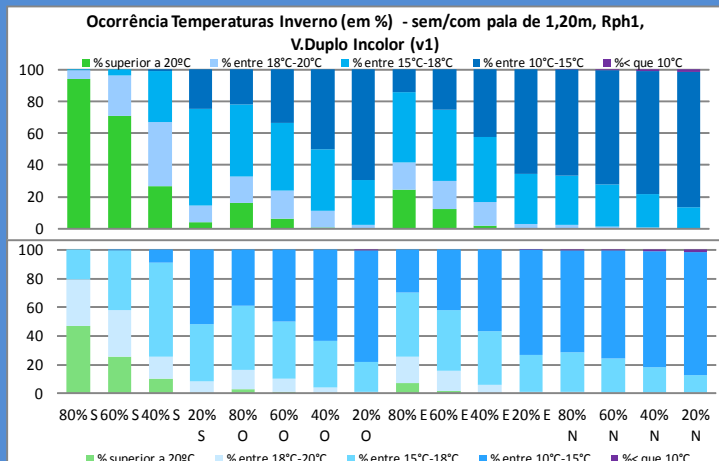
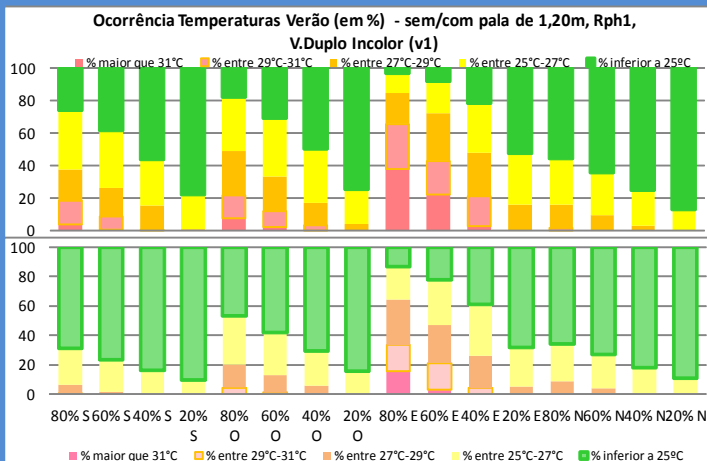
**Com Protecção Solar Exterior Junto ao Envidraçado**



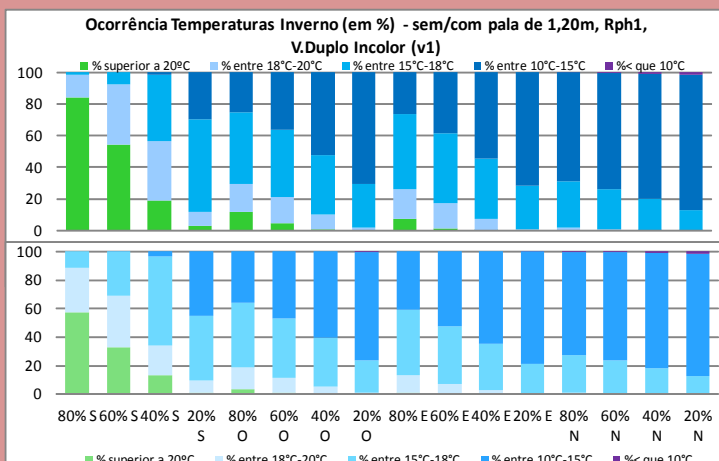
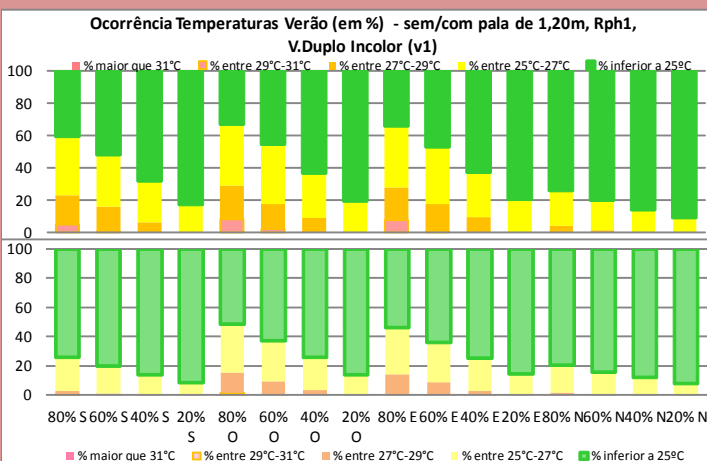
Sem Protecção Solar Junto ao Envidraçado



Com Protecção Solar Interior Junto ao Envidraçado



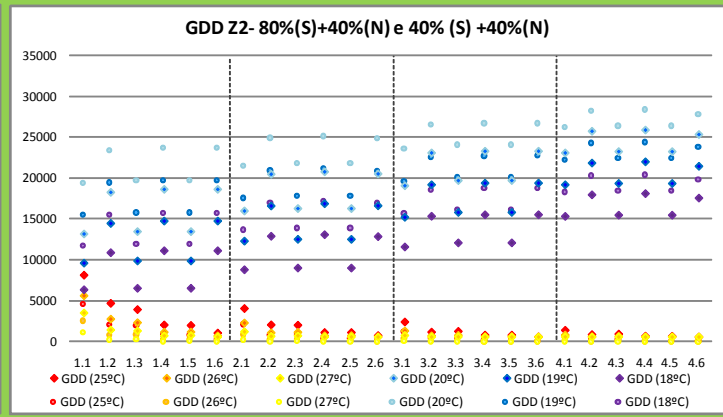
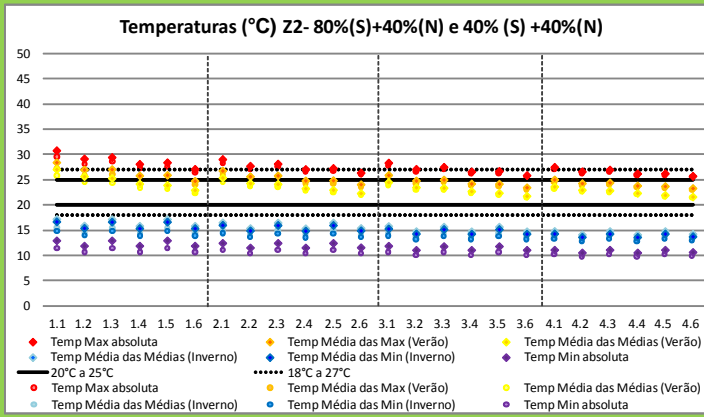
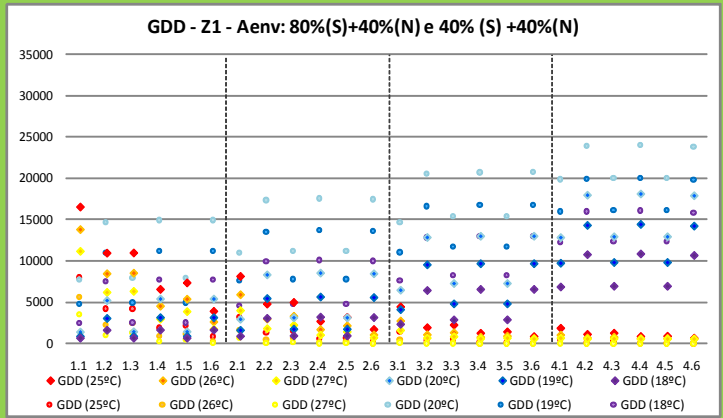
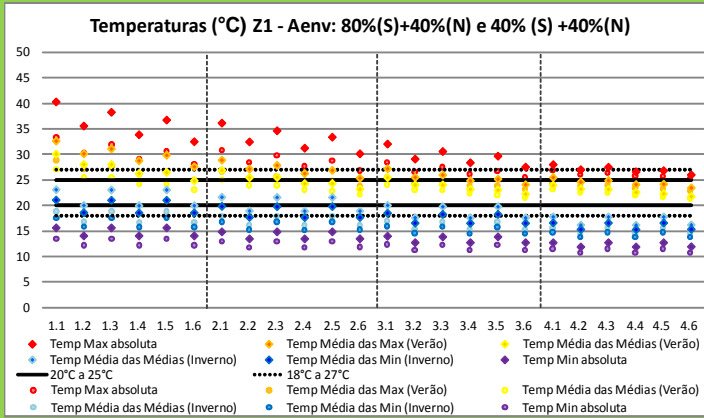
Com Protecção Solar Exterior Junto ao Envidraçado



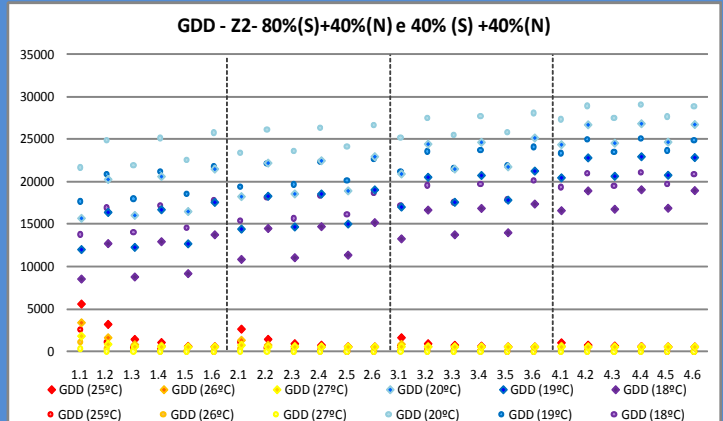
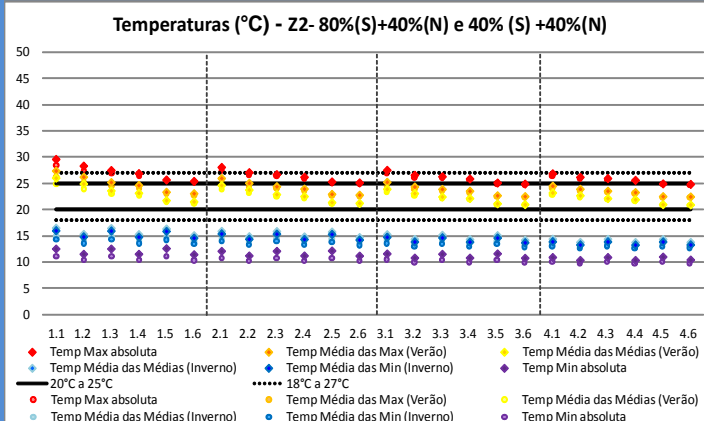
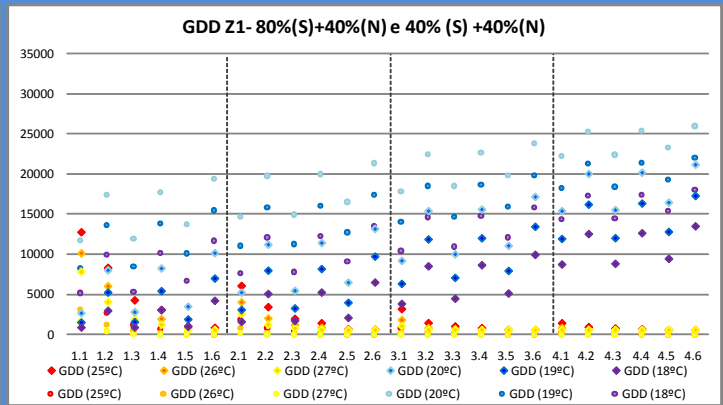
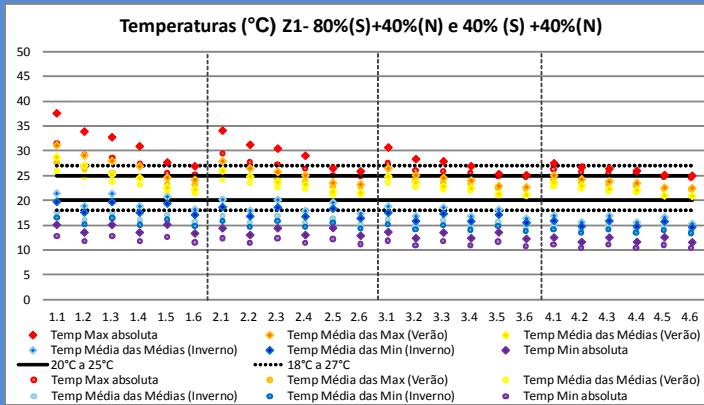


**Modelo2 Intermédio: Soluções com Fachadas Envidraçadas 80%(S)+40%(N) e 40% (S) +40%(N)**

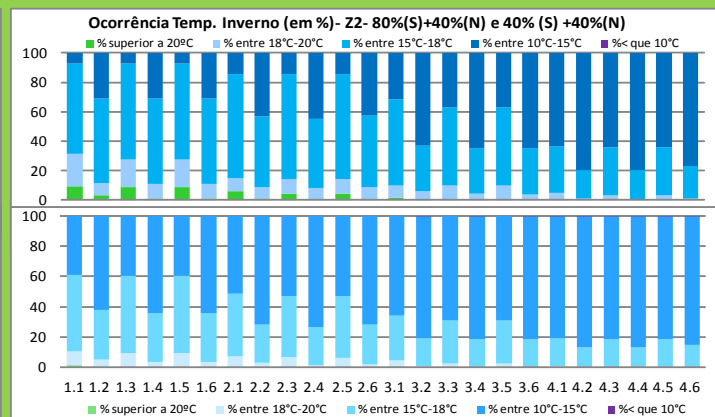
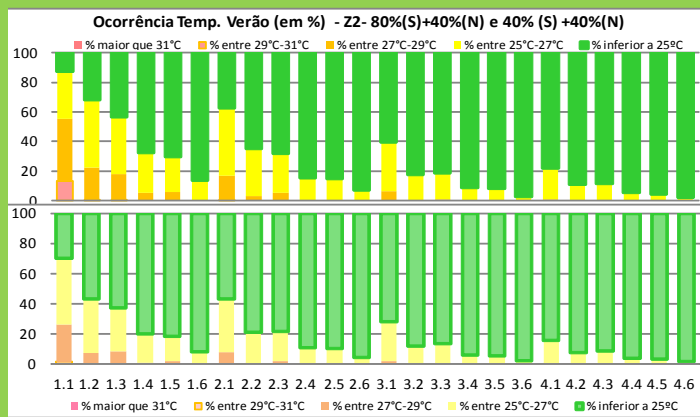
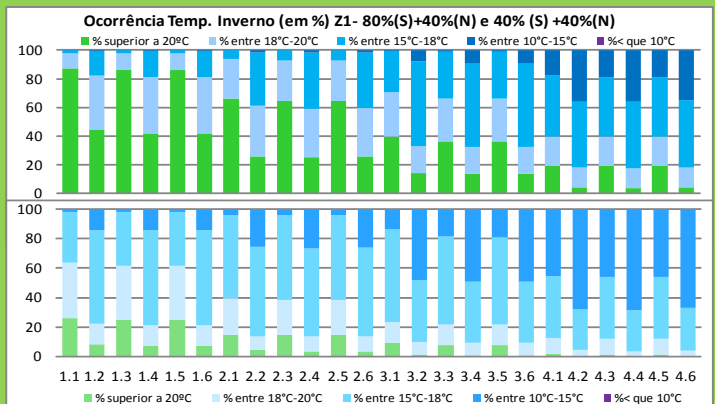
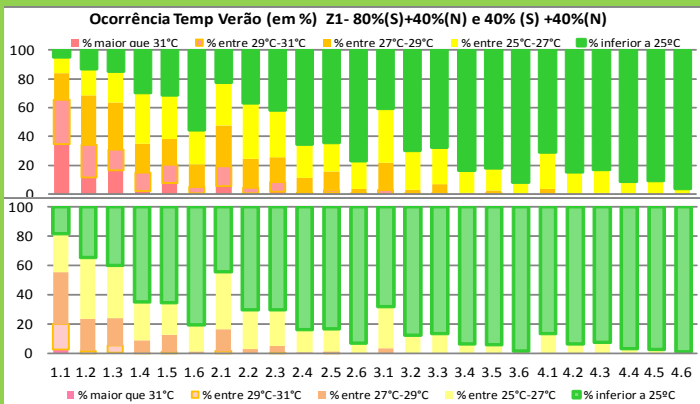
**Sem Protecção Solar Junto ao Envidraçado**



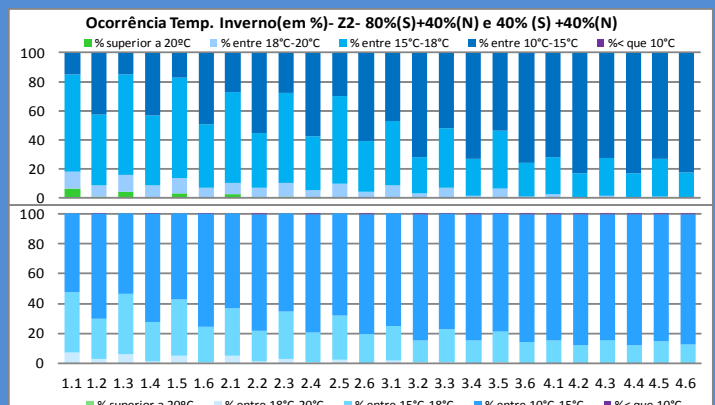
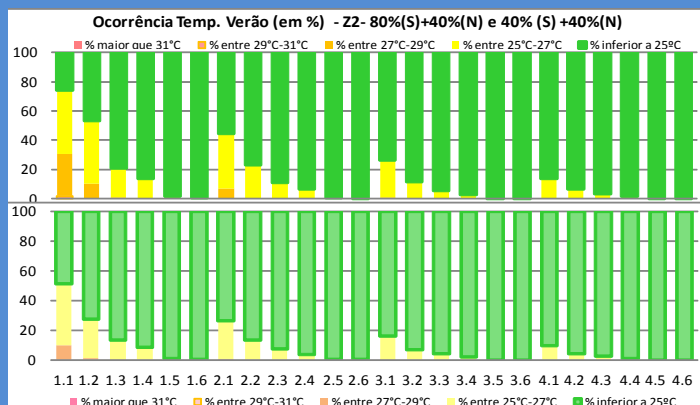
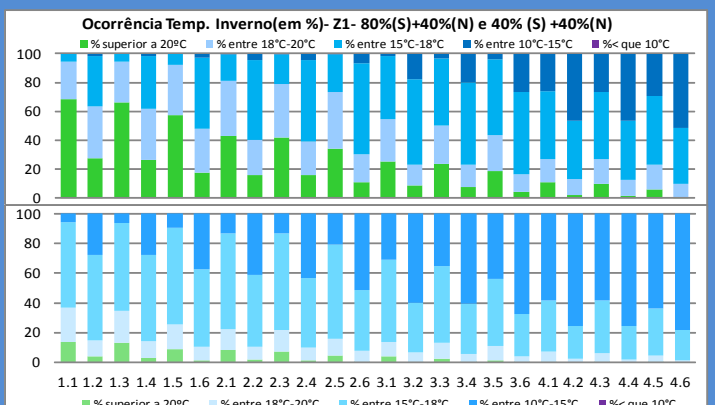
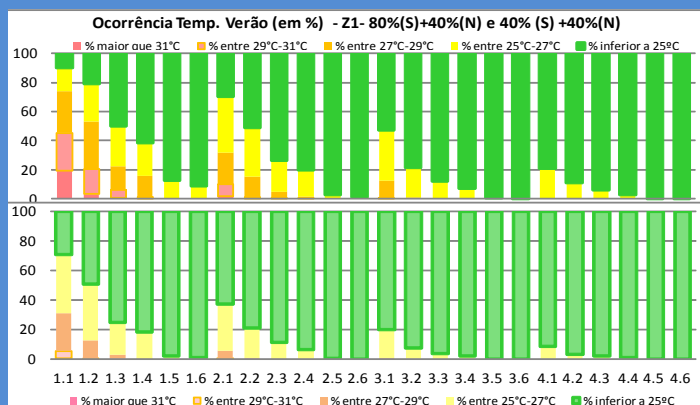
**Com Protecção Solar Interior Junto ao Envidraçado**



### Sem Protecção Solar Junto ao Envidraçado

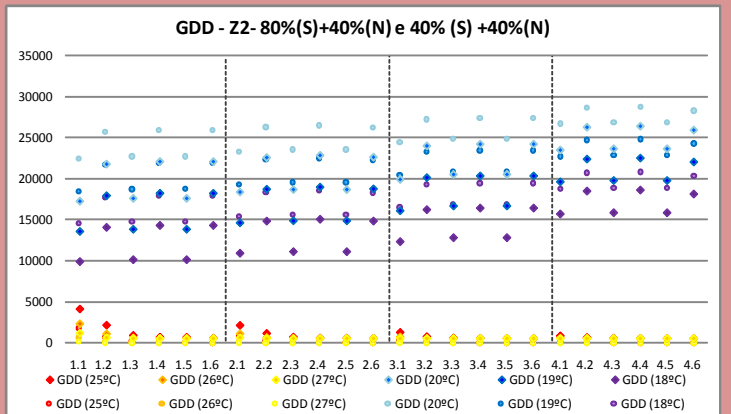
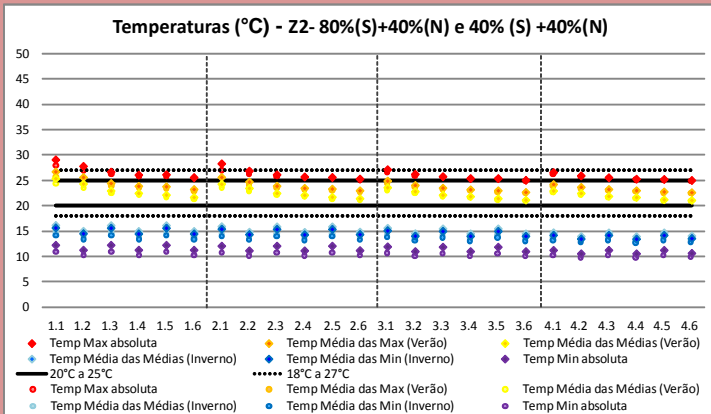
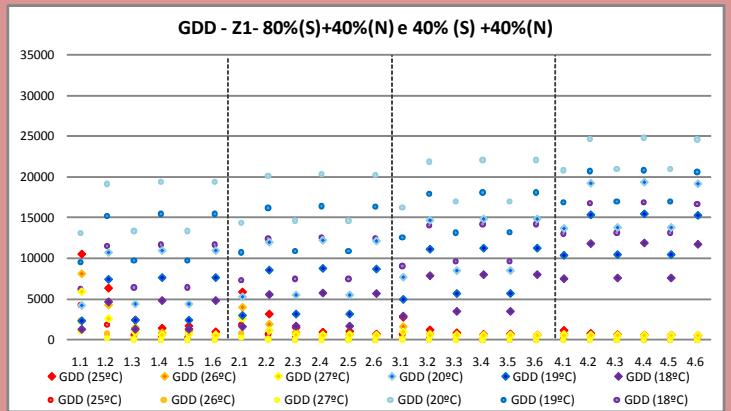
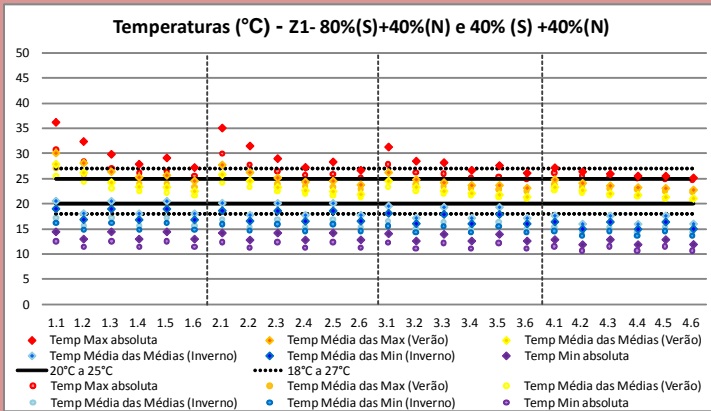


### Com Protecção Solar Interior Junto ao Envidraçado

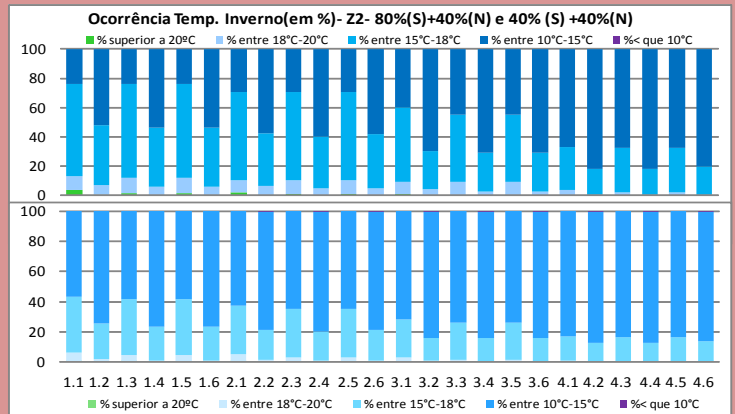
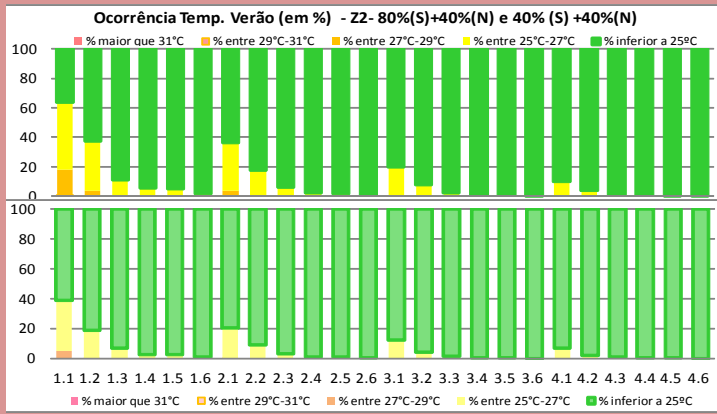
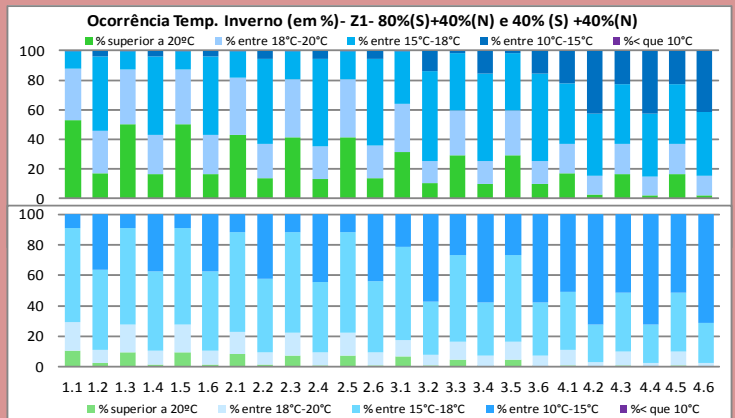
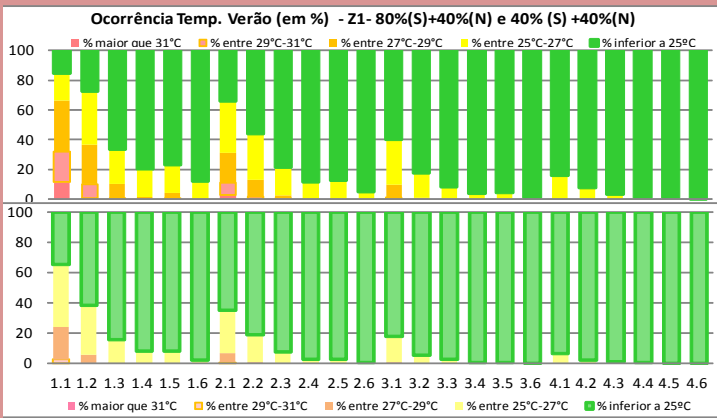


**Modelo2 Intermédio: Soluções com Fachadas Envidraçadas 80%(S)+40%(N) e 40% (S) +40%(N)**

**Com Protecção Solar Exterior Junto ao Envidraçado**

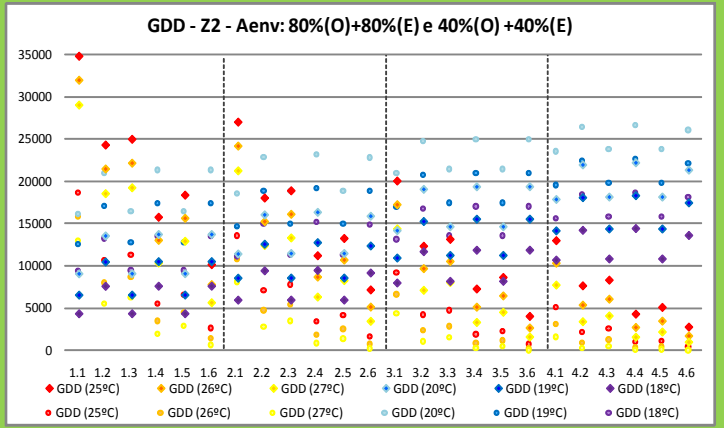
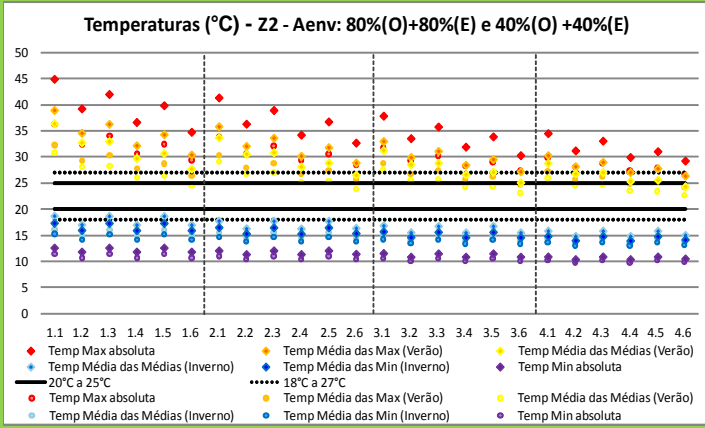
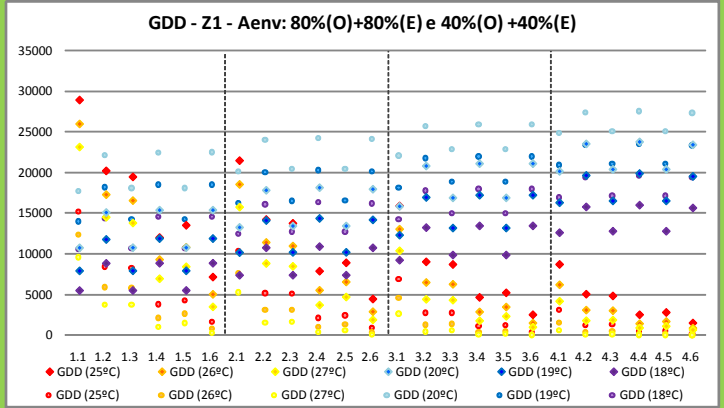
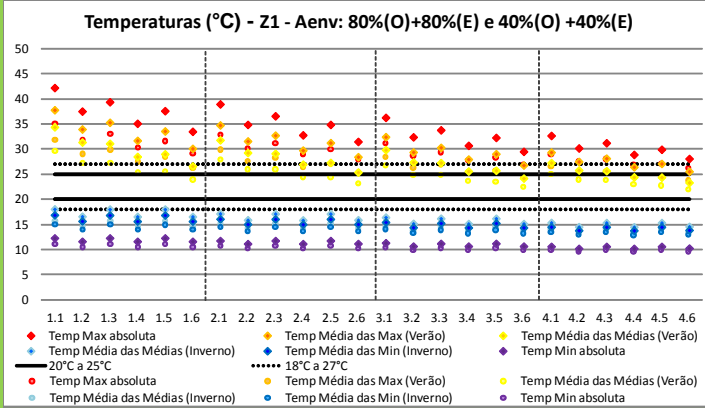


Com Protecção Solar Exterior Junto ao Envidraçado

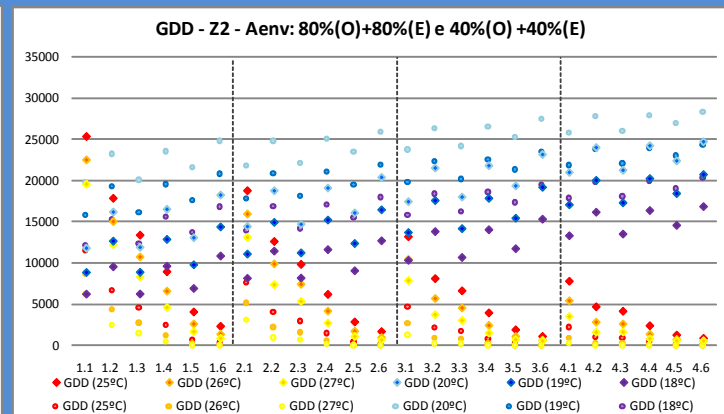
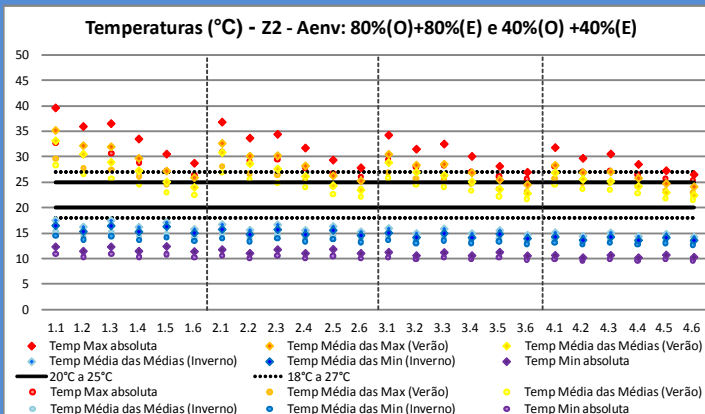
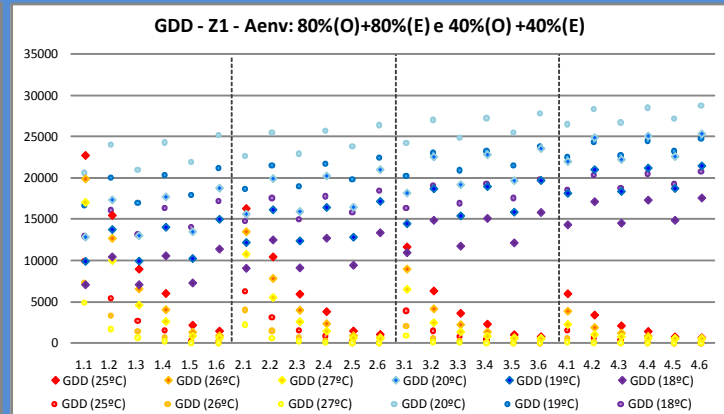
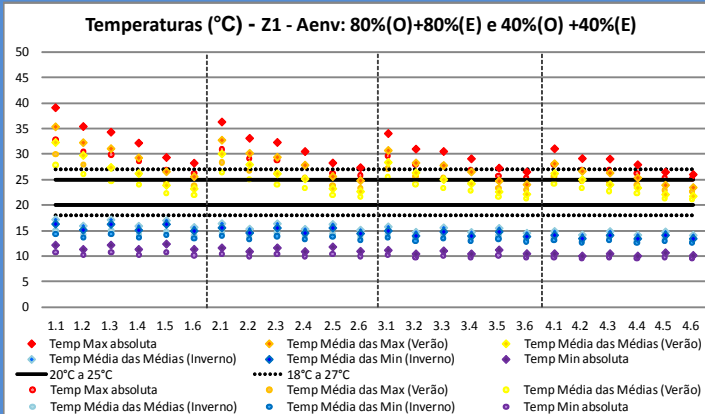


**Modelo2 Intermédio: Soluções com Fachadas Envidraçadas 80%(O)+80%(E) e 40% (O) +40%(E)**

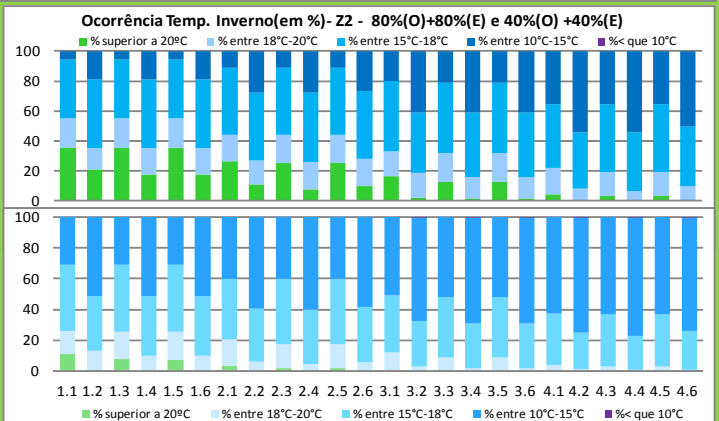
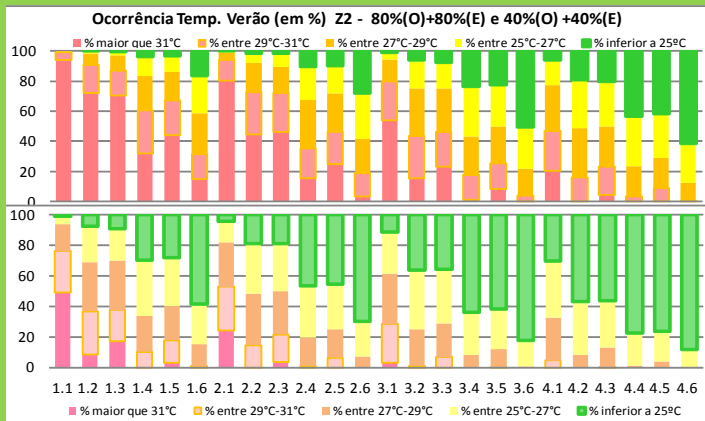
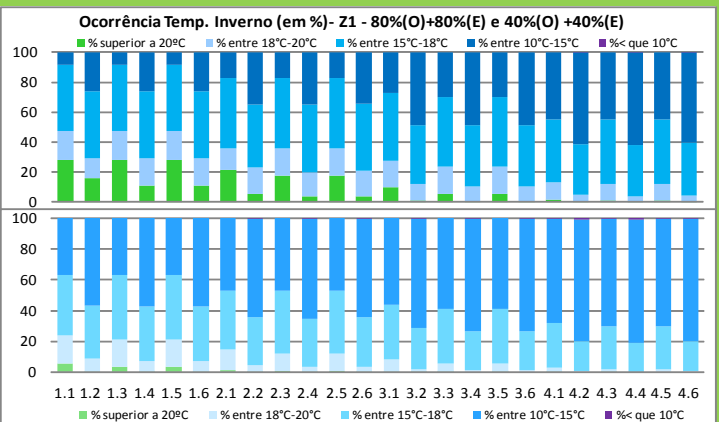
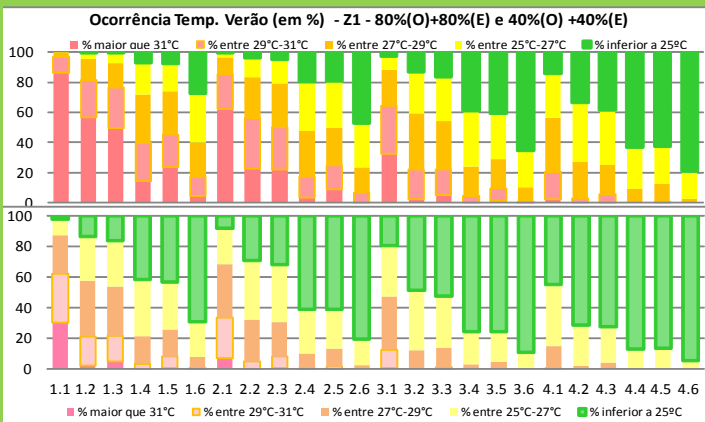
**Sem Protecção Solar Junto ao Envidraçado**



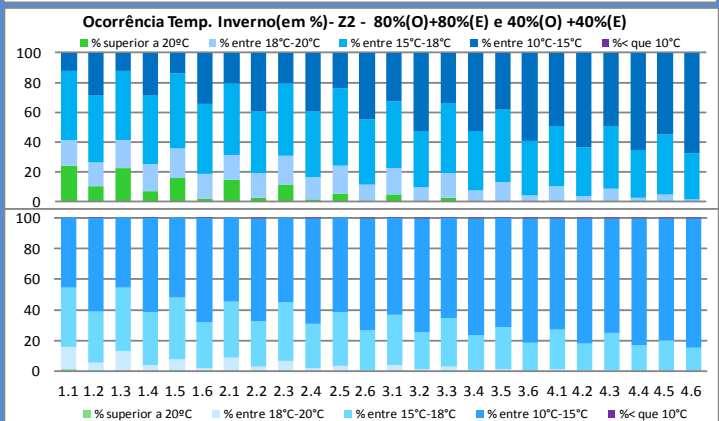
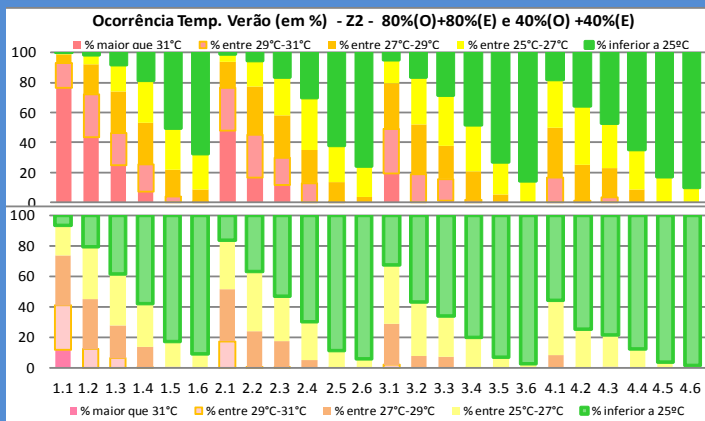
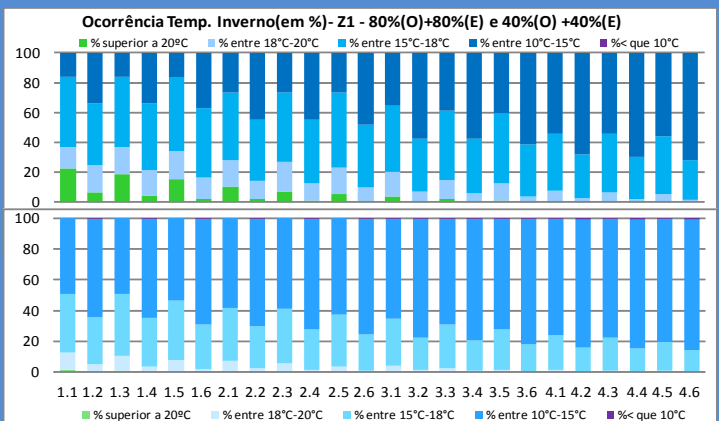
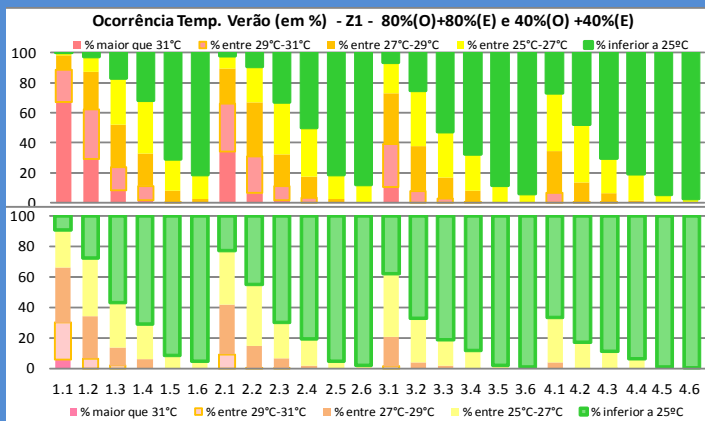
**Com Protecção Solar Interior Junto ao Envidraçado**



### Sem Protecção Solar Junto ao Envidraçado

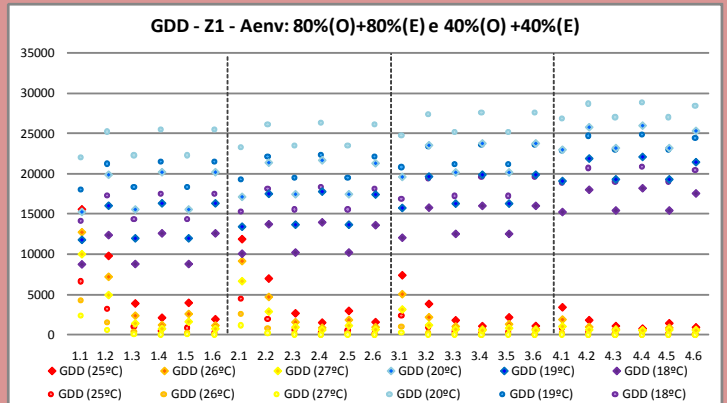
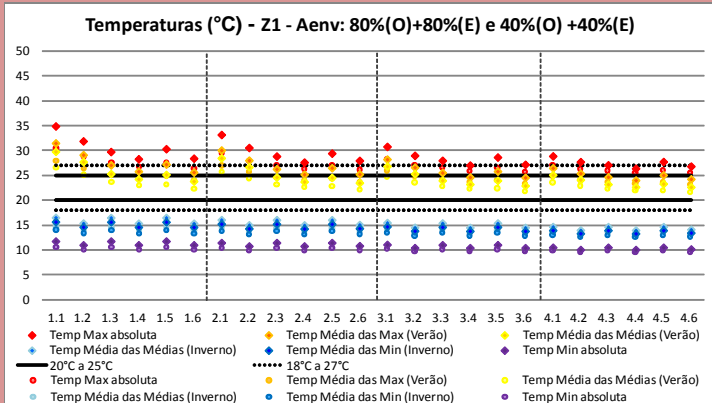
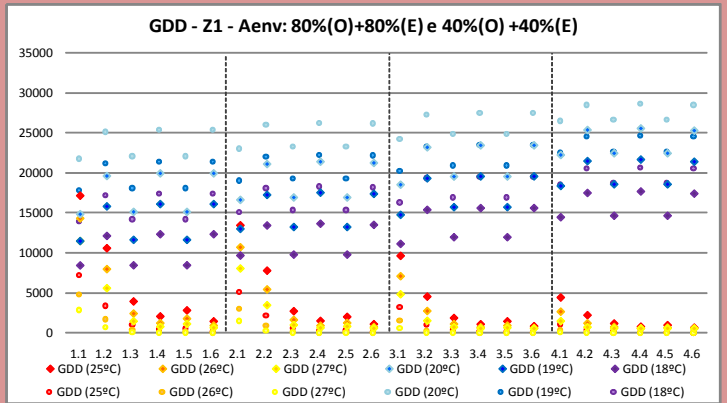
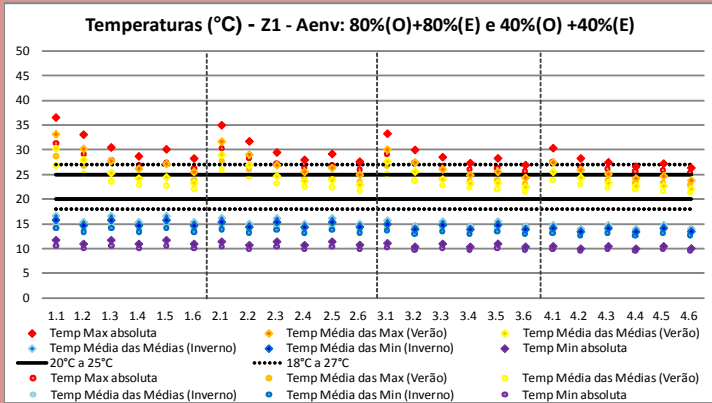


### Com Protecção Solar Interior Junto ao Envidraçado

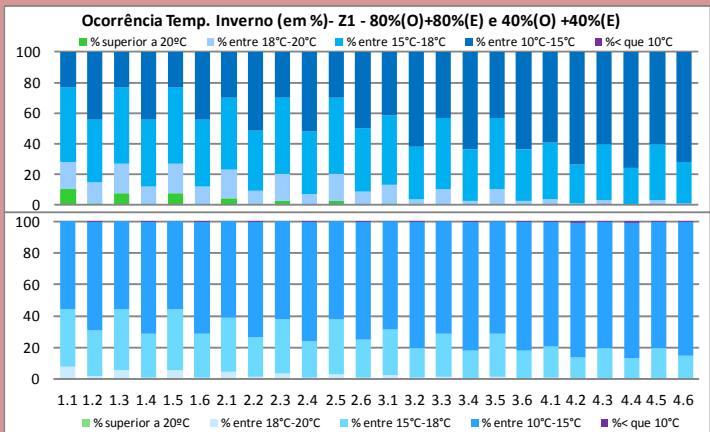
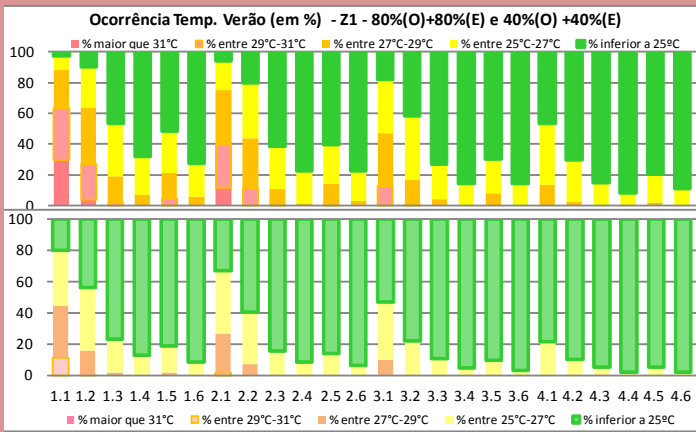
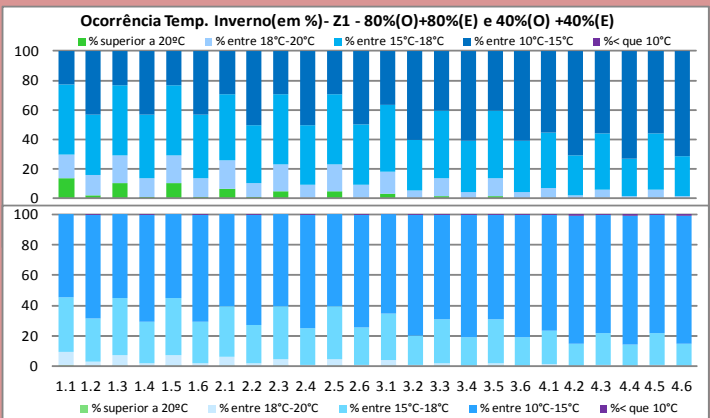
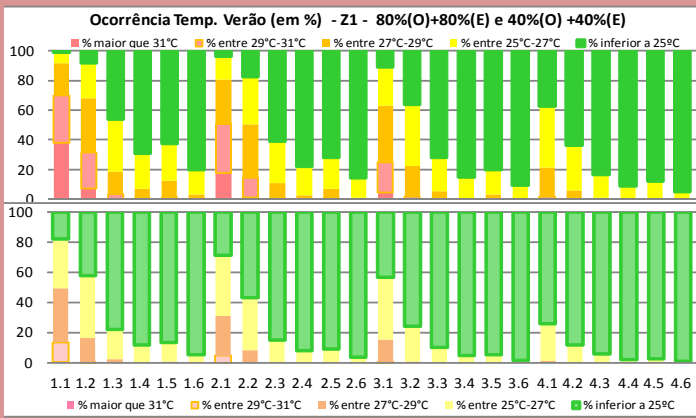


**Modelo2 Intermédio: Soluções com Fachadas Envidraçadas 80%(O)+80%(E) e 40% (O) +40%(E)**

**Com Protecção Solar Exterior Junto ao Envidraçado**



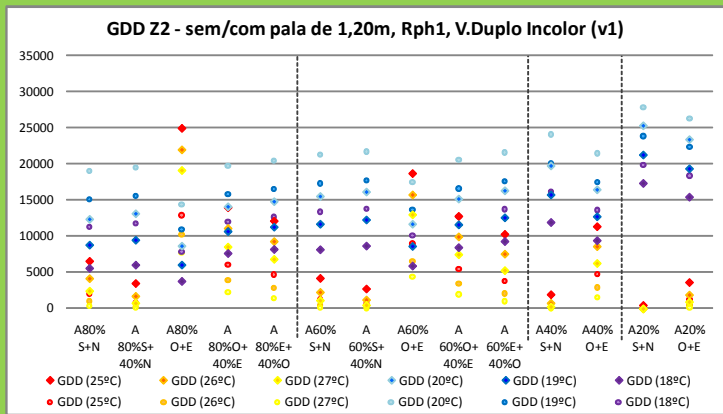
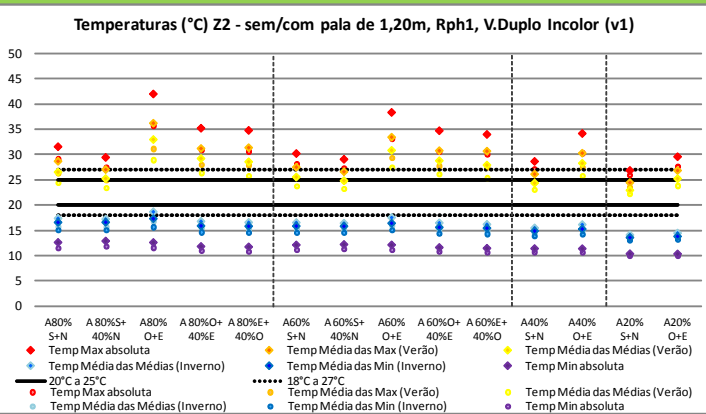
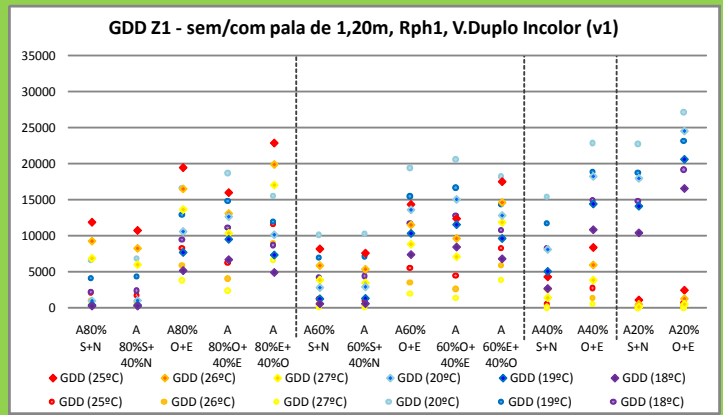
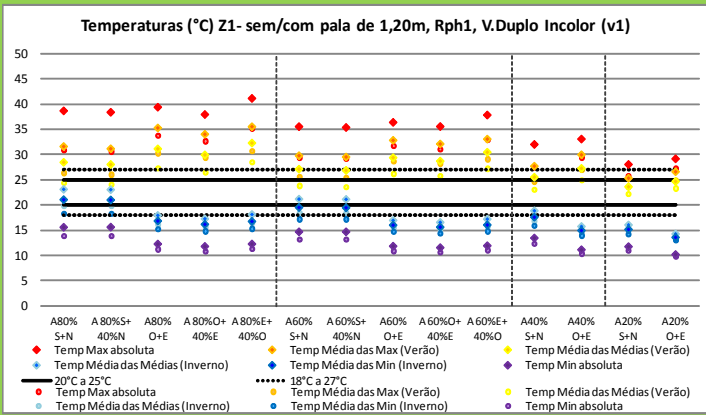
Com Protecção Solar Exterior Junto ao Envidraçado



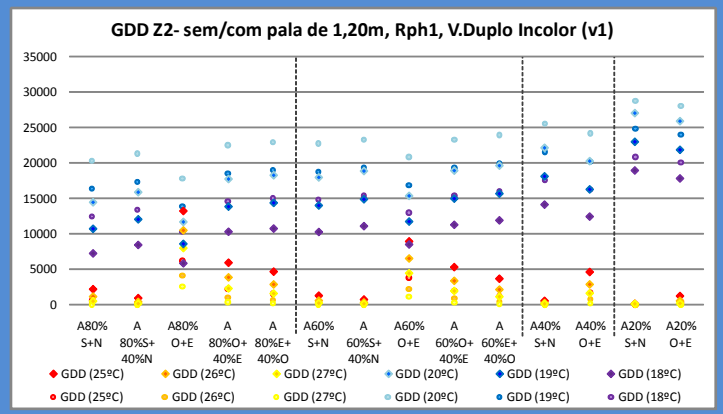
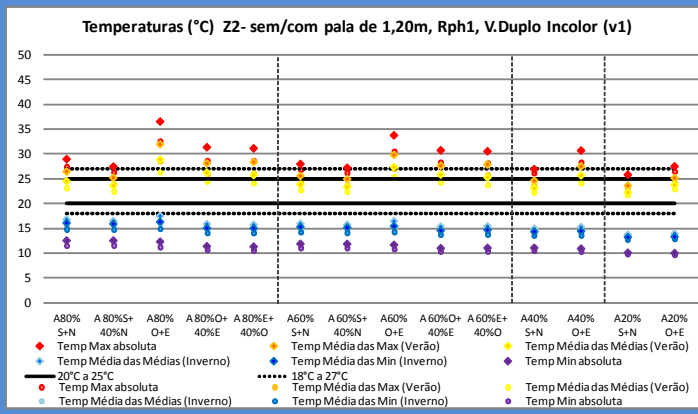
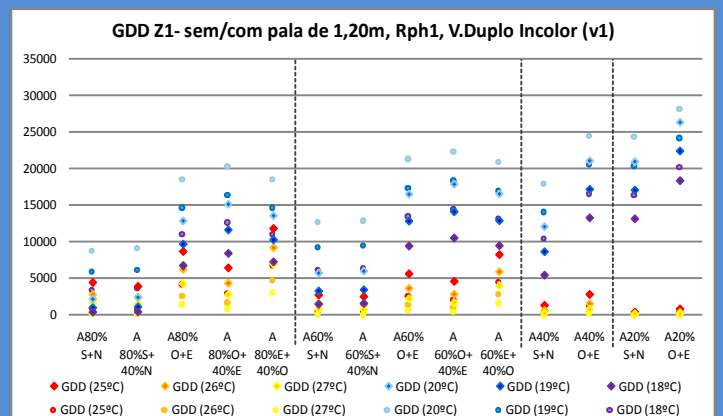
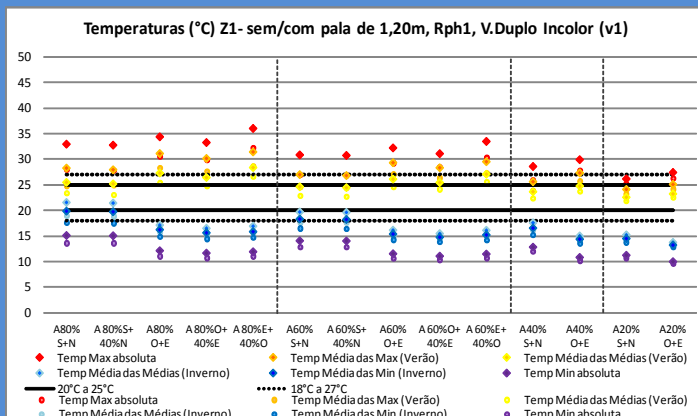


Modelo2 Intermédio: Soluções Sem e Com Palas de 1,20m – vidro duplo incolor e Rph nocturno I

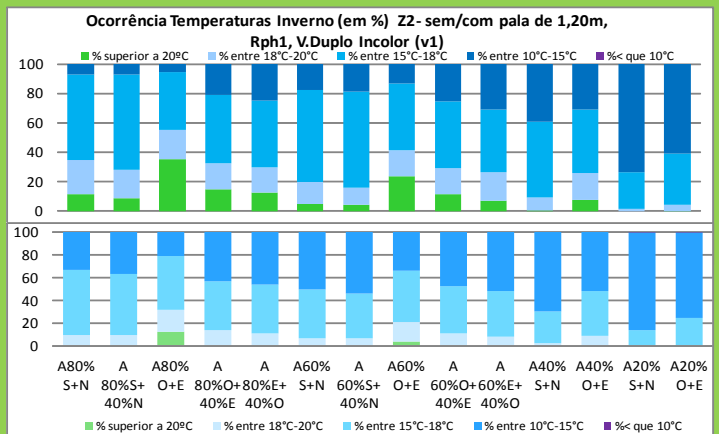
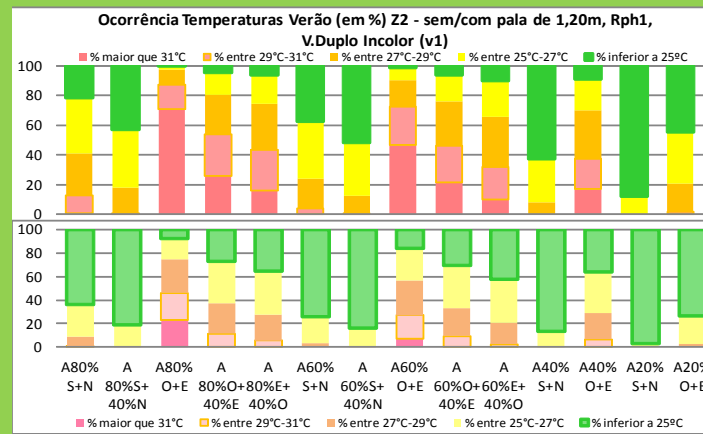
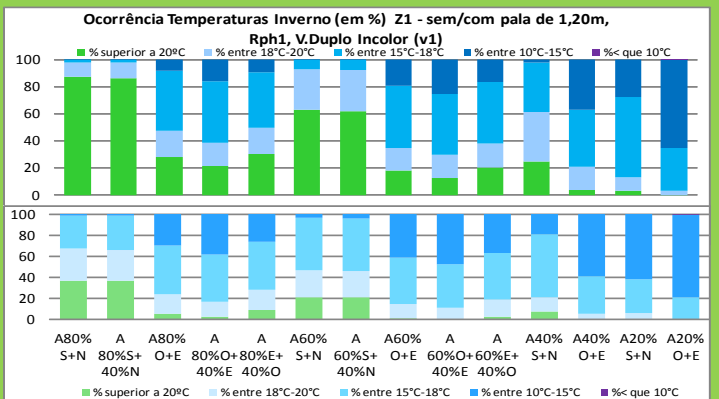
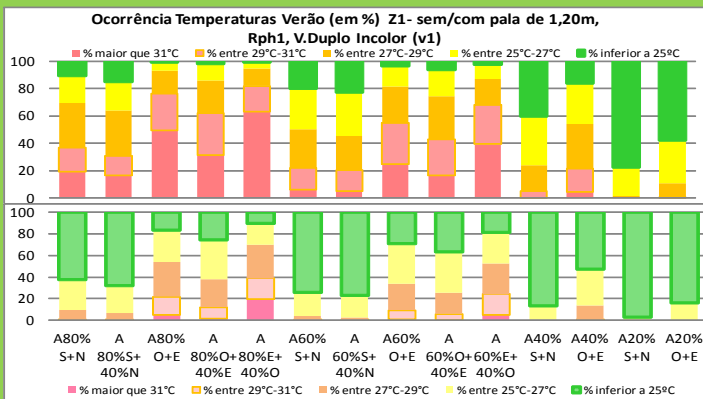
Sem Protecção Solar Junto ao Envidraçado



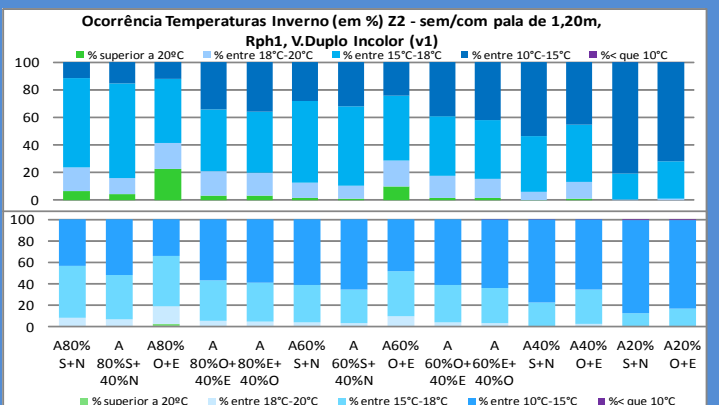
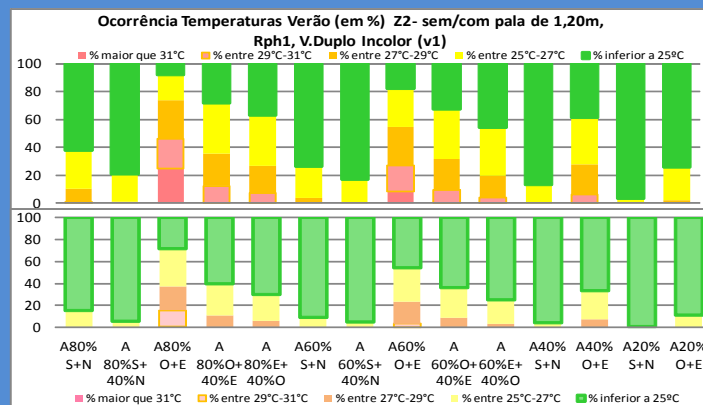
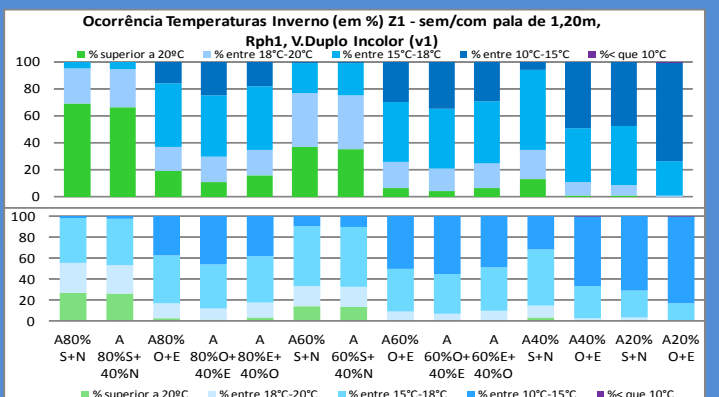
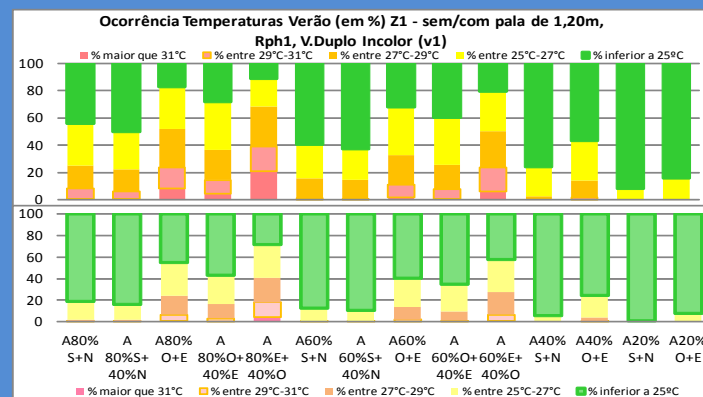
Com Protecção Solar Interior Junto ao Envidraçado



Sem Protecção Solar Junto ao Envidraçado

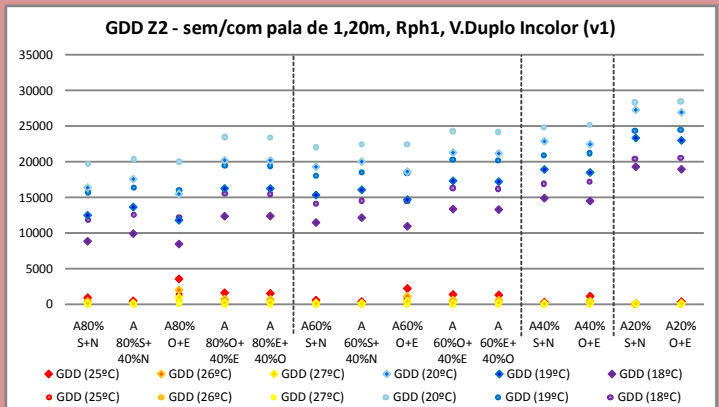
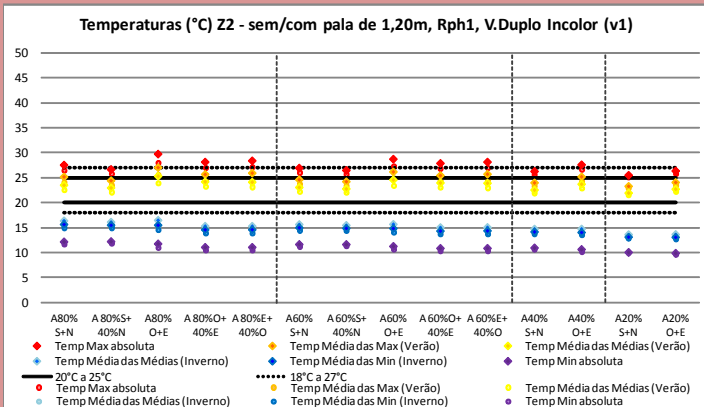
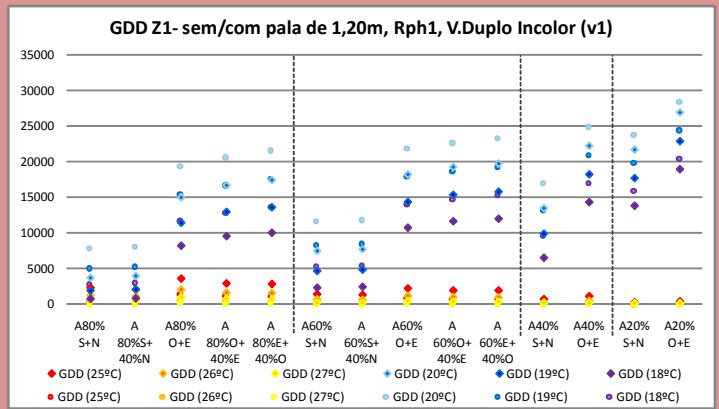
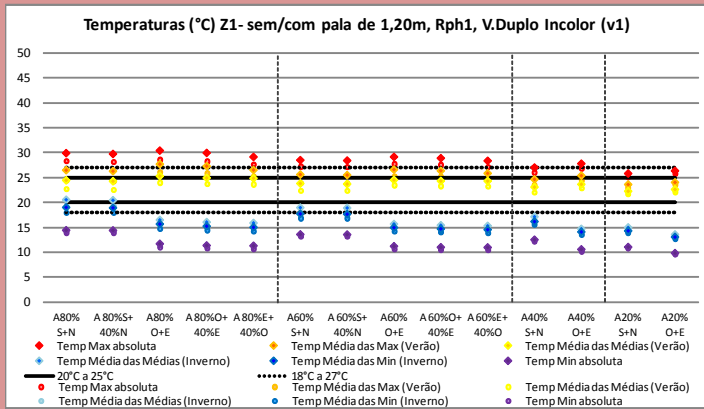


Com Protecção Solar Interior Junto ao Envidraçado

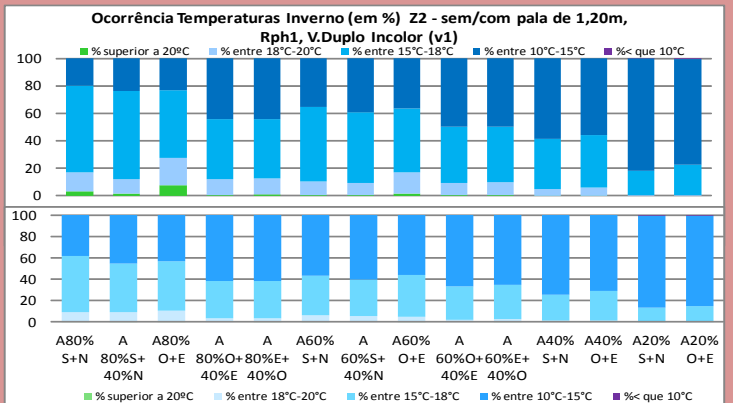
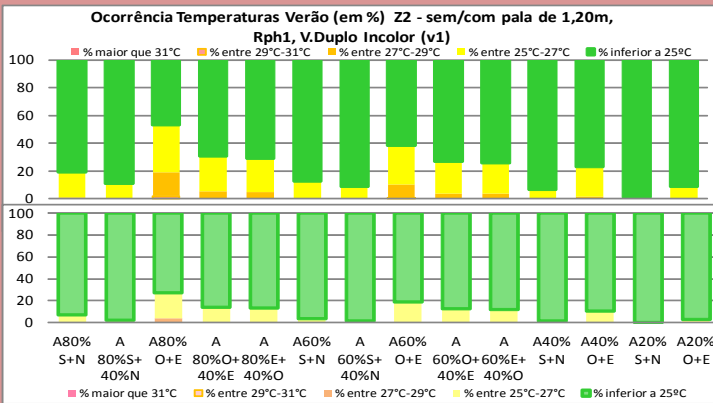
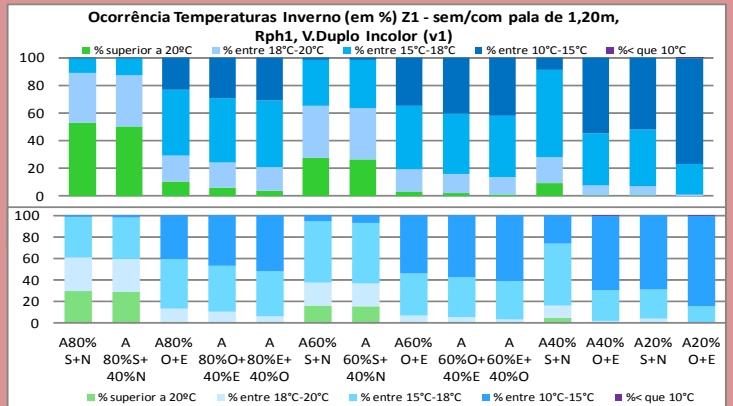
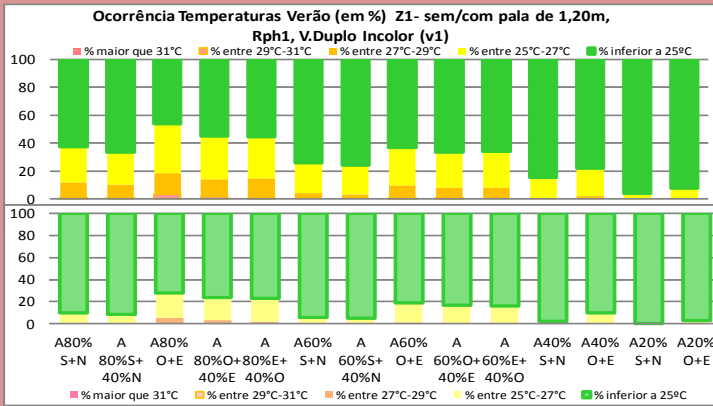


Modelo2 Intermédio: Soluções Sem e Com Palas de 1,20m – vidro duplo incolor e Rph nocturno I

Com Protecção Solar Exterior Junto ao Envidraçado

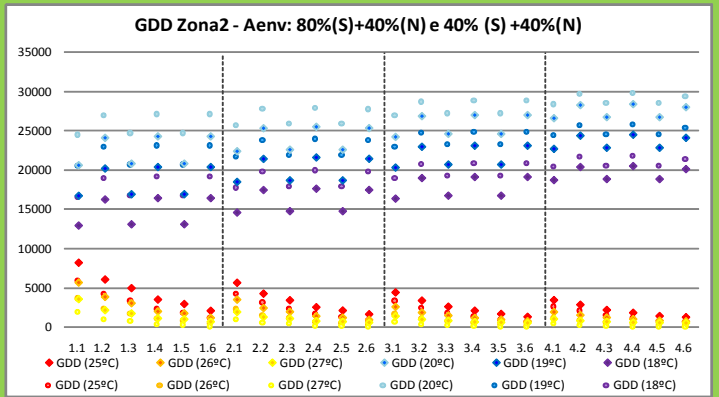
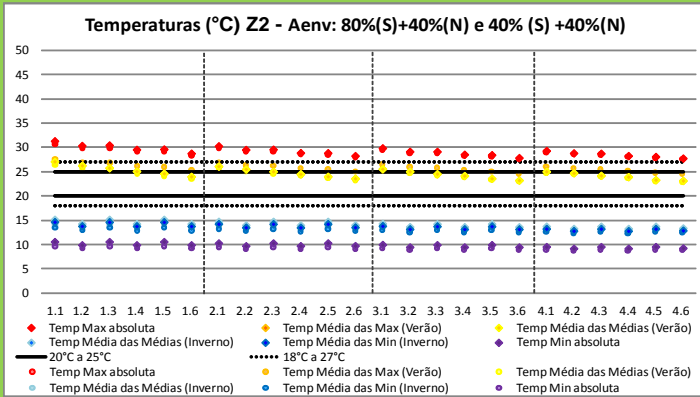
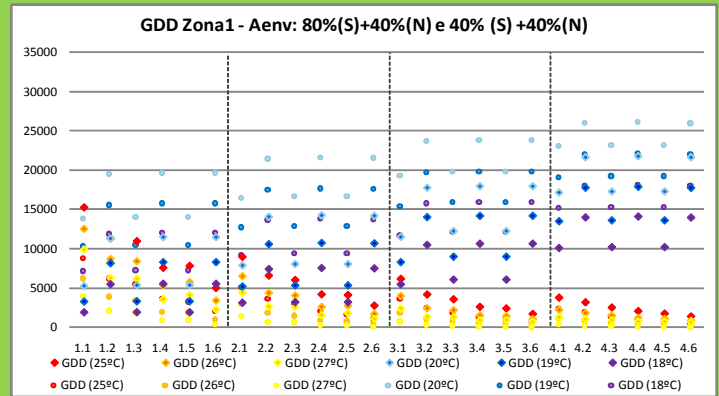
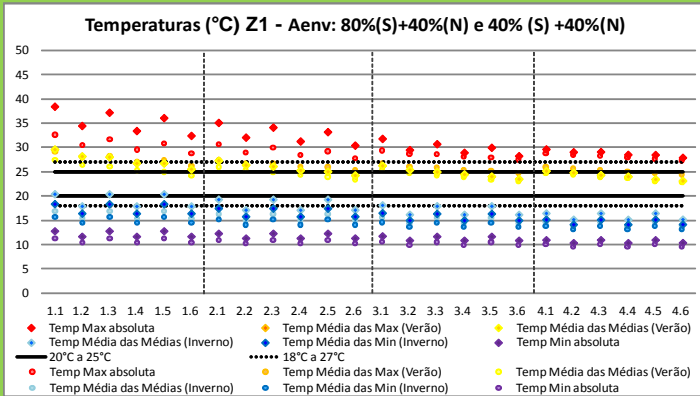


Com Protecção Solar Exterior Junto ao Envidraçado

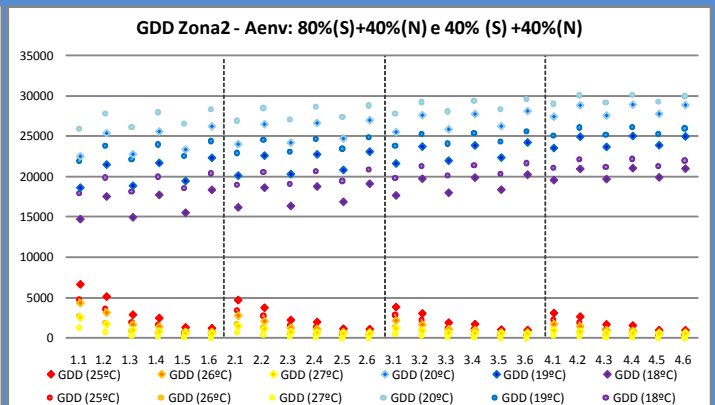
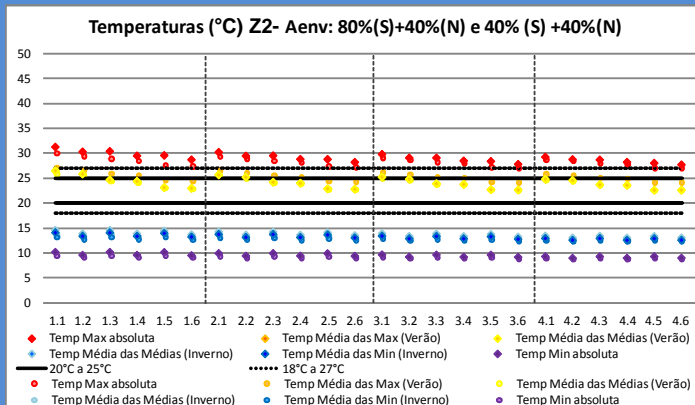
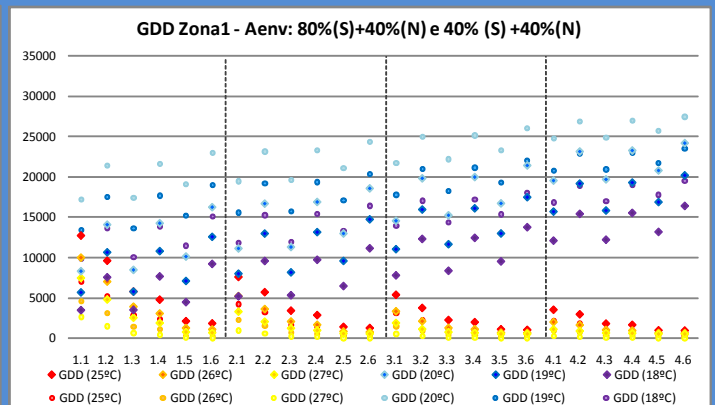
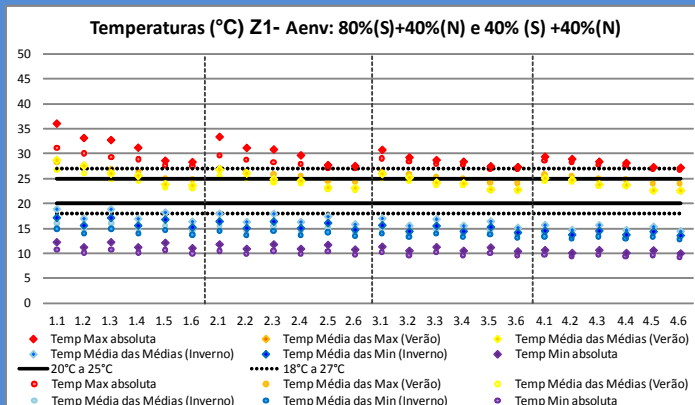


**Modelo2 Cobertura: Soluções com Fachadas Envidraçadas 80%(S)+40%(N) e 40% (S) +40%(N)**  
**Massa Térmica2, isolamento 30mm**

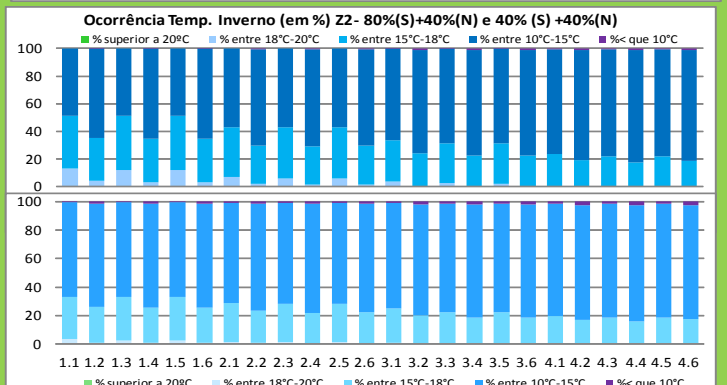
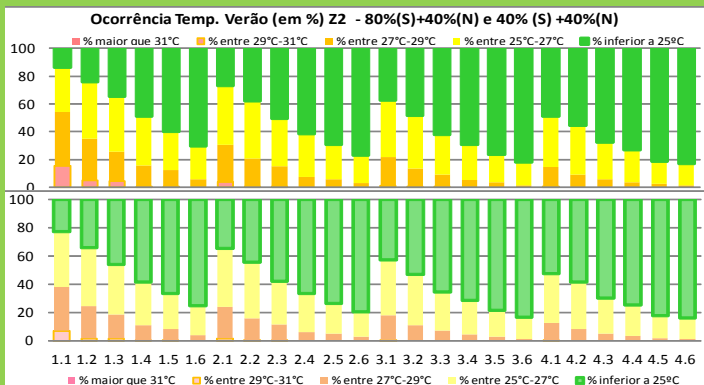
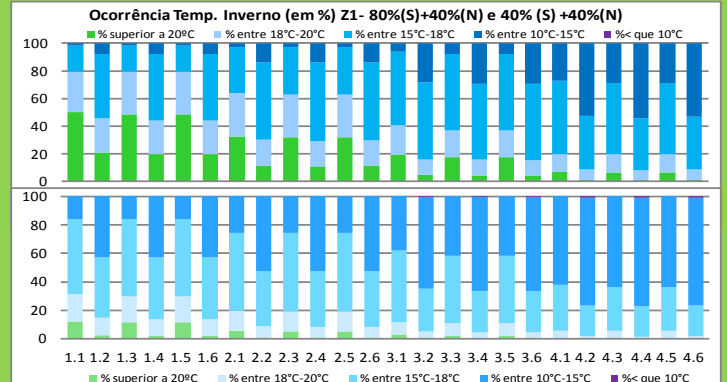
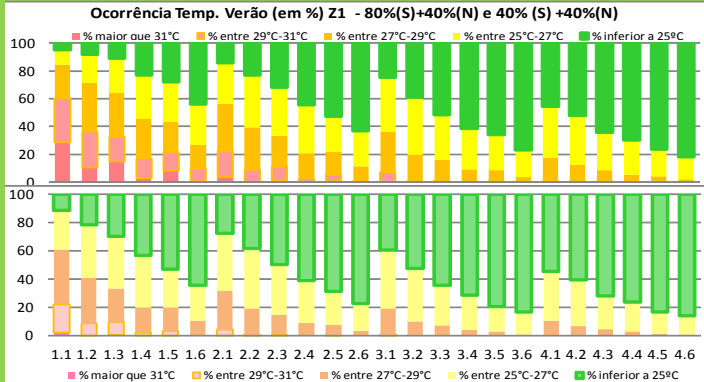
**Sem Protecção Solar Junto ao Envidraçado**



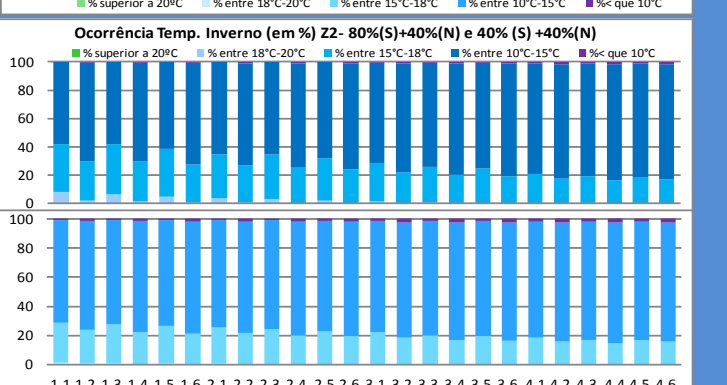
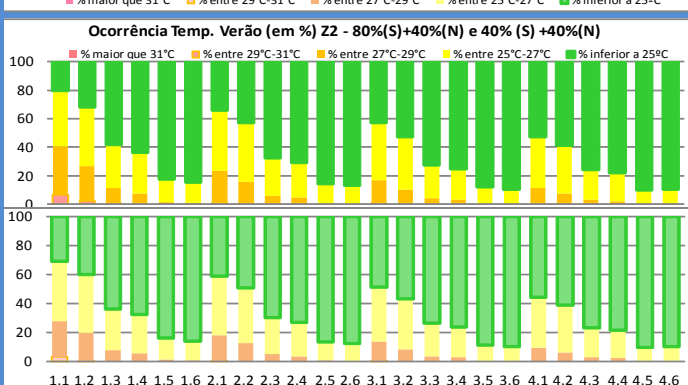
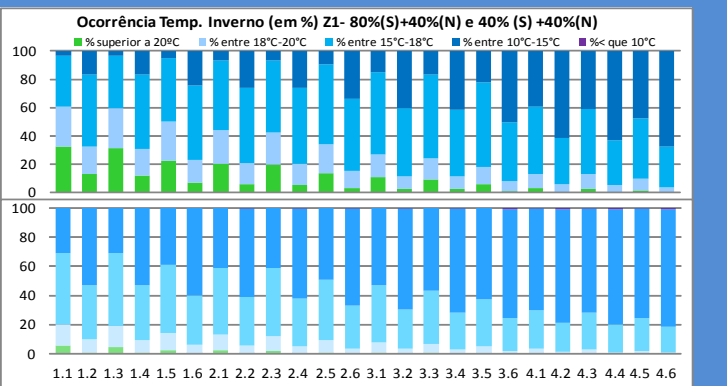
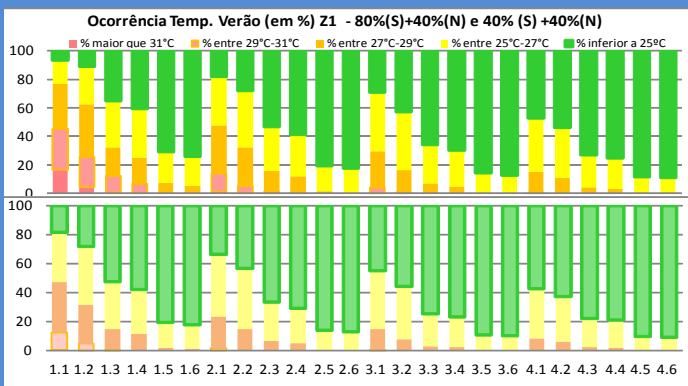
**Com Protecção Solar Interior Junto ao Envidraçado**



**Sem Protecção Solar Junto ao Envidraçado**

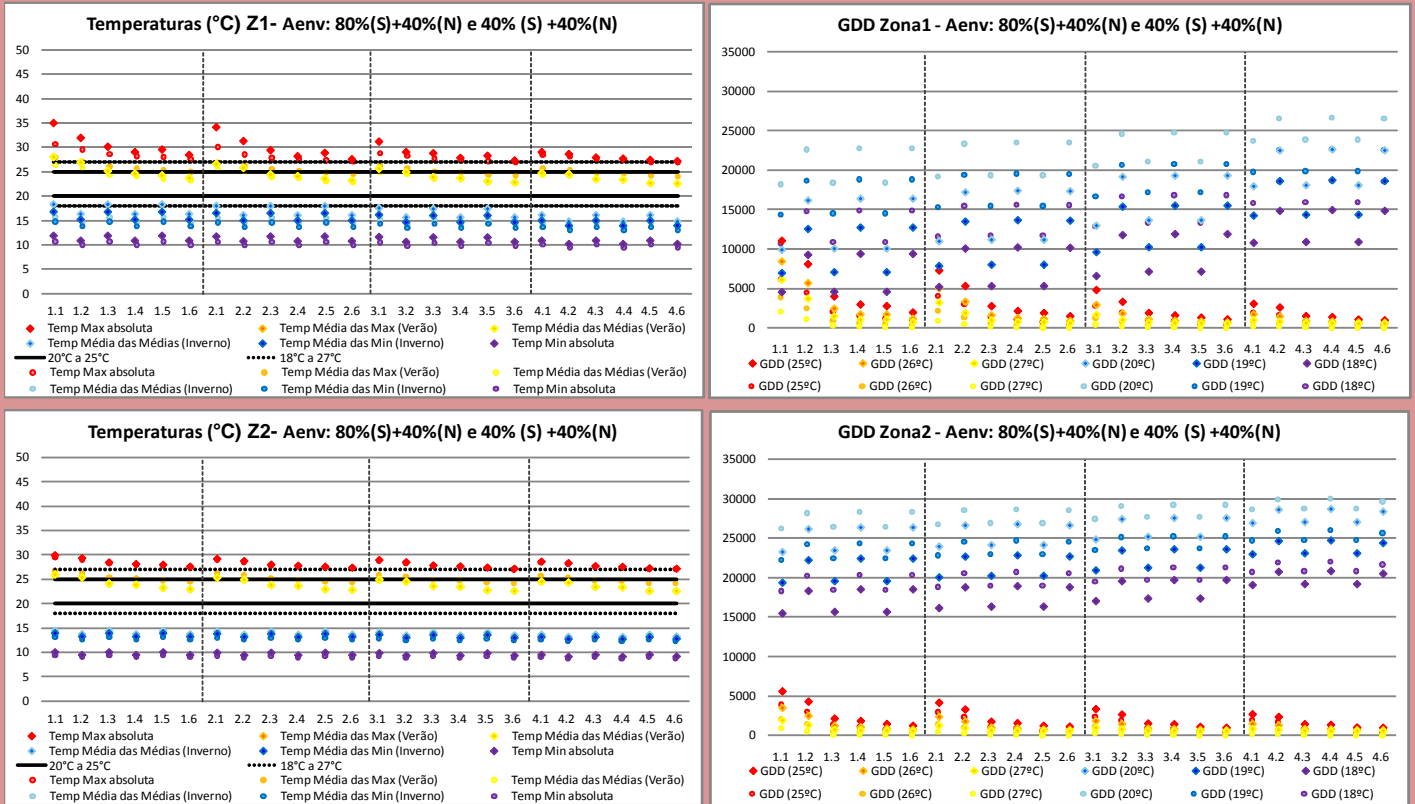


**Com Protecção Solar Interior Junto ao Envidraçado**

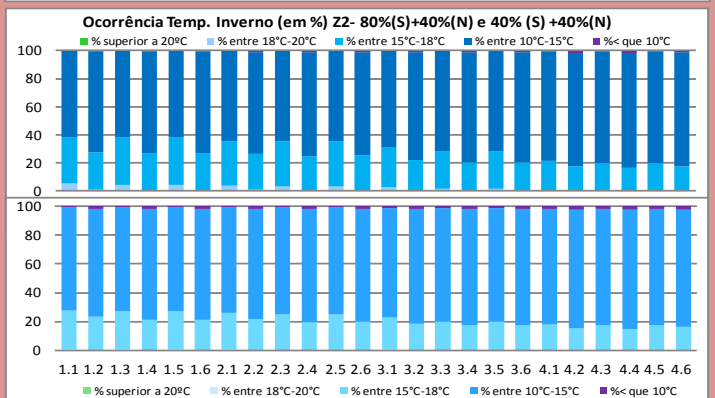
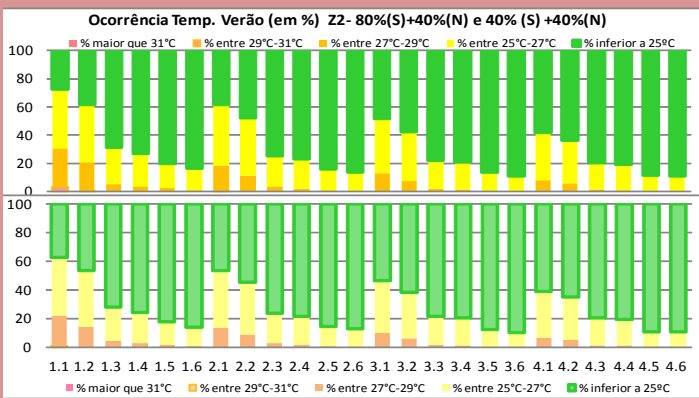
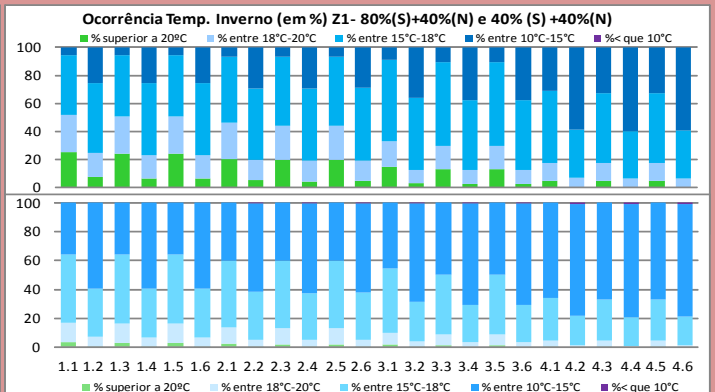
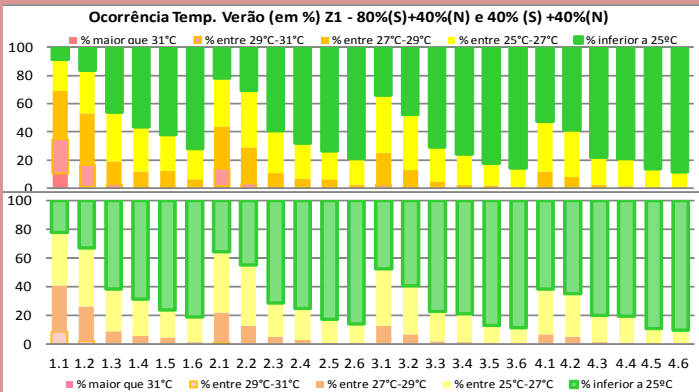


**Modelo2 Cobertura: Soluções com Fachadas Envidraçadas 80%(S)+40%(N) e 40% (S) +40%(N)**  
**Massa Térmica2, isolamento 30mm**

**Com Protecção Solar Exterior Junto ao Envidraçado**



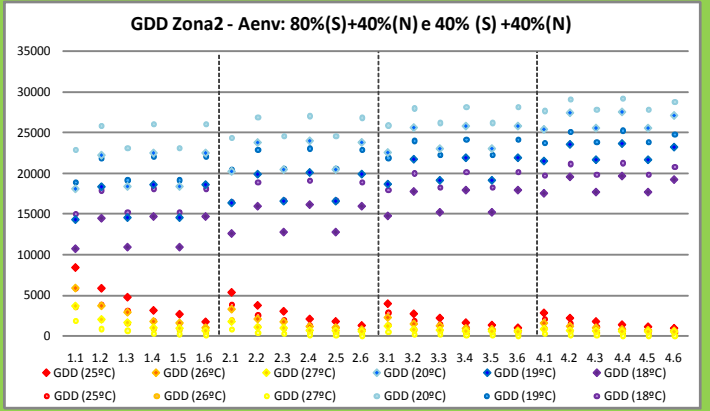
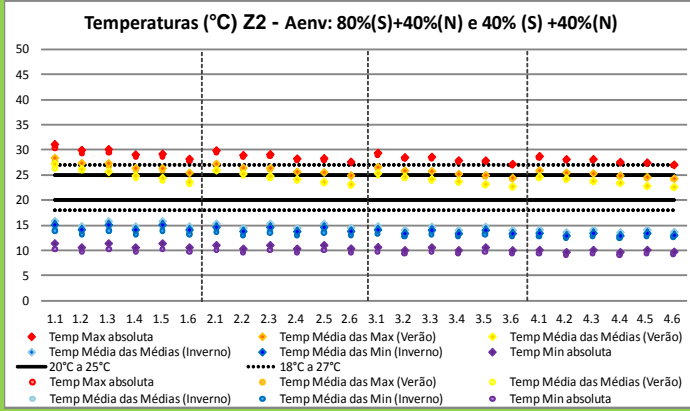
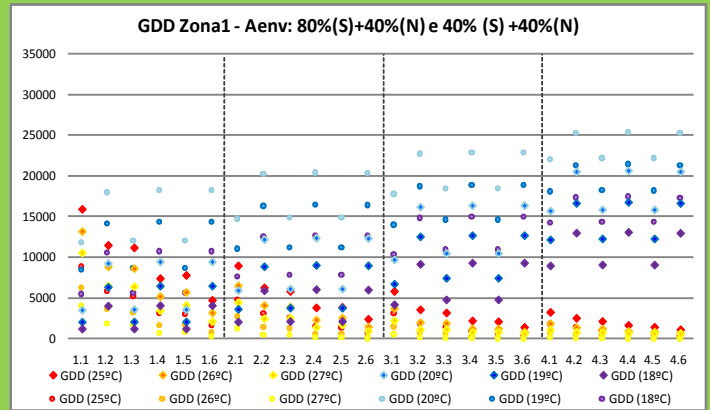
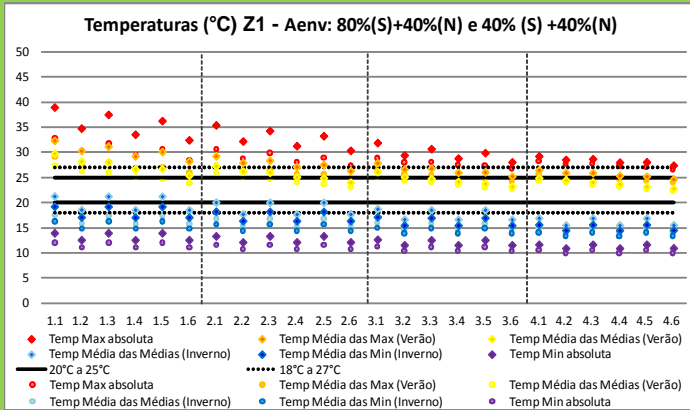
Com Protecção Solar Exterior Junto ao Envidraçado



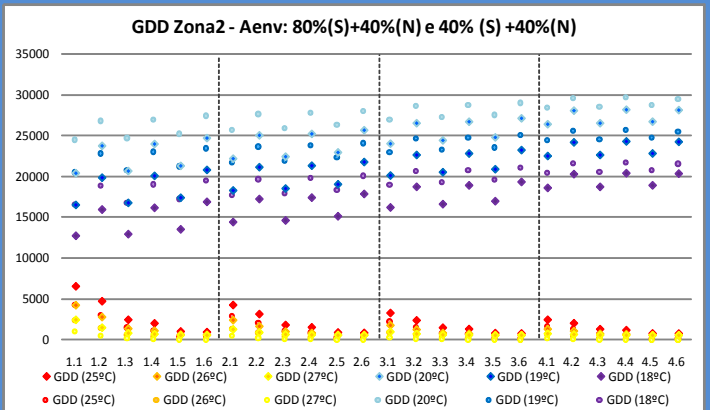
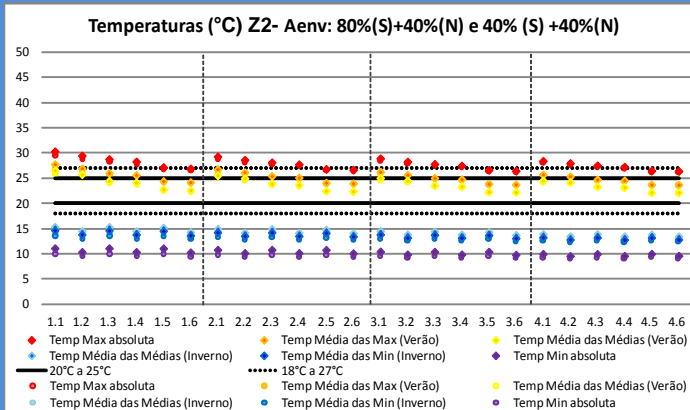
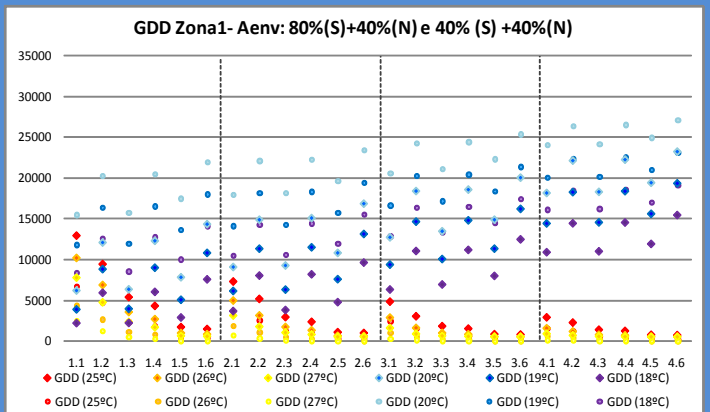
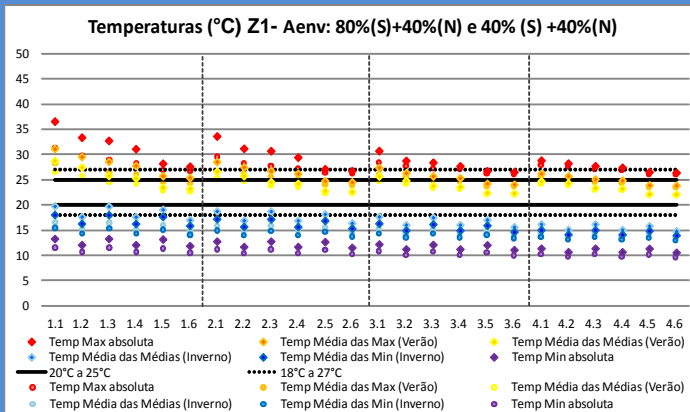


**Modelo2 Cobertura: Soluções com Fachadas Envidraçadas 80%(S)+40%(N) e 40% (S) +40%(N)**  
**Massa Térmica2, isolamento 60mm**

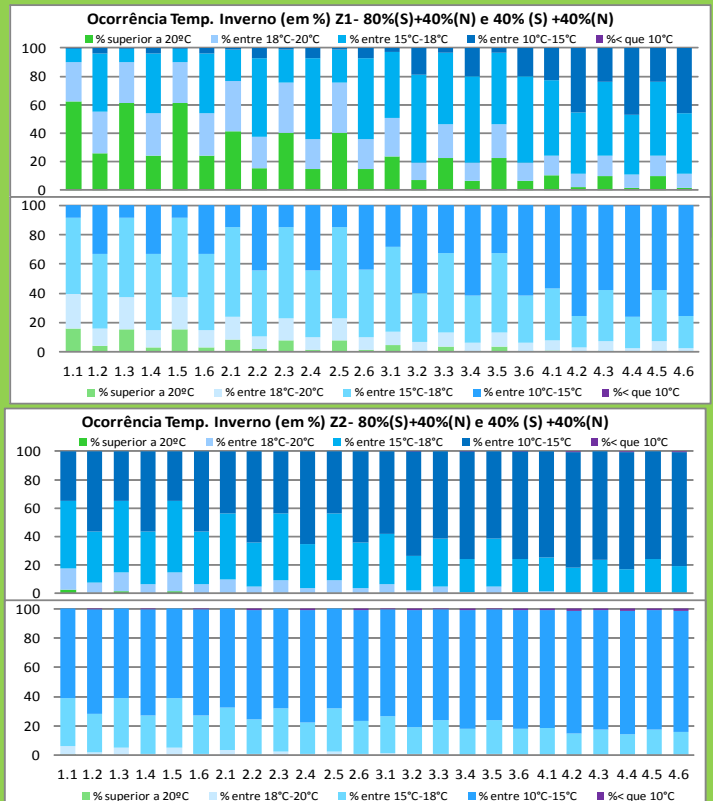
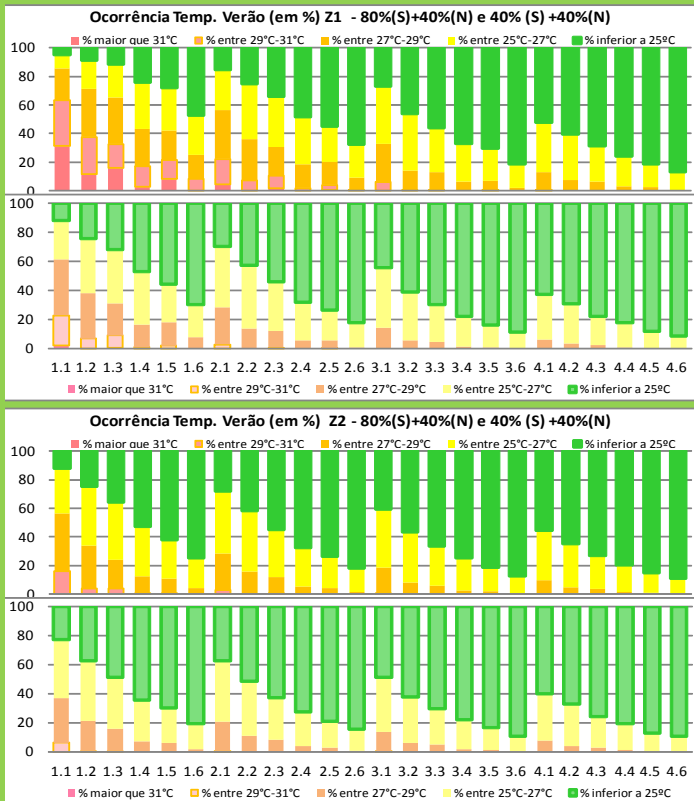
**Sem Protecção Solar Junto ao Envidraçado**



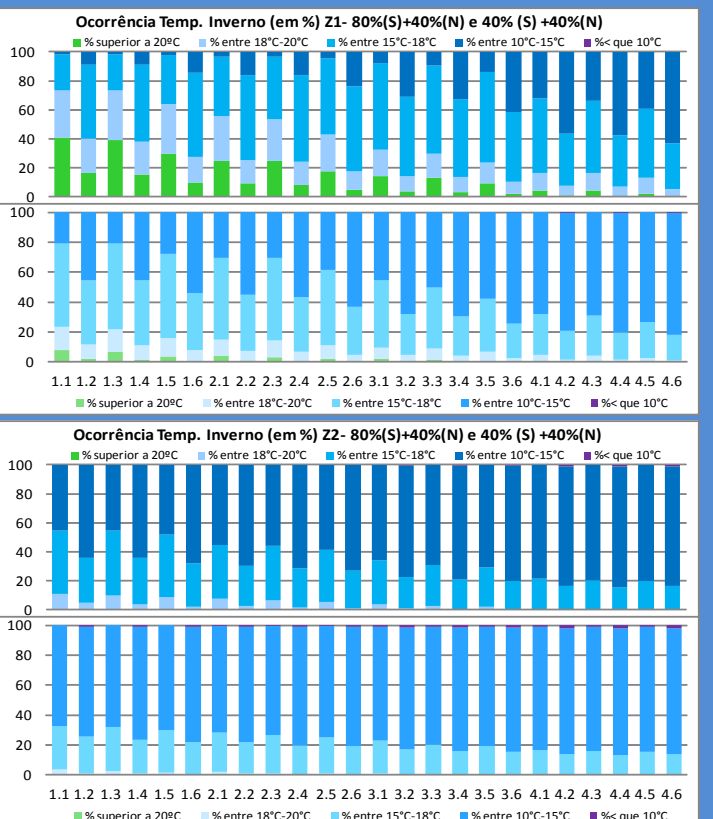
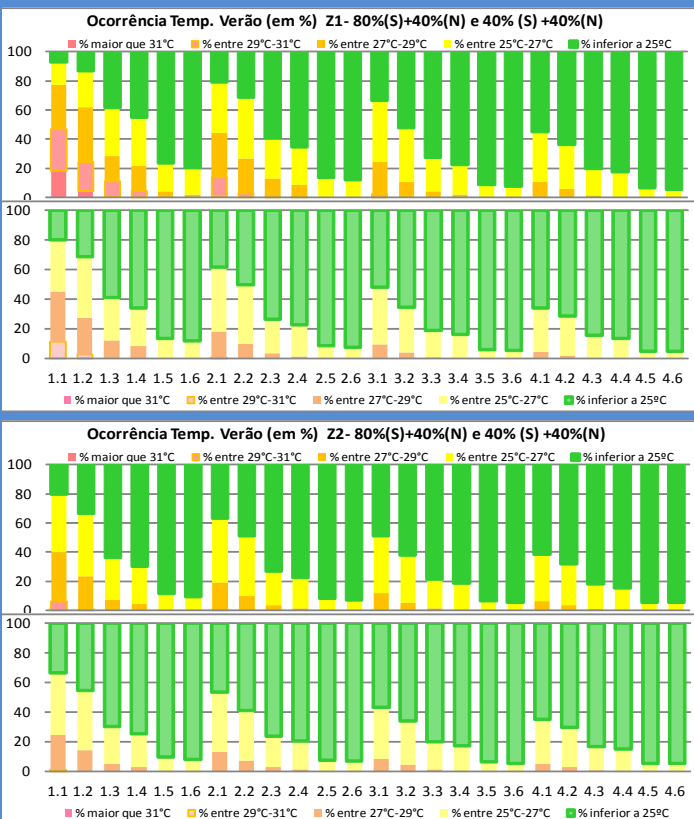
**Com Protecção Solar Interior Junto ao Envidraçado**



Sem Protecção Solar Junto ao Envidraçado

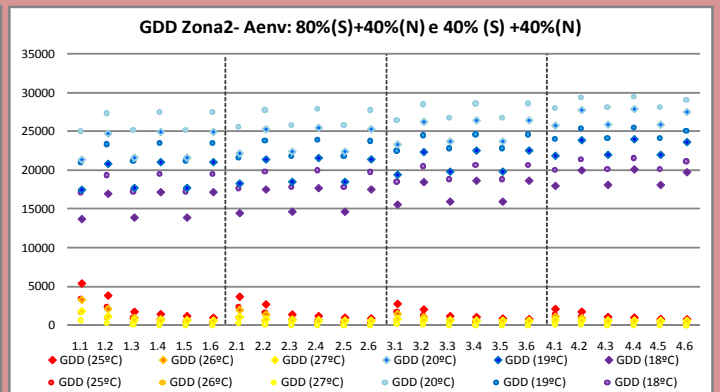
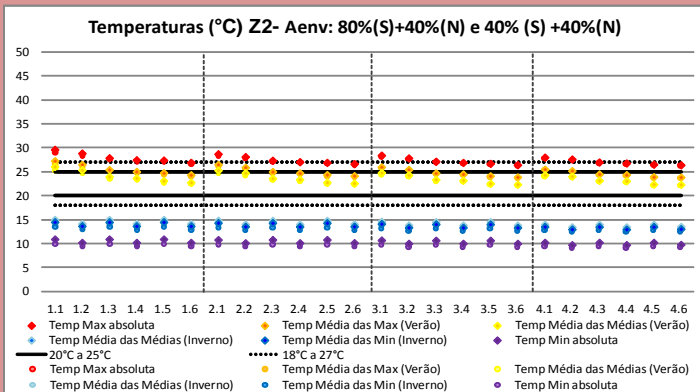
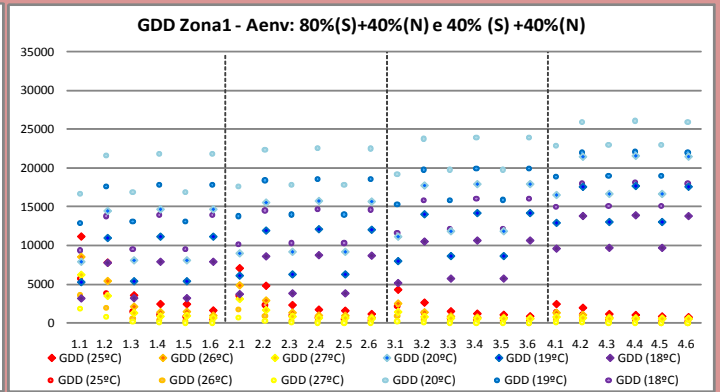
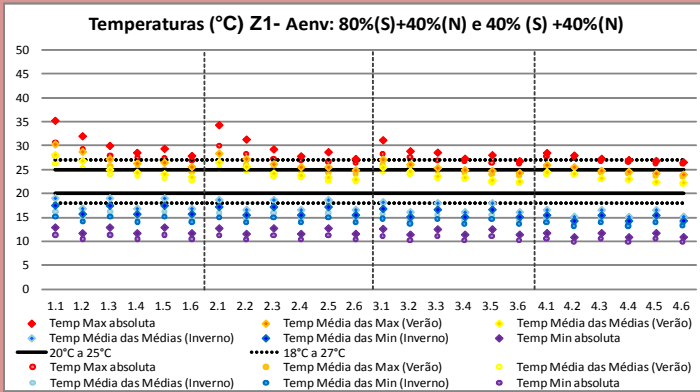


Com Protecção Solar Interior Junto ao Envidraçado

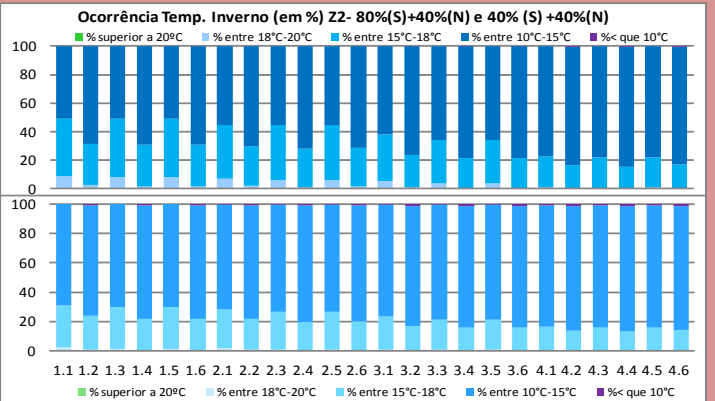
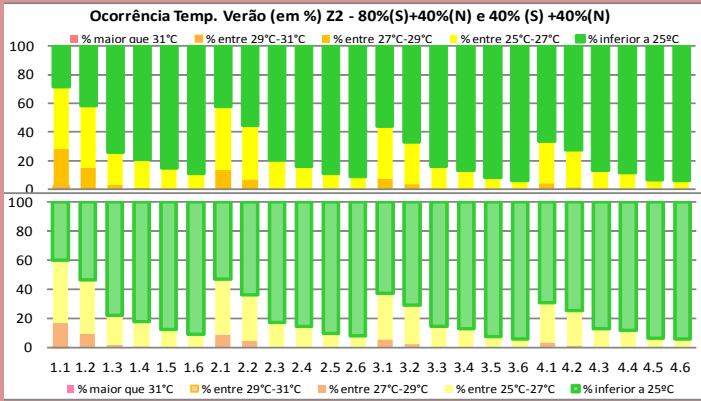
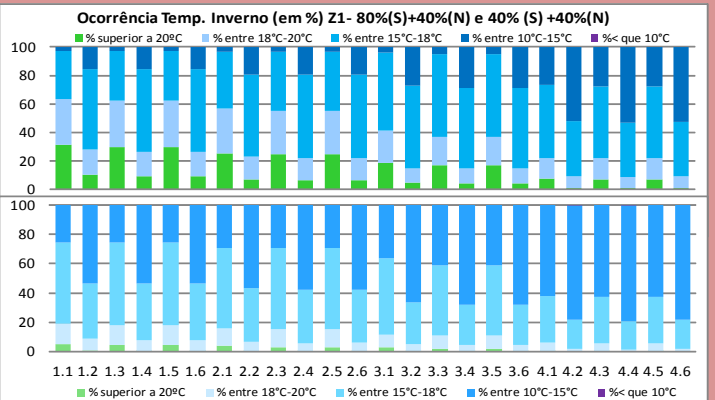
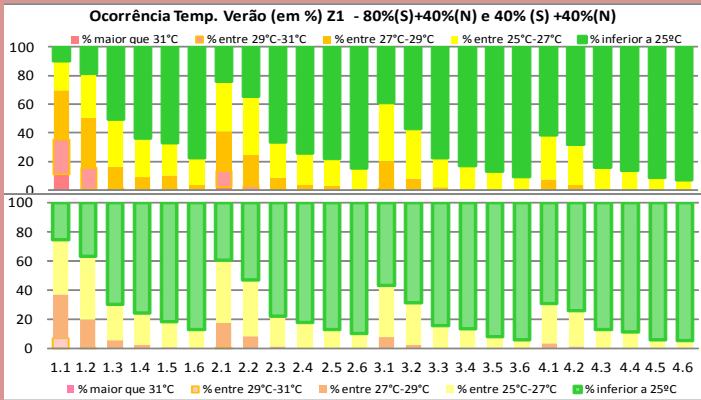


**Modelo2 Cobertura: Soluções com Fachadas Envidraçadas 80%(S)+40%(N) e 40% (S) +40%(N)**  
**Massa Térmica2, isolamento 60mm**

**Com Protecção Solar Exterior Junto ao Envidraçado**

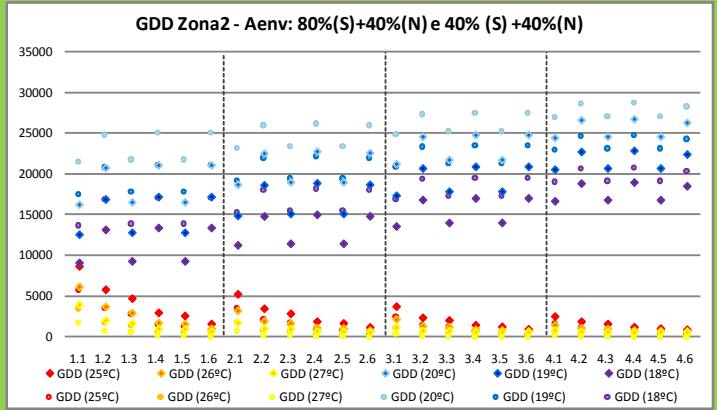
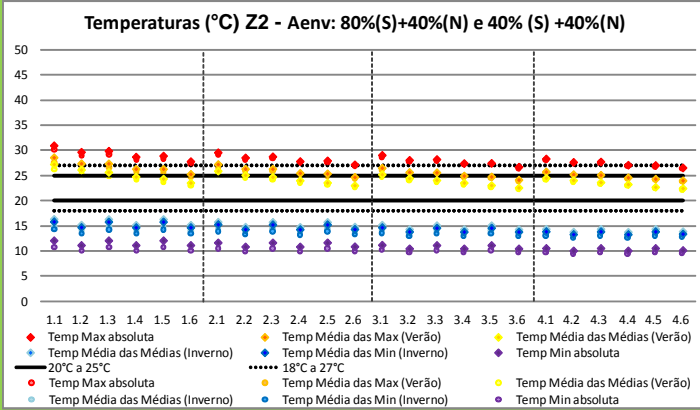
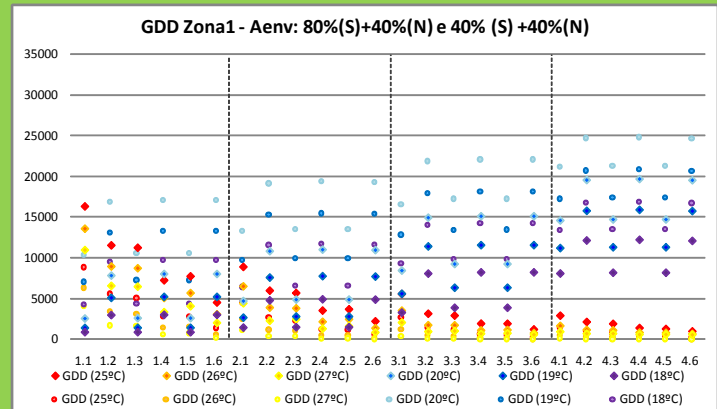
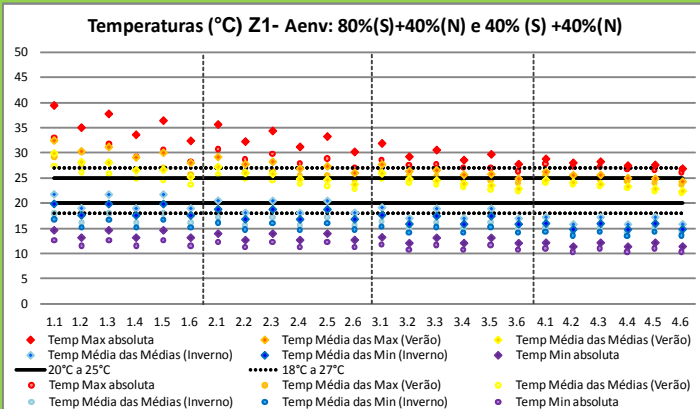


Com Protecção Solar Exterior Junto ao Envidraçado

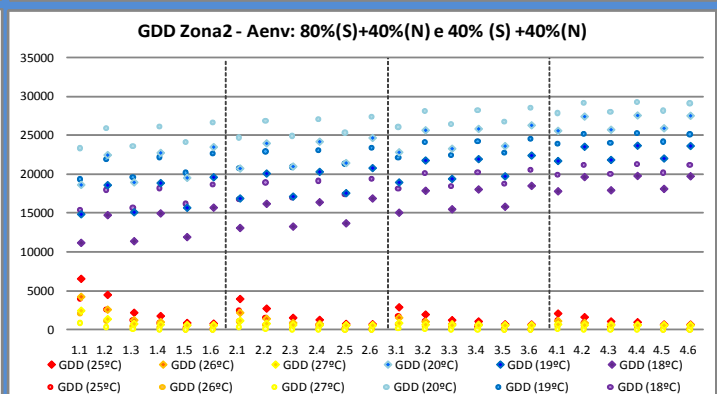
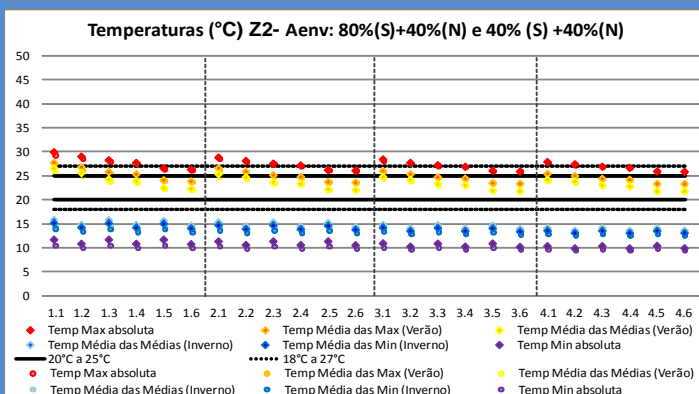
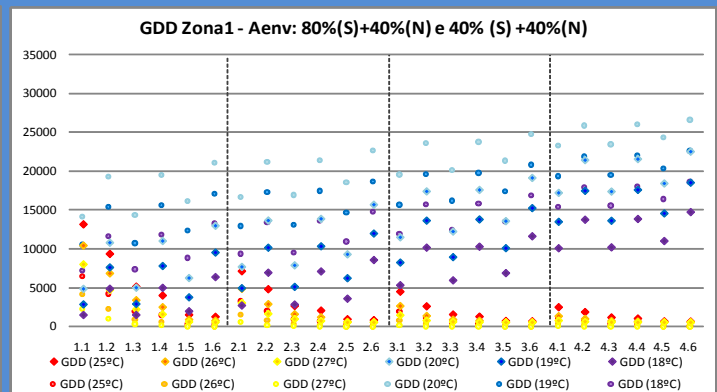
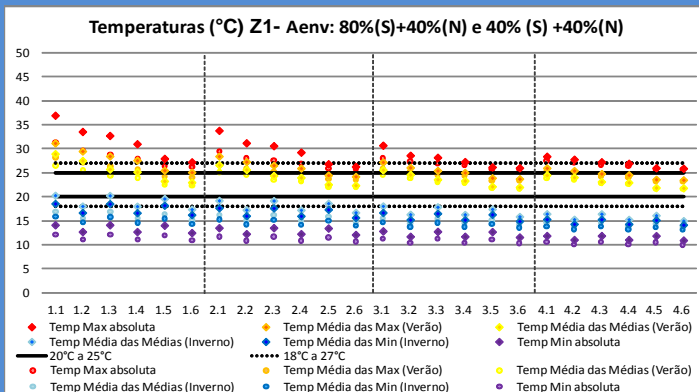


**Modelo2 Cobertura: Soluções com Fachadas Envidraçadas 80%(S)+40%(N) e 40% (S) +40%(N)**  
**Massa Térmica2, isolamento 100mm**

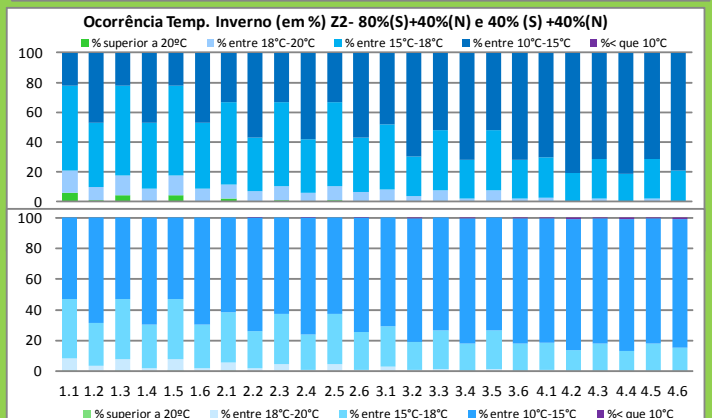
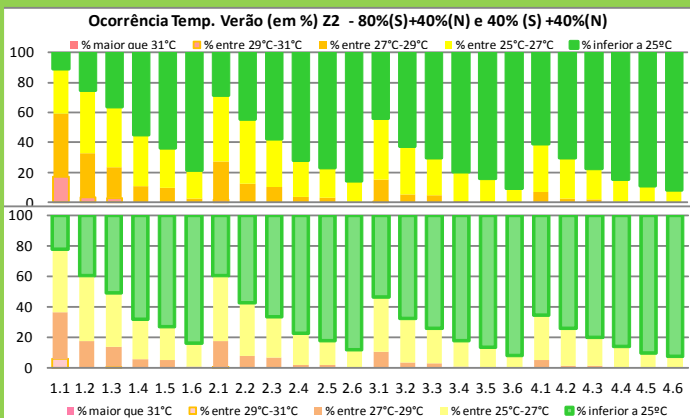
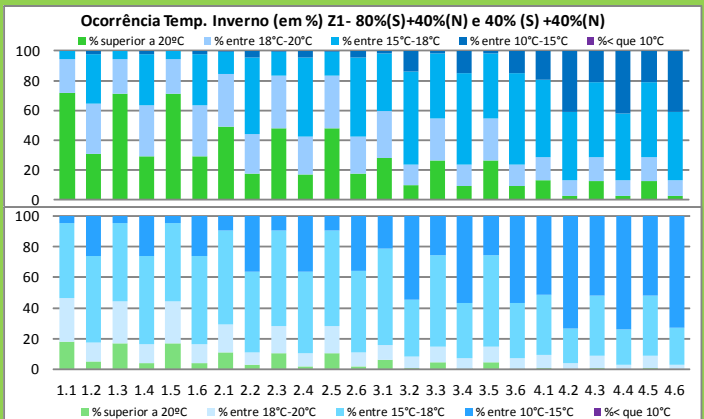
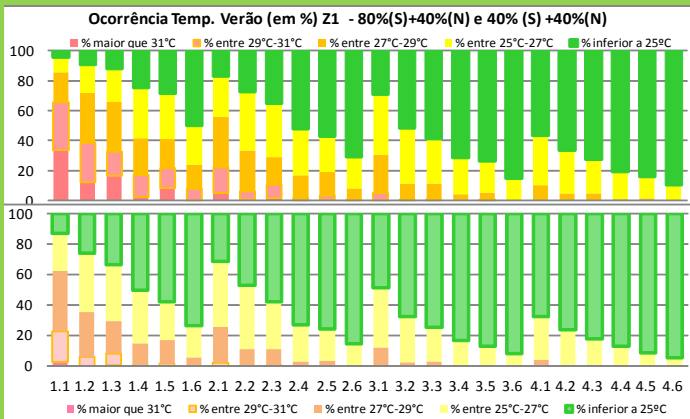
**Sem Protecção Solar Junto ao Envidraçado**



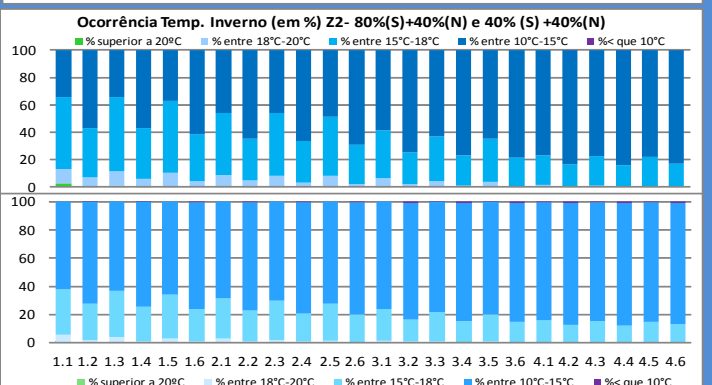
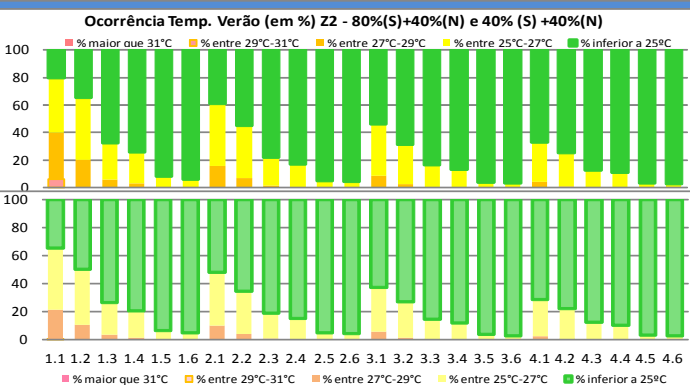
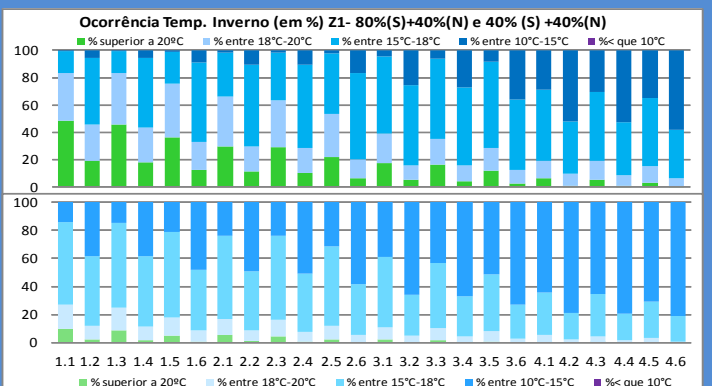
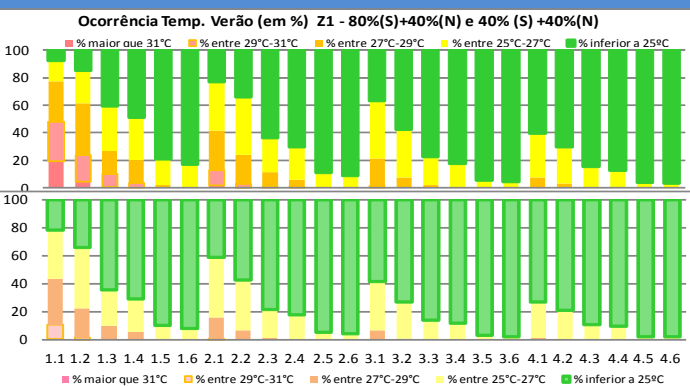
**Com Protecção Solar Interior Junto ao Envidraçado**



**Sem Protecção Solar Junto ao Envidraçado**

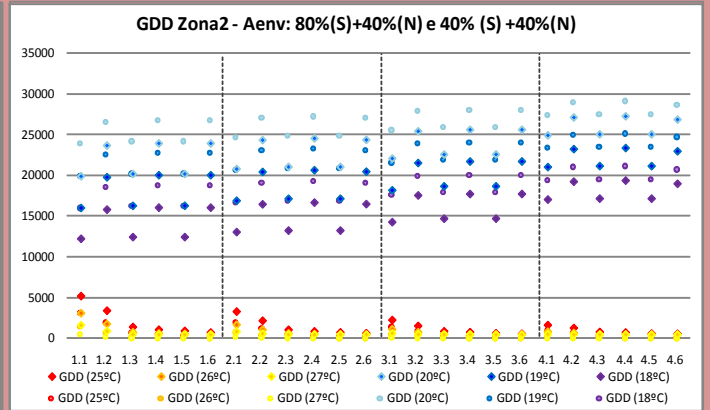
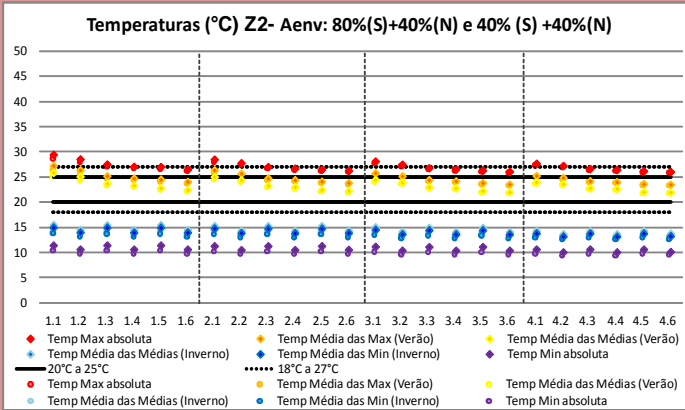
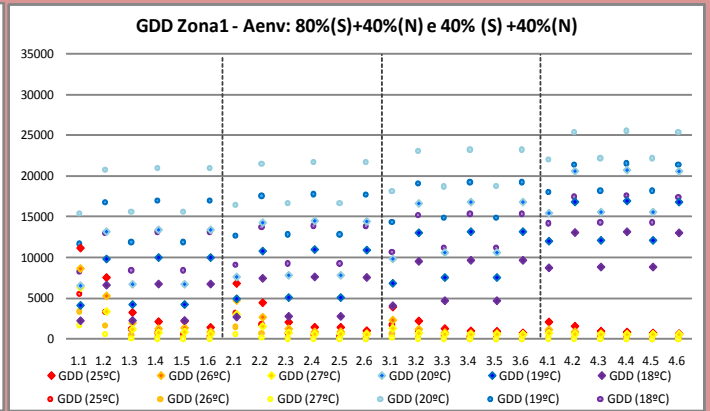
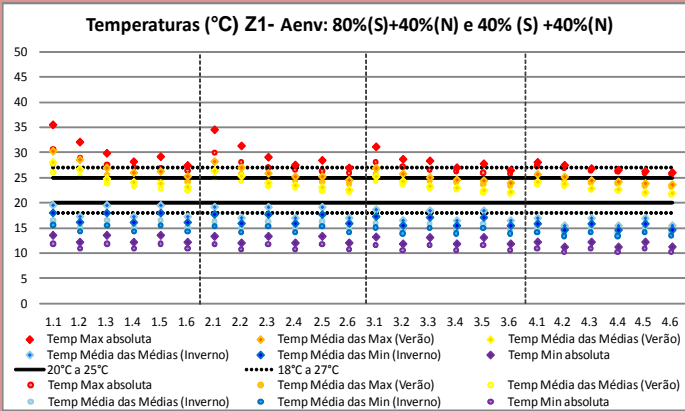


**Com Protecção Solar Interior Junto ao Envidraçado**

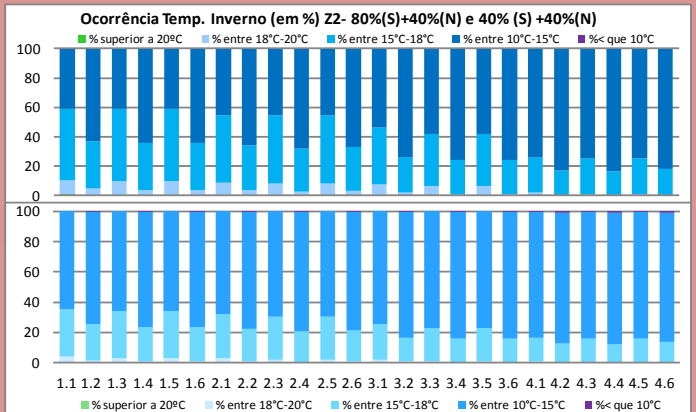
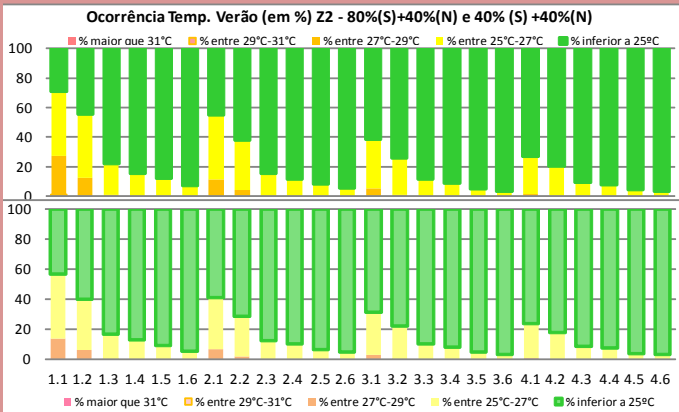
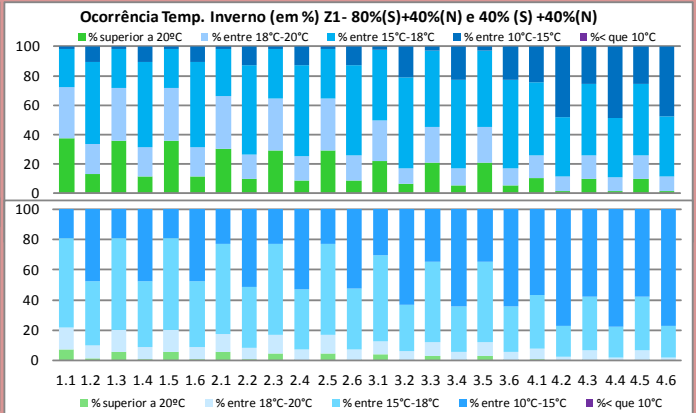
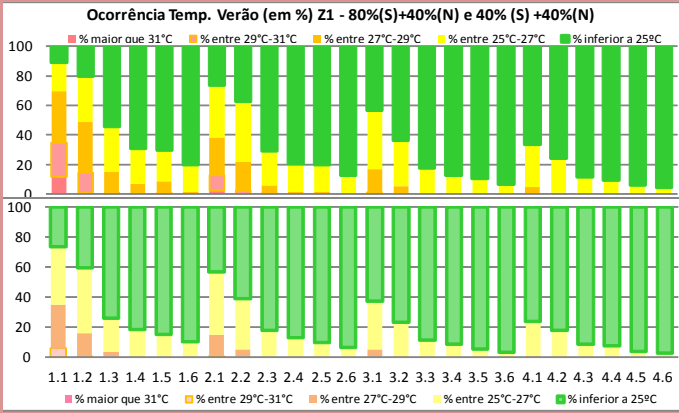


**Modelo2 Cobertura: Soluções com Fachadas Envidraçadas 80%(S)+40%(N) e 40% (S) +40%(N)**  
**Massa Térmica2, isolamento 100mm**

**Com Protecção Solar Exterior Junto ao Envidraçado**



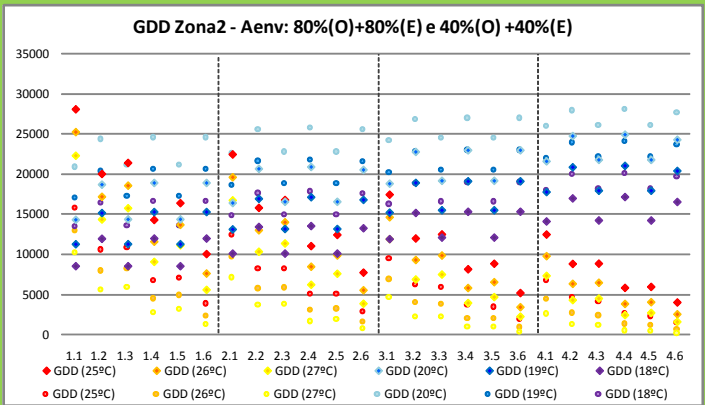
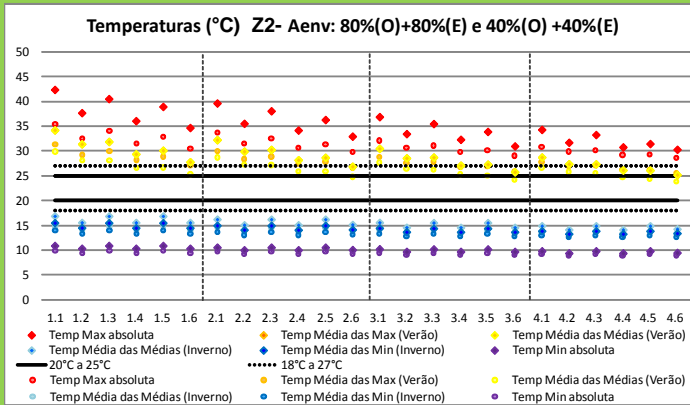
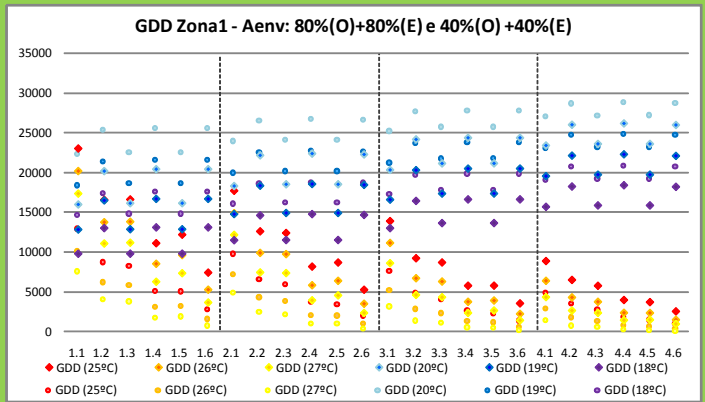
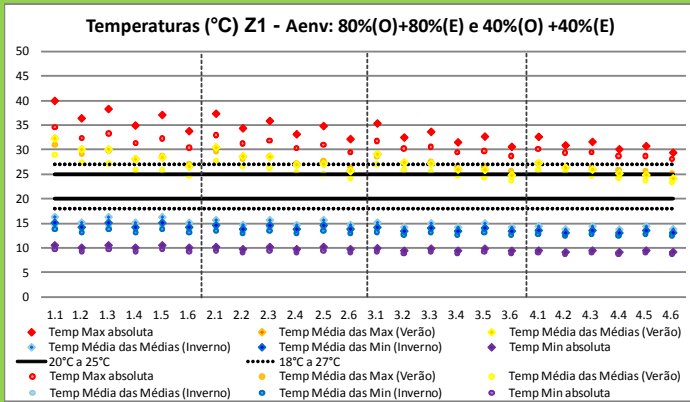
Com Protecção Solar Exterior Junto ao Envidraçado



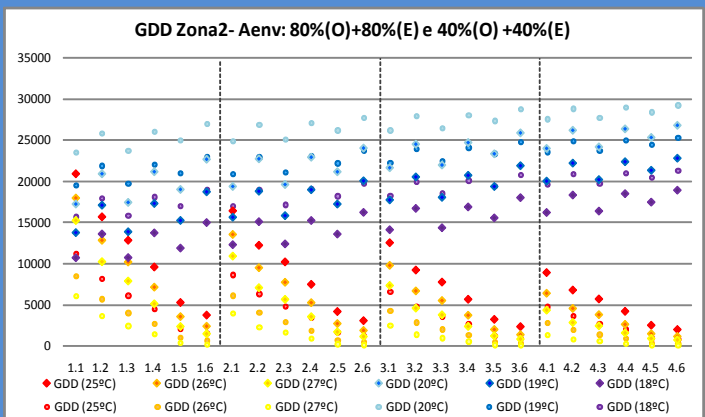
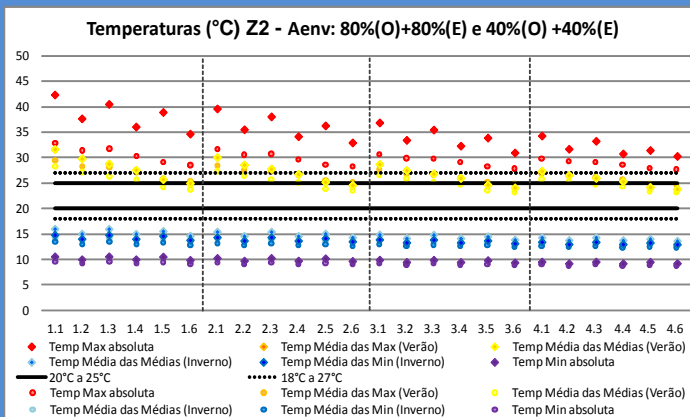
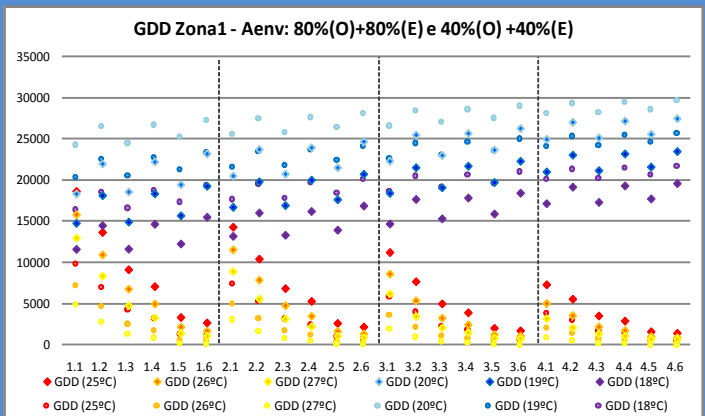
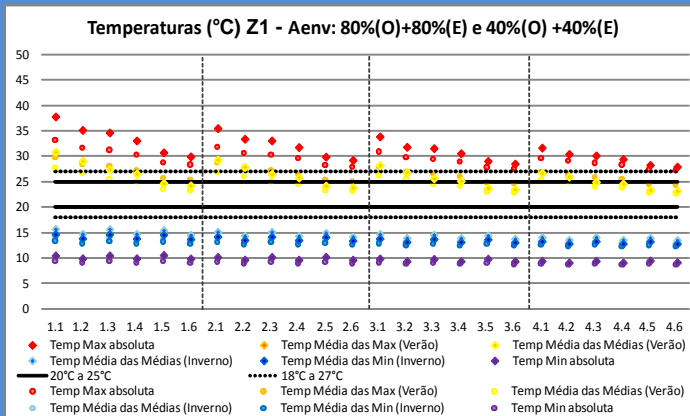


**Modelo2 Cobertura: Soluções com Fachadas Envidraçadas 80%(O)+80%(E) e 40% (O) +40%(E)**  
**Massa Térmica2, isolamento 30mm**

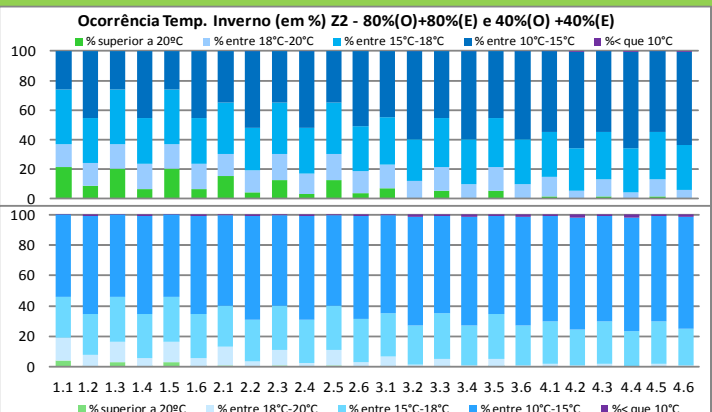
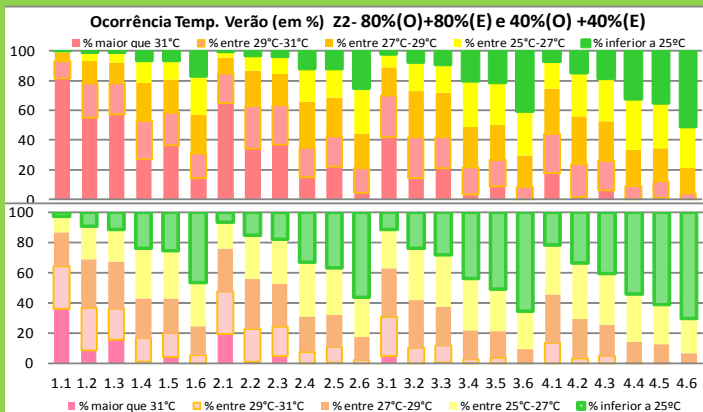
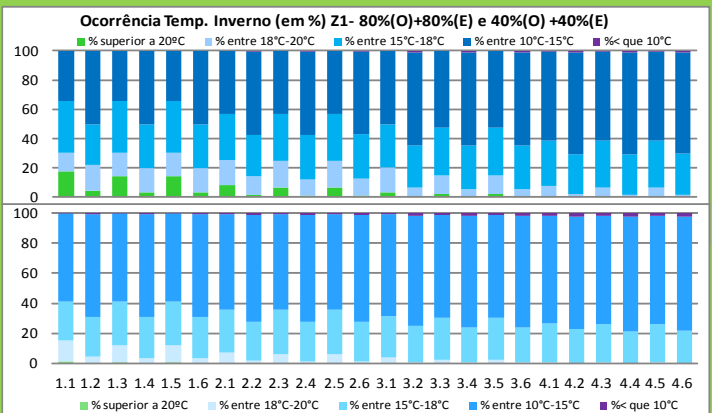
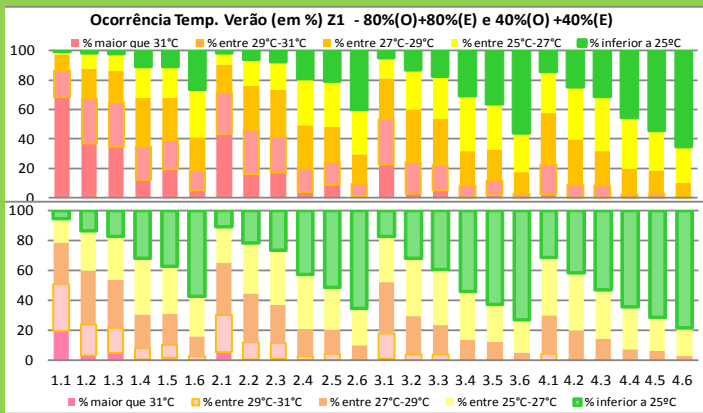
**Sem Protecção Solar Junto ao Envidraçado**



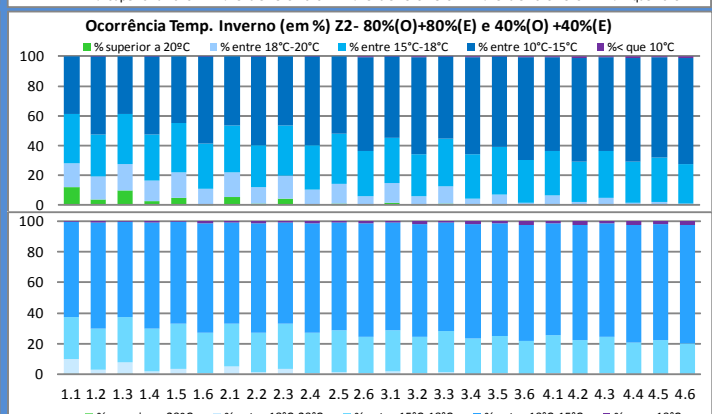
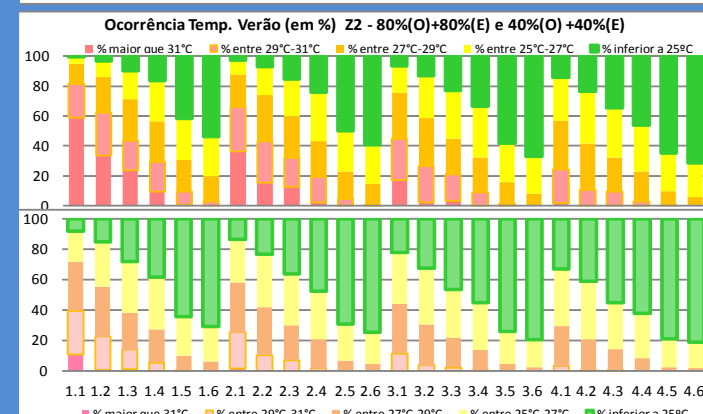
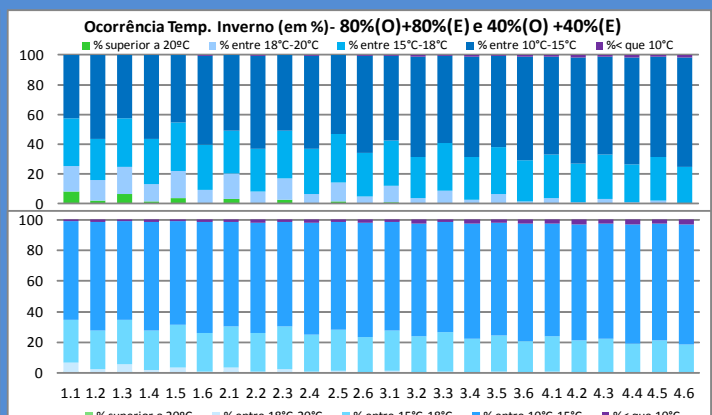
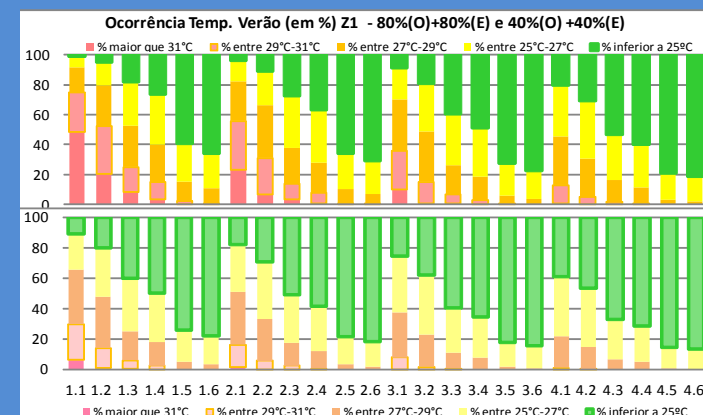
**Com Protecção Solar Interior Junto ao Envidraçado**



**Sem Protecção Solar Junto ao Envidraçado**

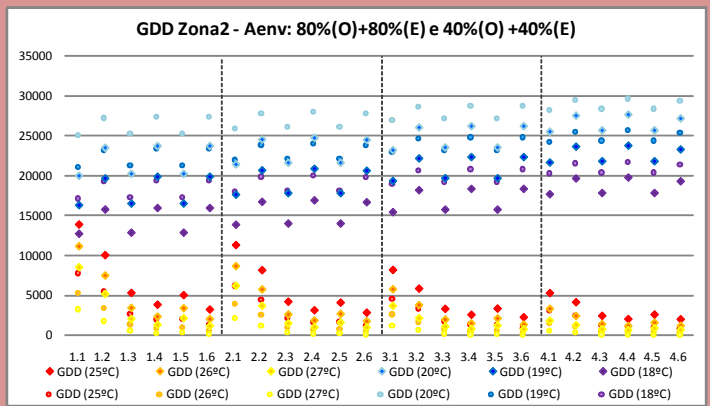
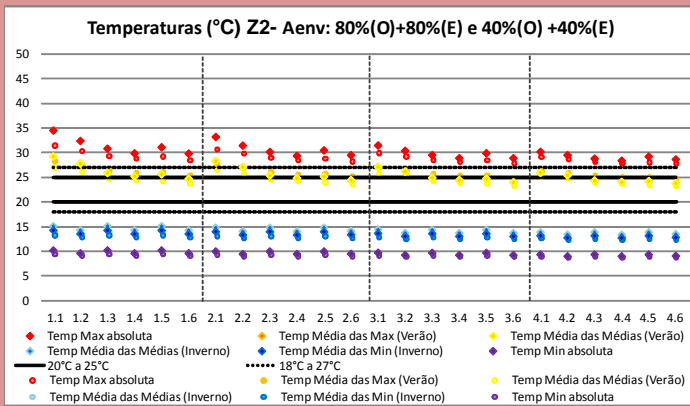
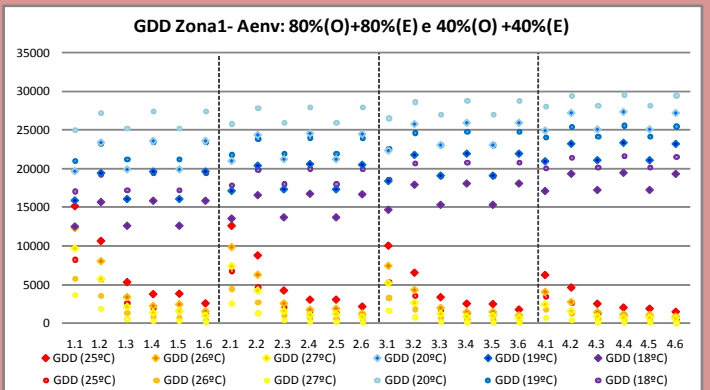
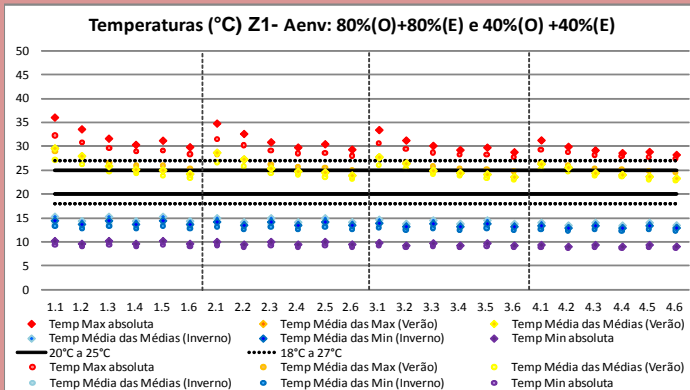


**Com Protecção Solar Interior Junto ao Envidraçado**

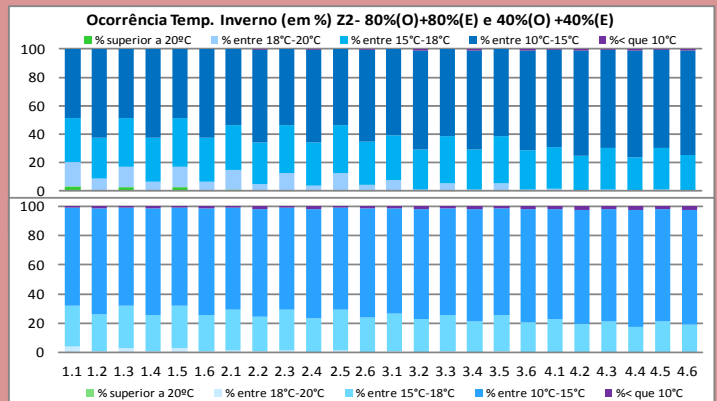
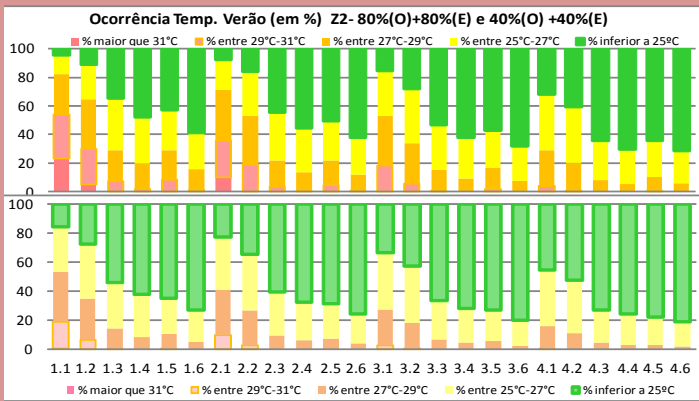
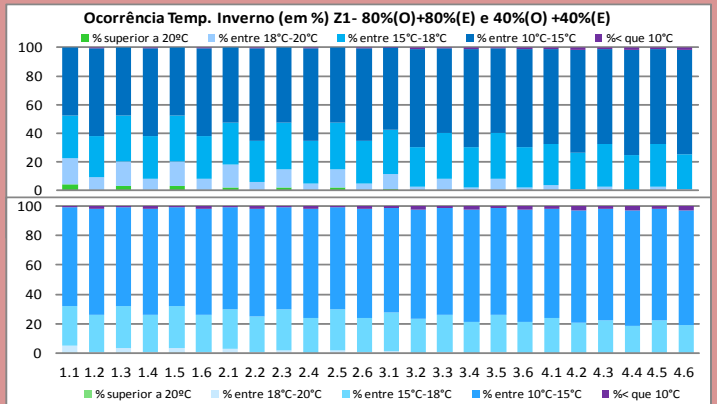
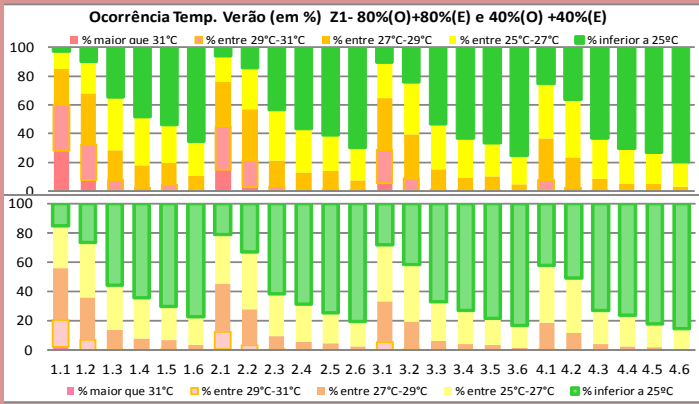


**Modelo2 Cobertura: Soluções com Fachadas Envidraçadas 80%(O)+80%(E) e 40% (O) +40%(E)**  
**Massa Térmica2, isolamento 30mm**

**Com Protecção Solar Exterior Junto ao Envidraçado**

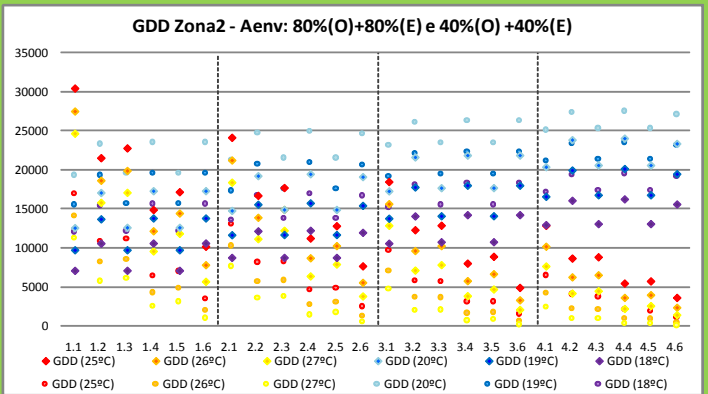
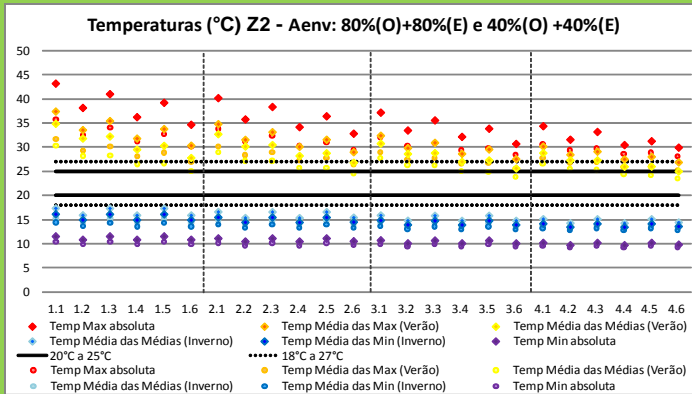
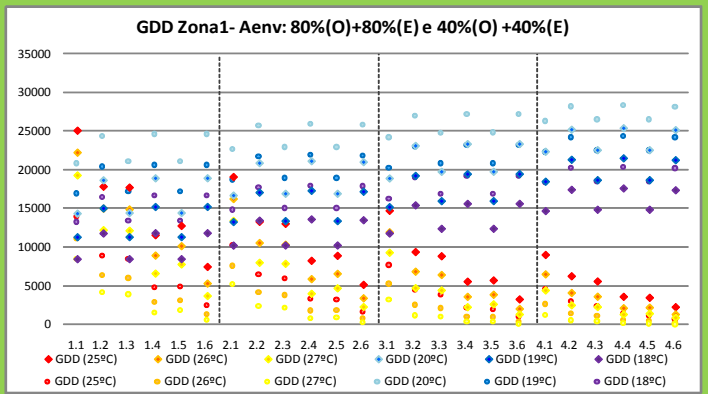
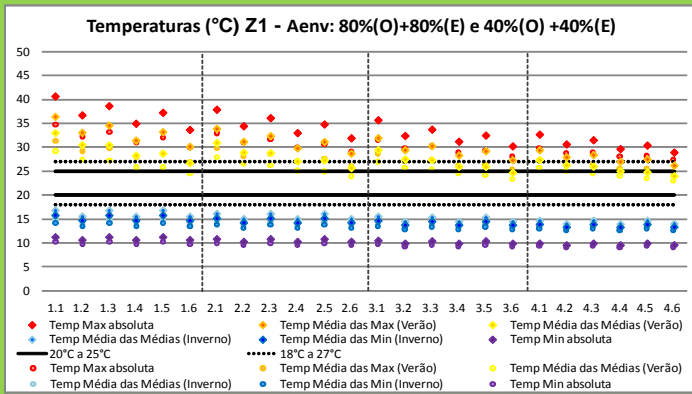


Com Protecção Solar Exterior Junto ao Envidraçado

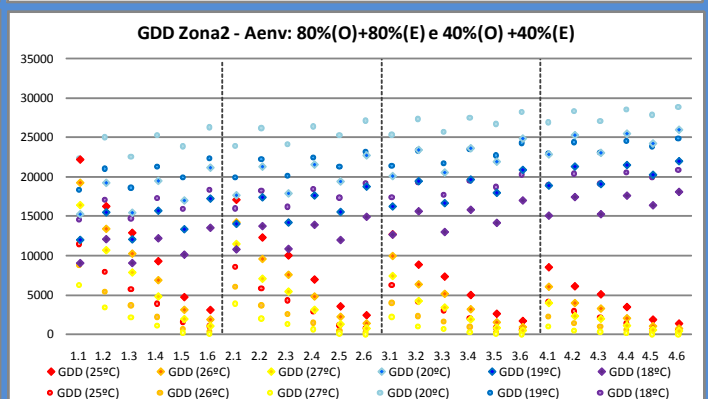
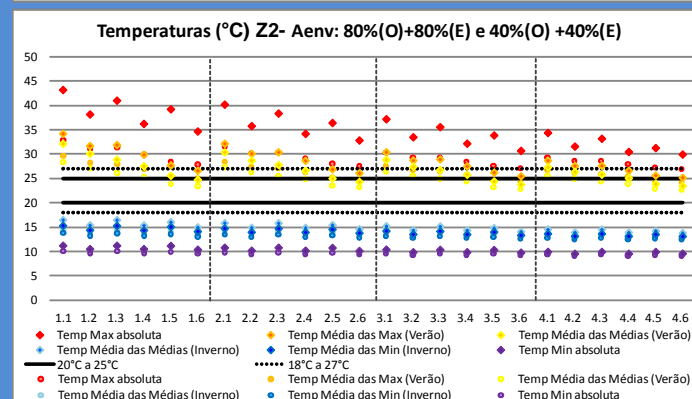
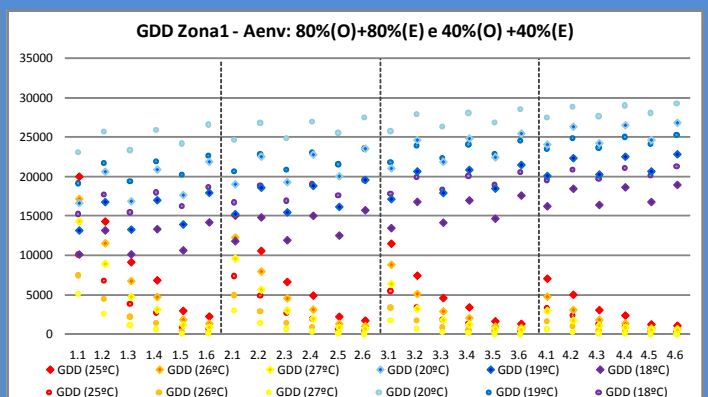
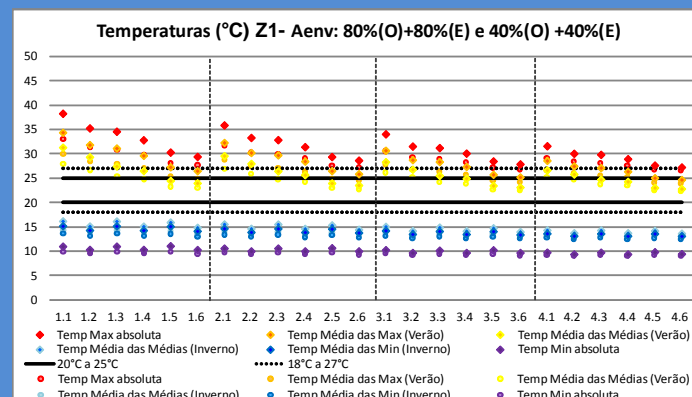


**Modelo2 Cobertura: Soluções com Fachadas Envidraçadas 80%(O)+80%(E) e 40% (O) +40%(E)**  
**Massa Térmica2, isolamento 60mm**

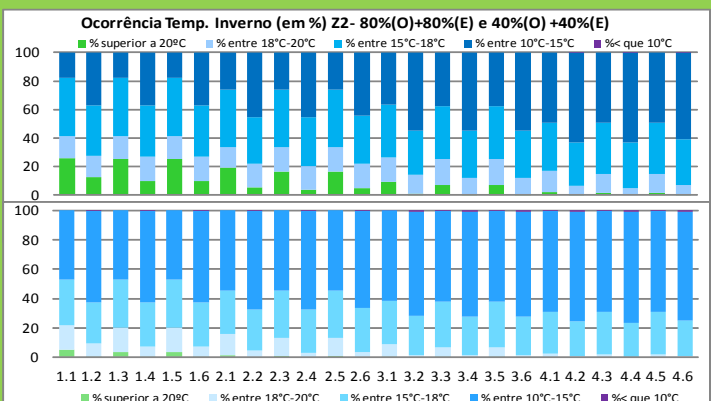
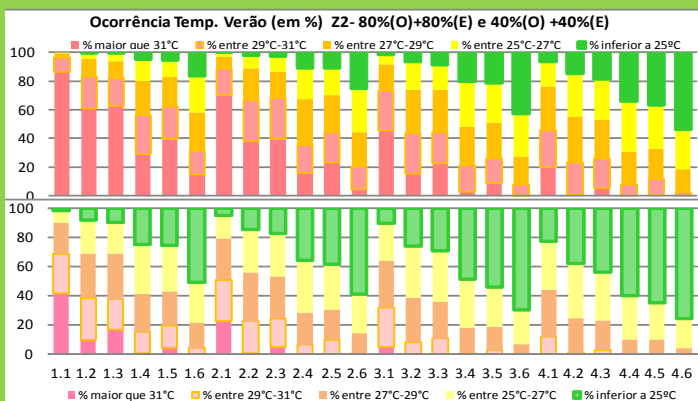
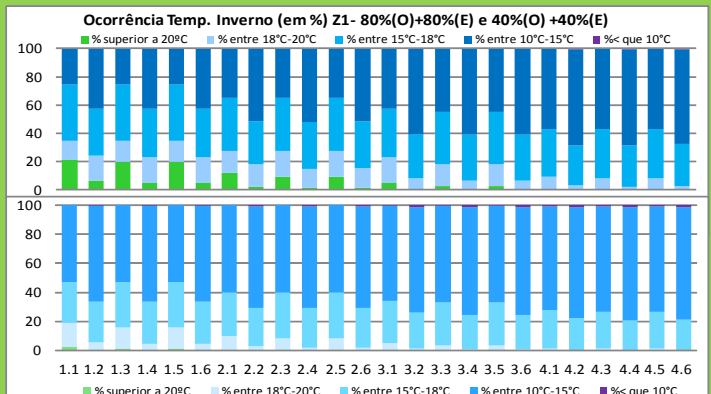
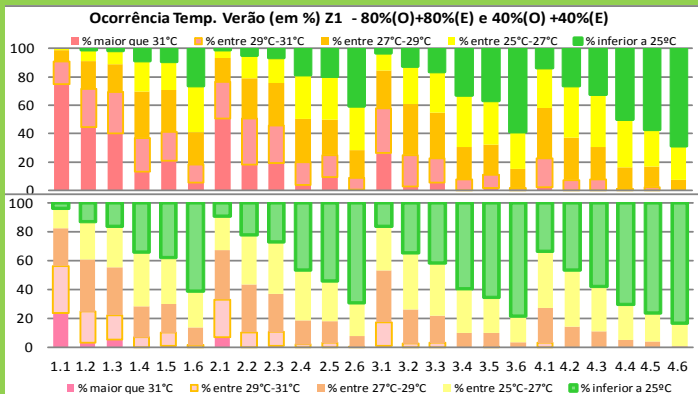
**Sem Protecção Solar Junto ao Envidraçado**



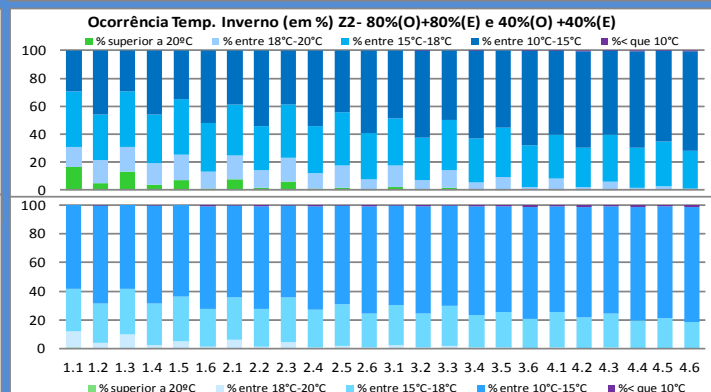
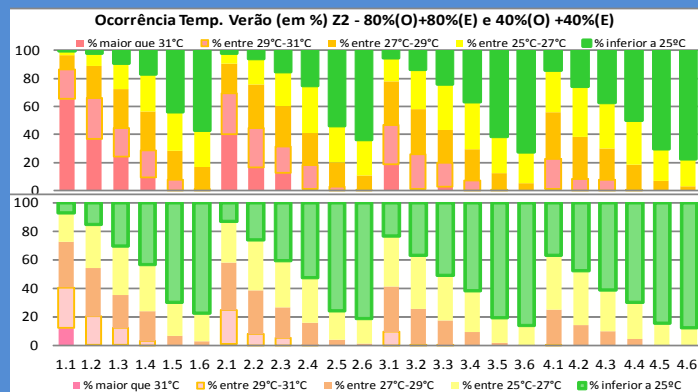
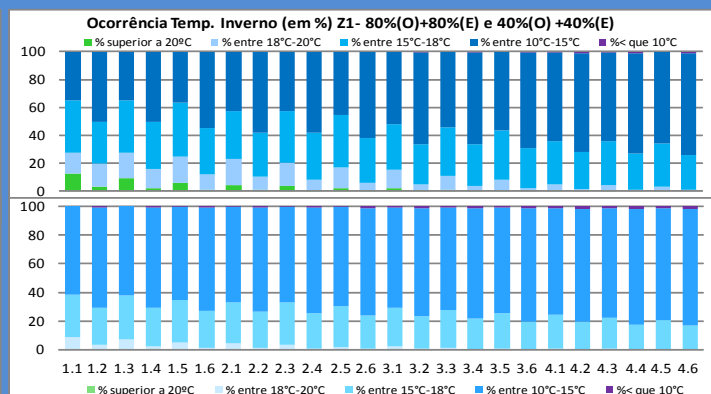
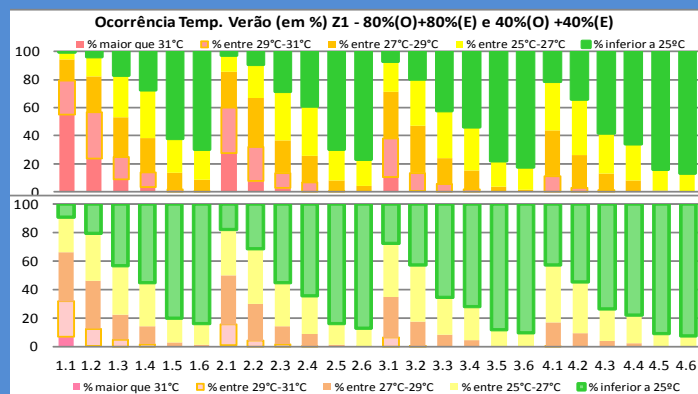
**Com Protecção Solar Interior Junto ao Envidraçado**



### Sem Protecção Solar Junto ao Envidraçado

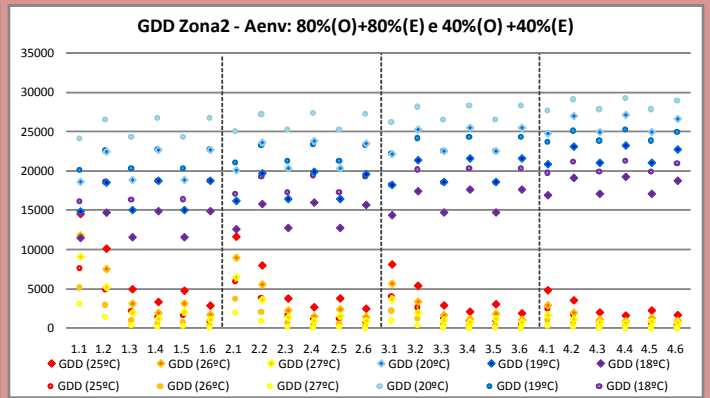
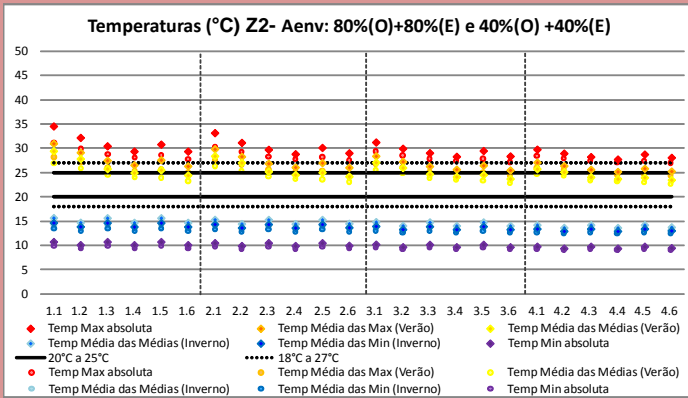
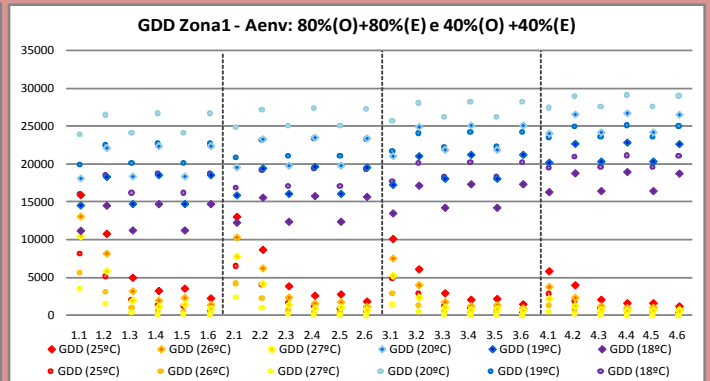
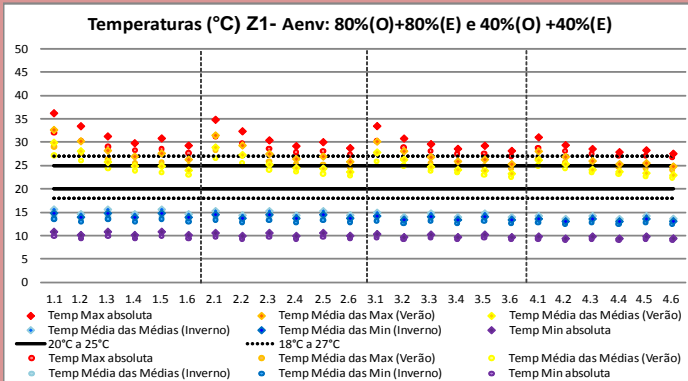


### Com Protecção Solar Interior Junto ao Envidraçado

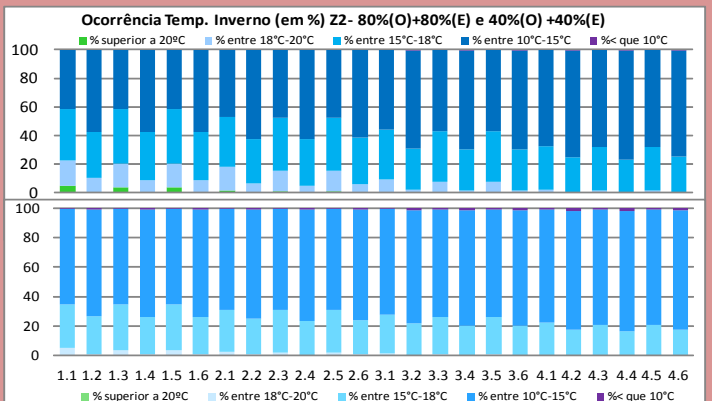
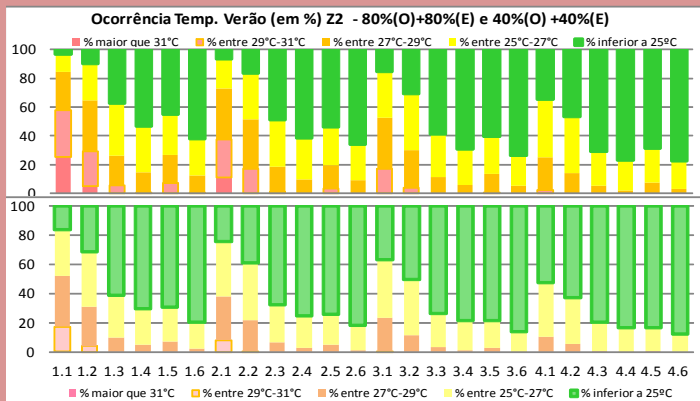
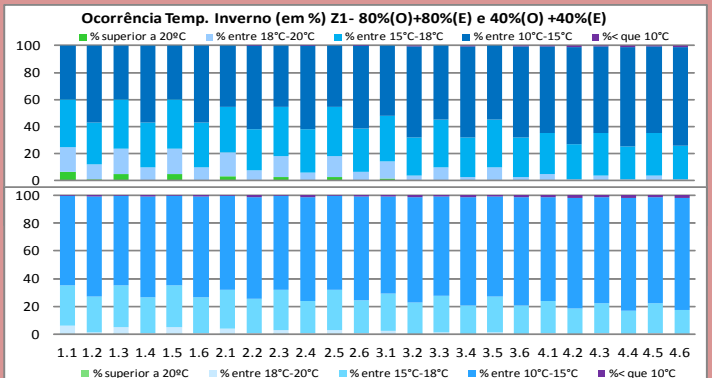
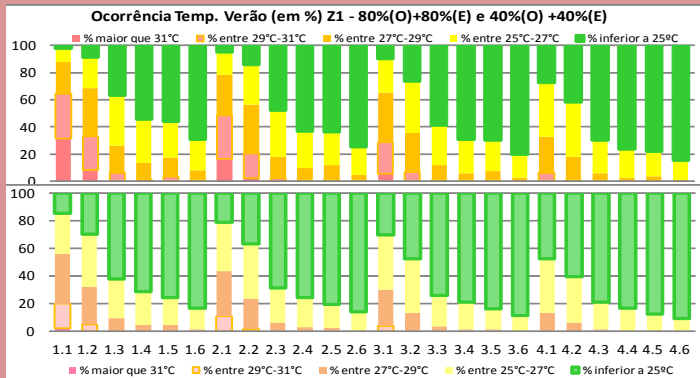


**Modelo2 Cobertura: Soluções com Fachadas Envidraçadas 80%(O)+80%(E) e 40% (O) +40%(E)**  
**Massa Térmica2, isolamento 60mm**

**Com Protecção Solar Exterior Junto ao Envidraçado**



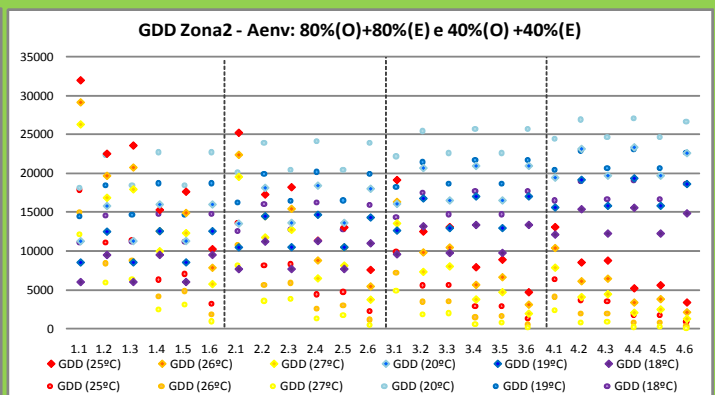
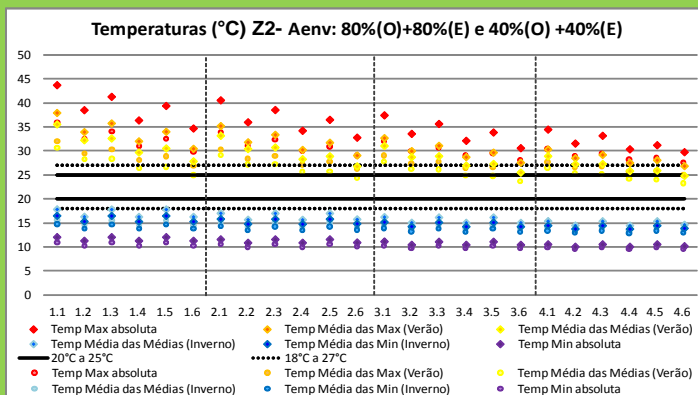
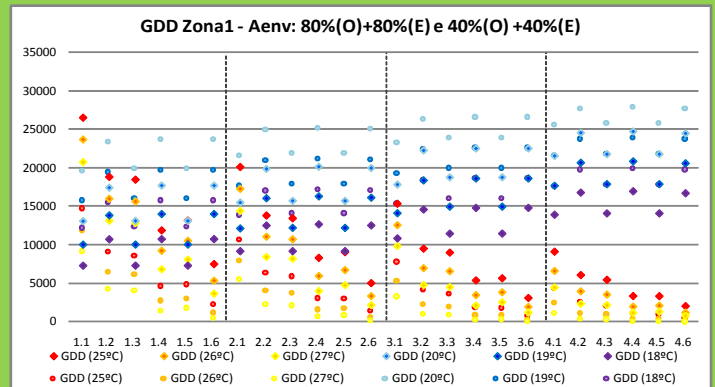
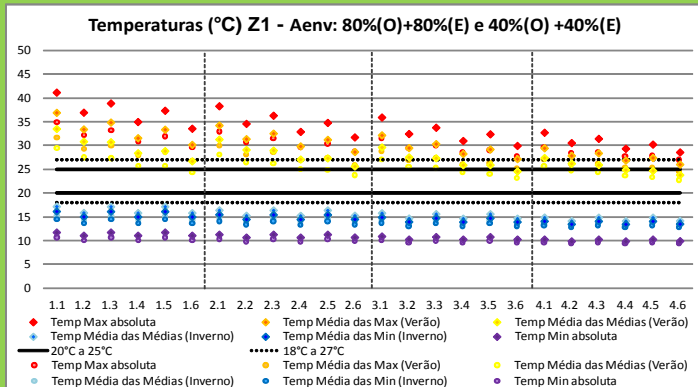
Com Protecção Solar Exterior Junto ao Envidraçado



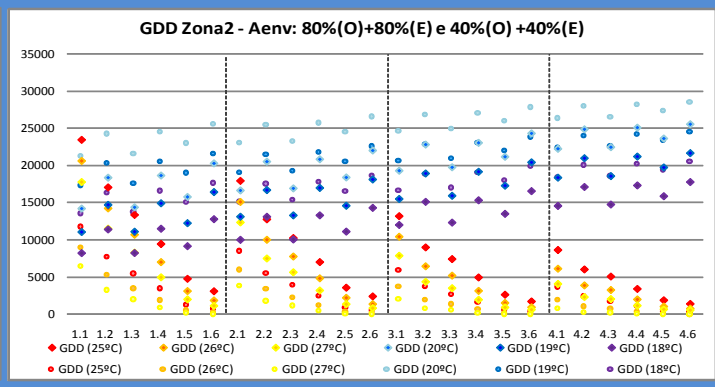
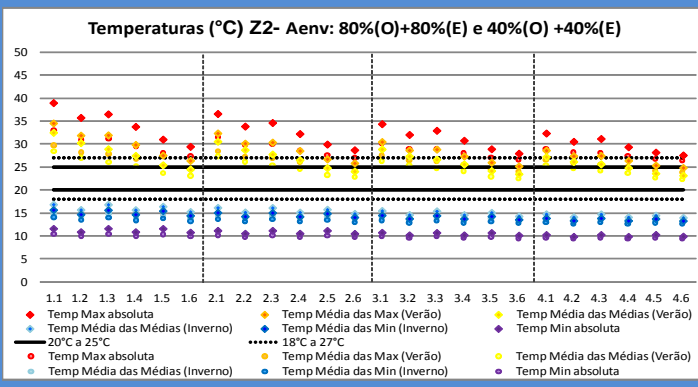
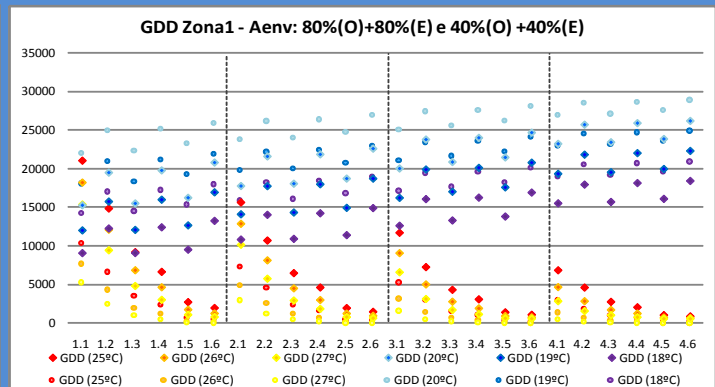
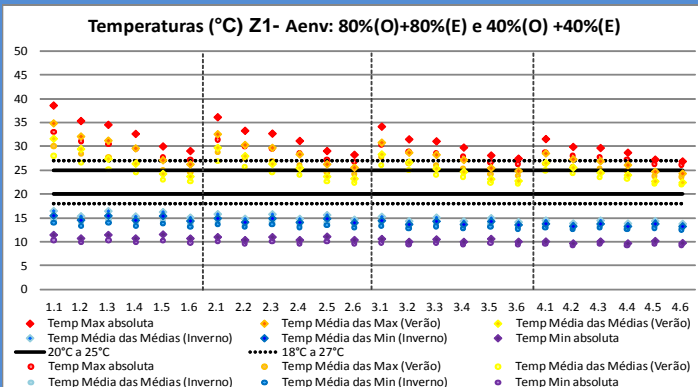


**Modelo2 Cobertura: Soluções com Fachadas Envidraçadas 80%(O)+80%(E) e 40% (O) +40%(E)**  
**Massa Térmica2, isolamento 100mm**

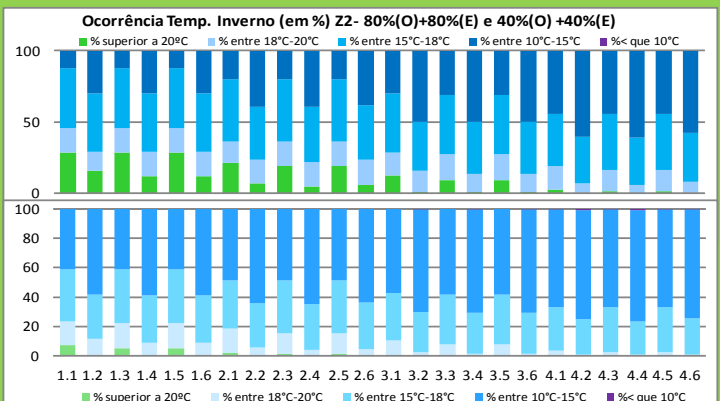
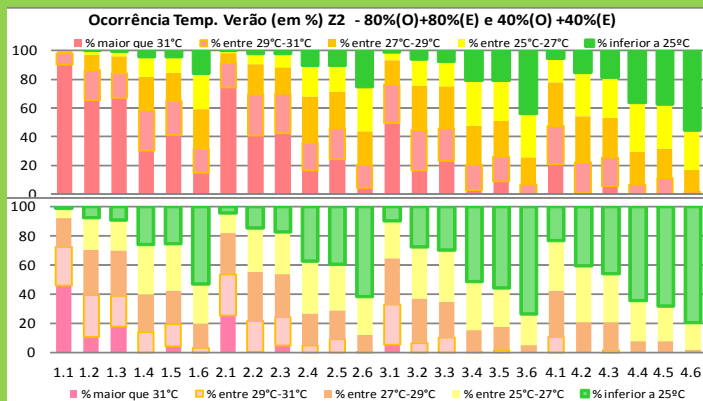
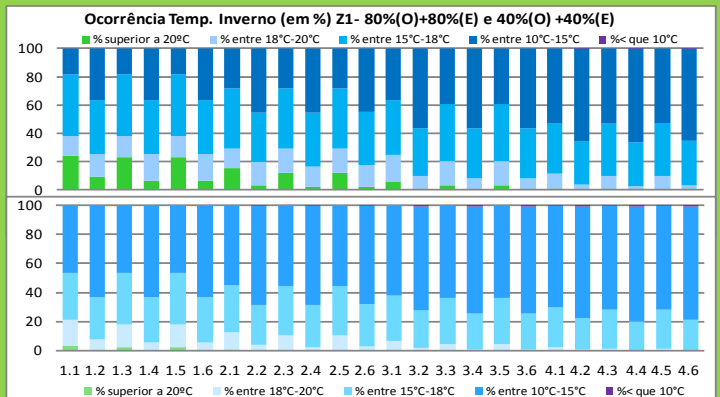
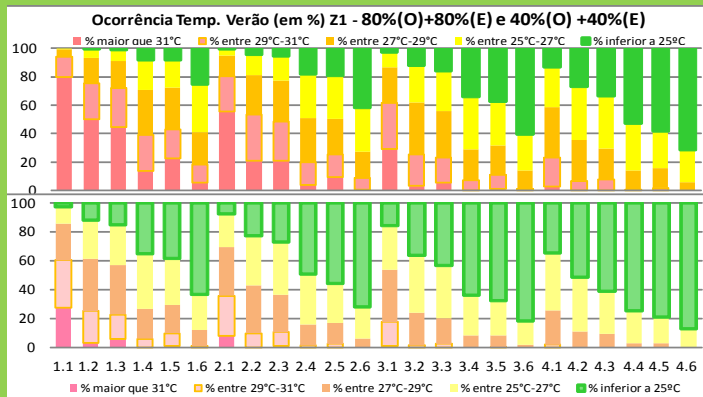
**Sem Protecção Solar Junto ao Envidraçado**



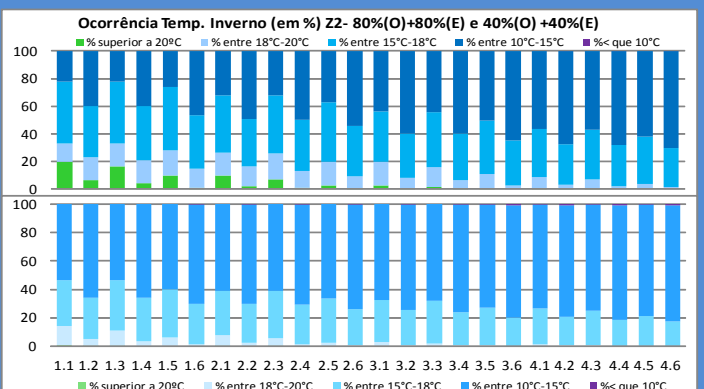
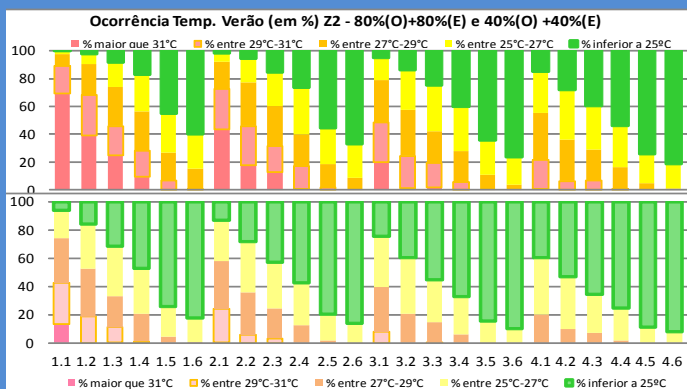
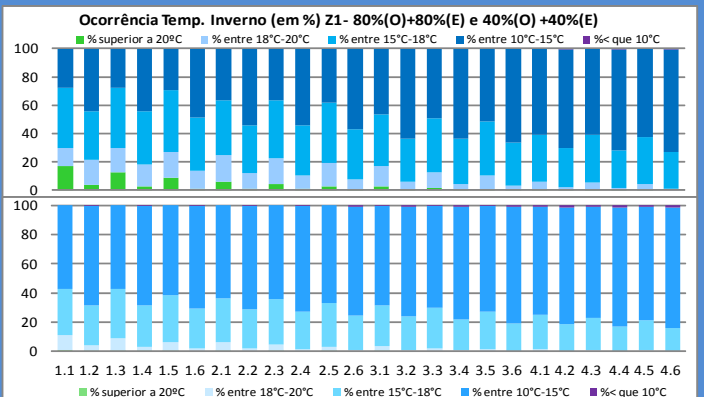
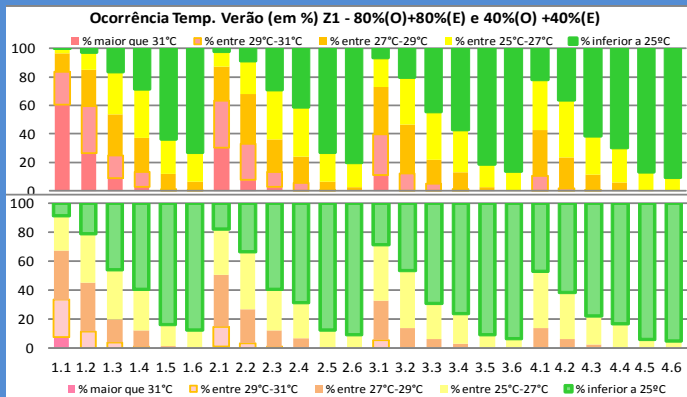
**Com Protecção Solar Interior Junto ao Envidraçado**



**Sem Protecção Solar Junto ao Envidraçado**



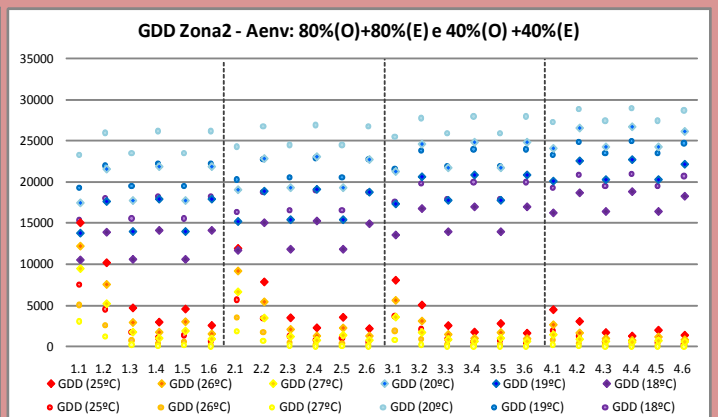
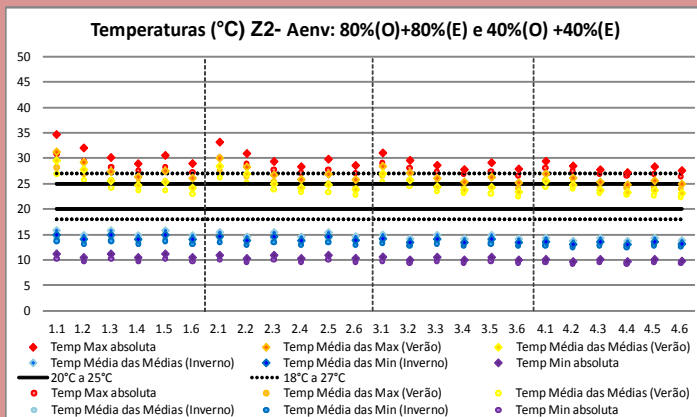
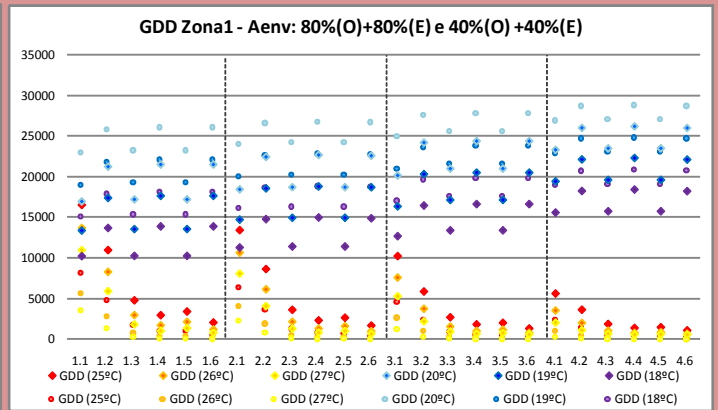
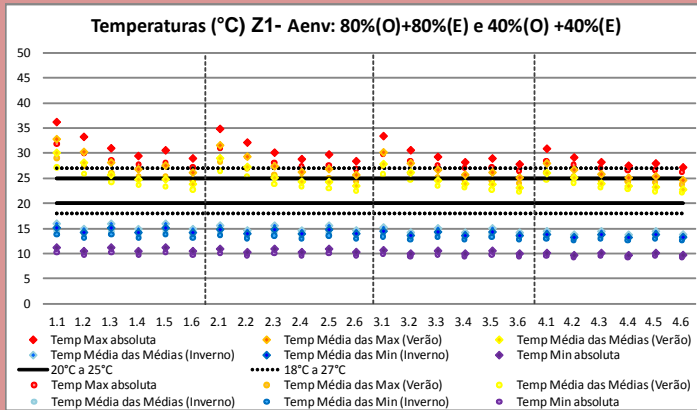
**Com Protecção Solar Interior Junto ao Envidraçado**



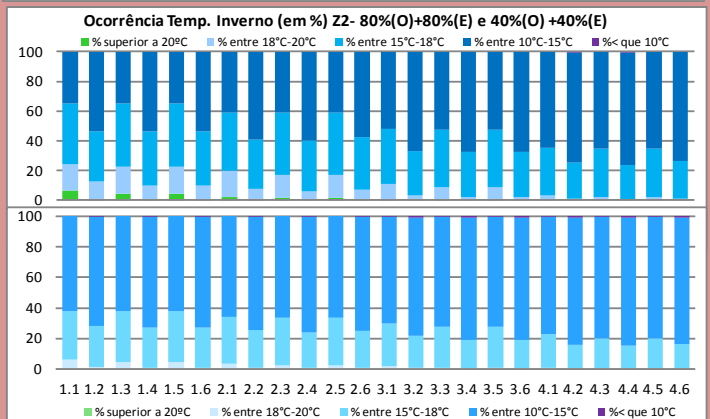
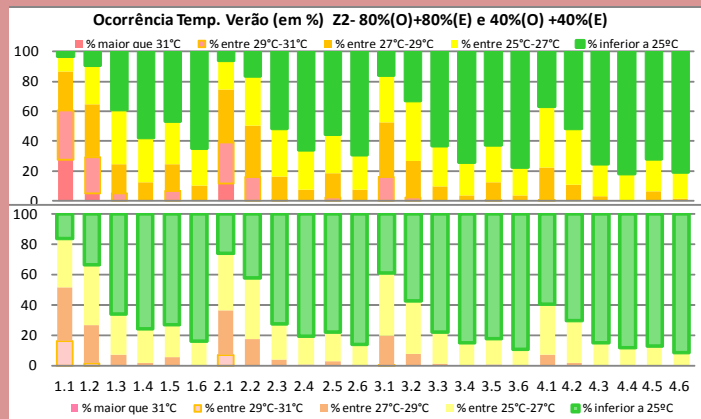
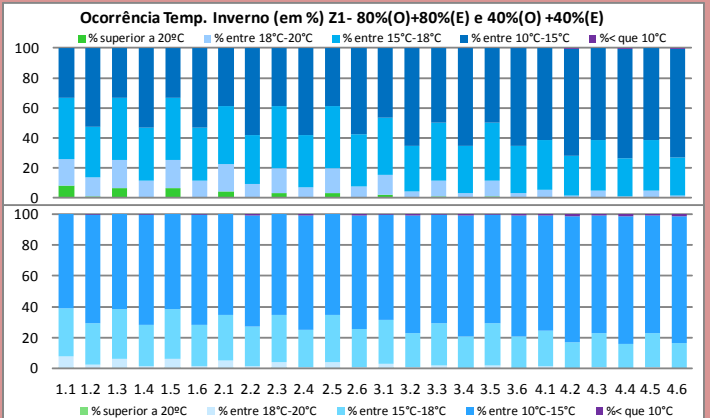
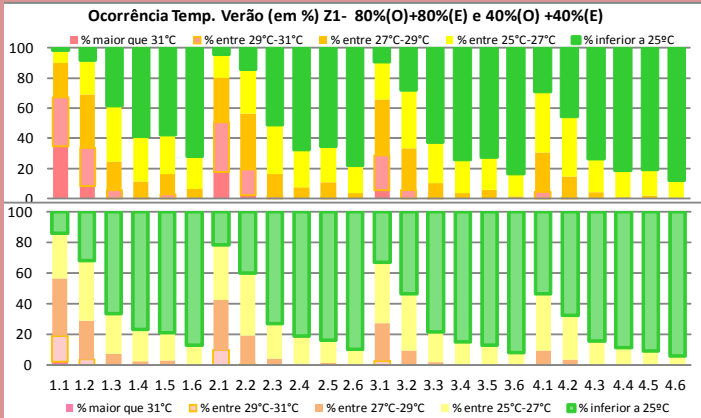
**Modelo2 Cobertura: Soluções com Fachadas Envidraçadas 80%(O)+80%(E) e 40% (O) +40%(E)**

**Massa Térmica2, isolamento 100mm**

**Com Protecção Solar Exterior Junto ao Envidraçado**

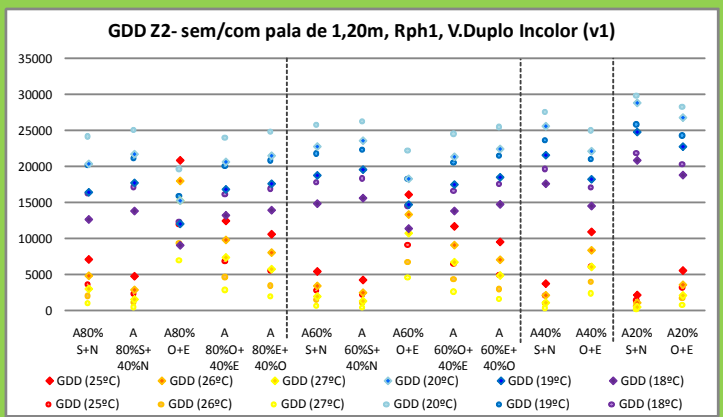
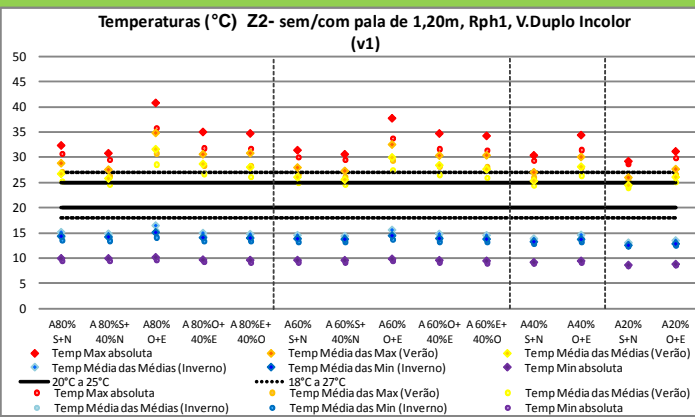
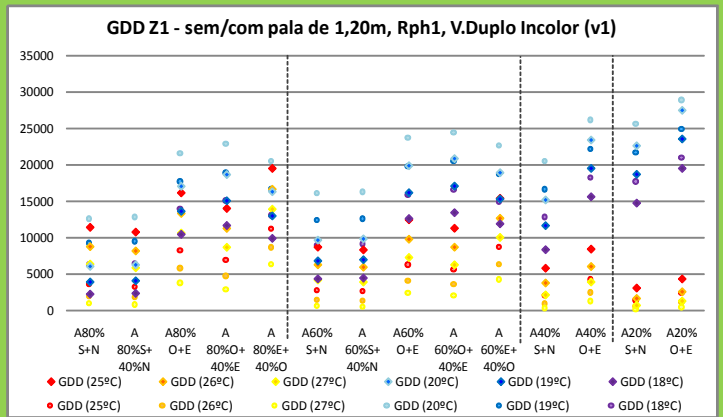
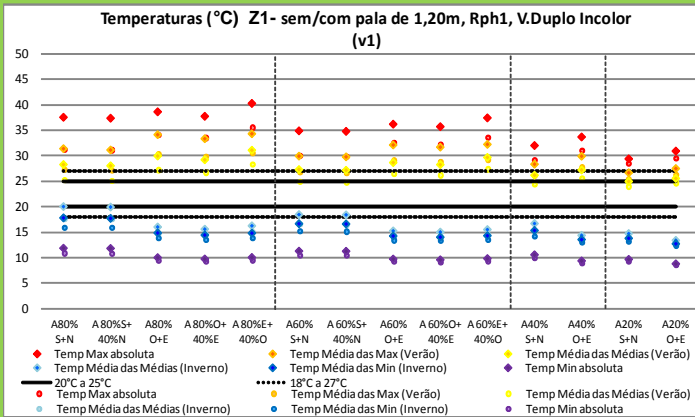


Com Protecção Solar Exterior Junto ao Envidraçado

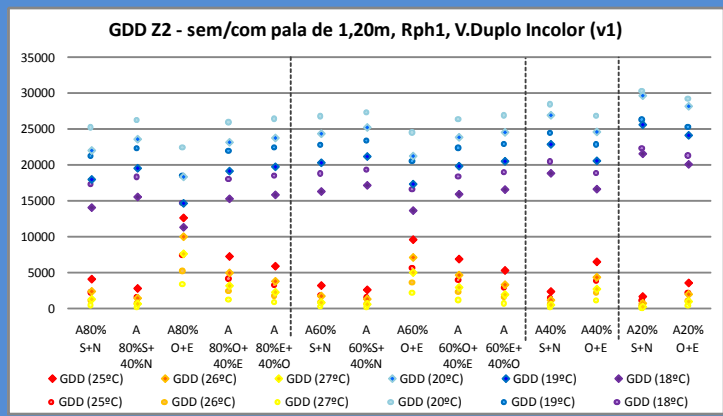
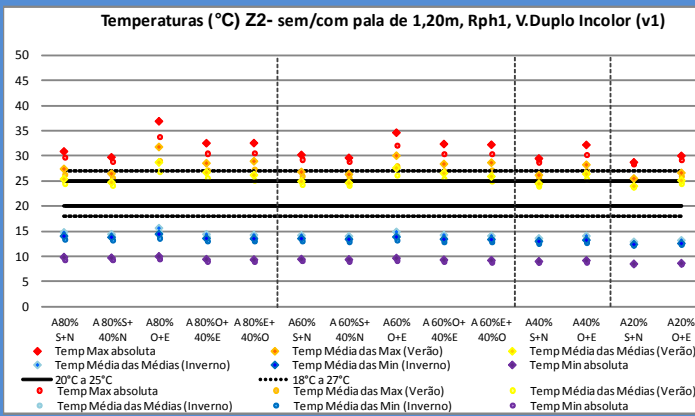
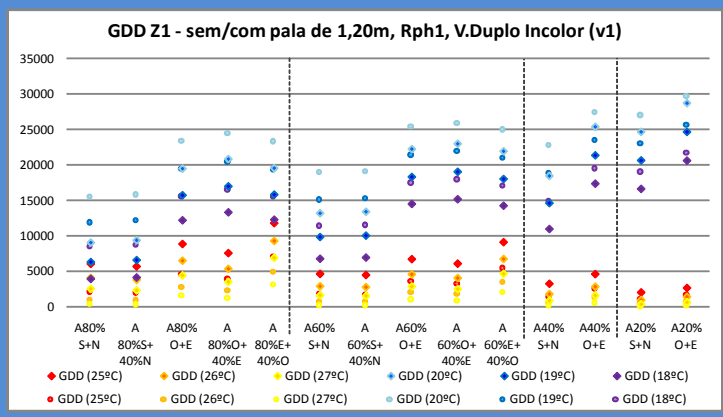
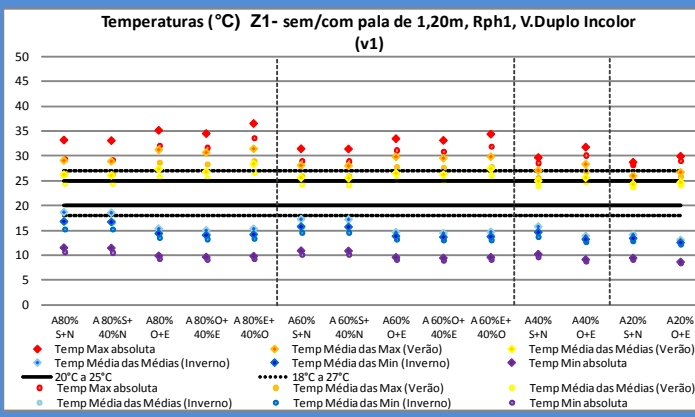


**Modelo2 Cobertura: Soluções Sem e Com Palas de 1,20m – vidro duplo incolor e Rph nocturno I**  
**Massa Térmica1, isolamento 30mm**

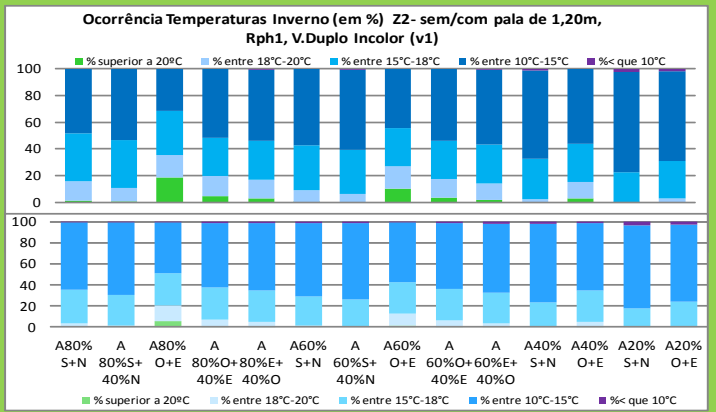
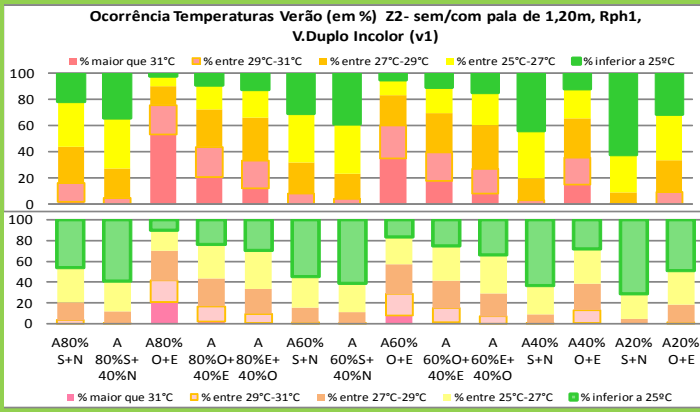
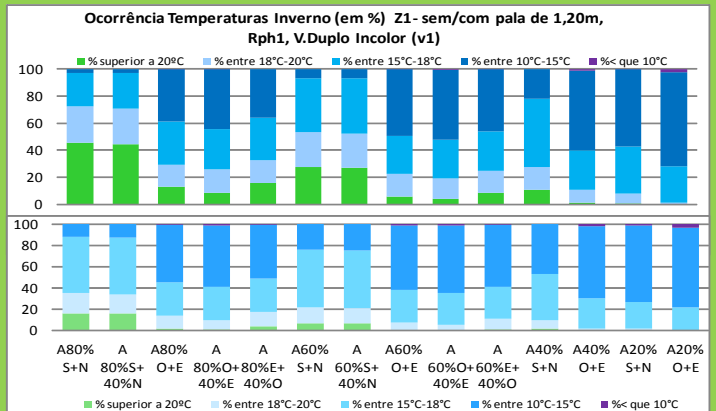
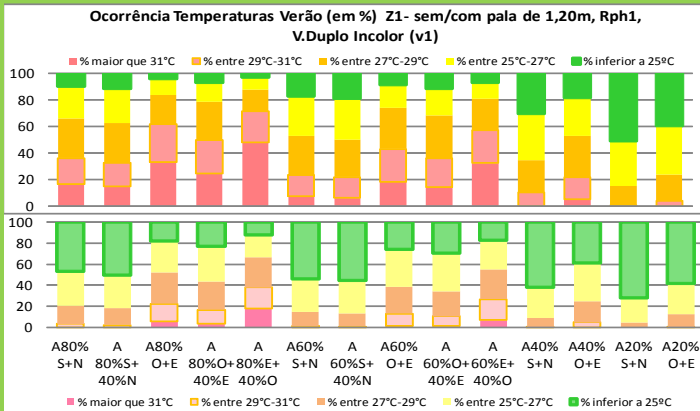
**Sem Protecção Solar Junto ao Envidraçado**



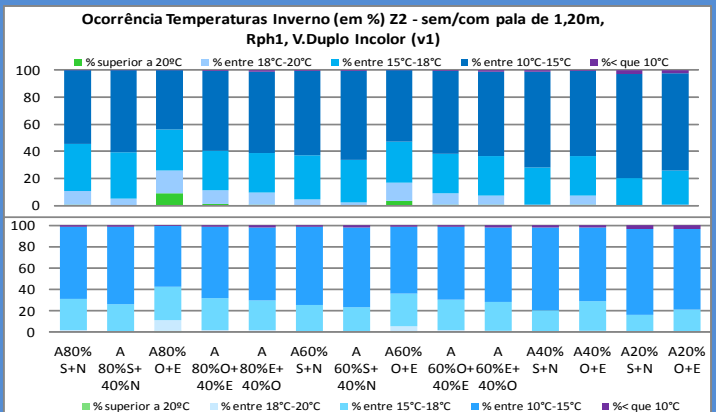
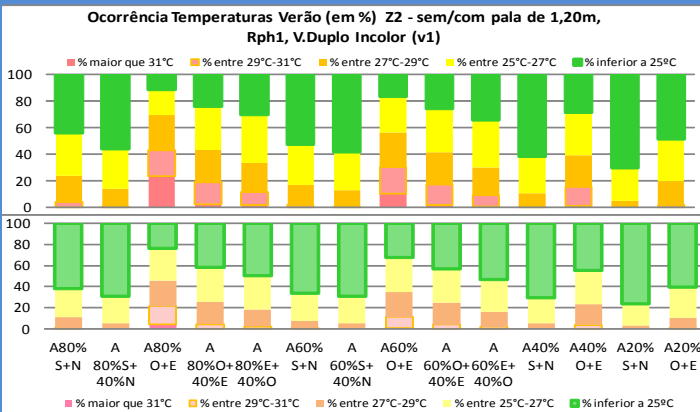
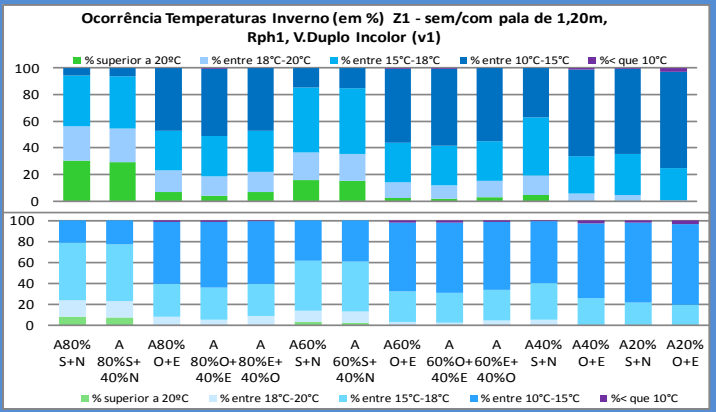
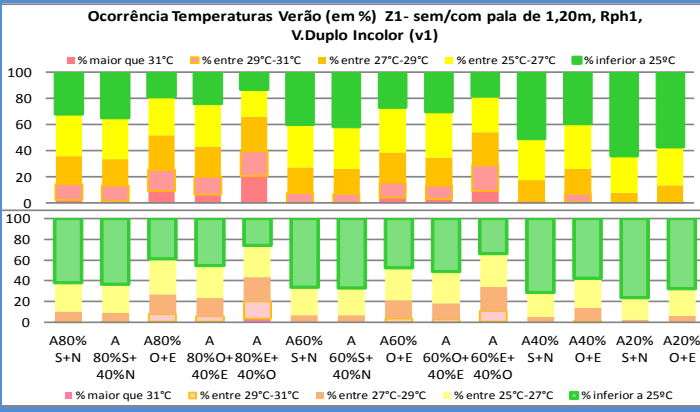
**Com Protecção Solar Interior Junto ao Envidraçado**



**Sem Protecção Solar Junto ao Envidraçado**

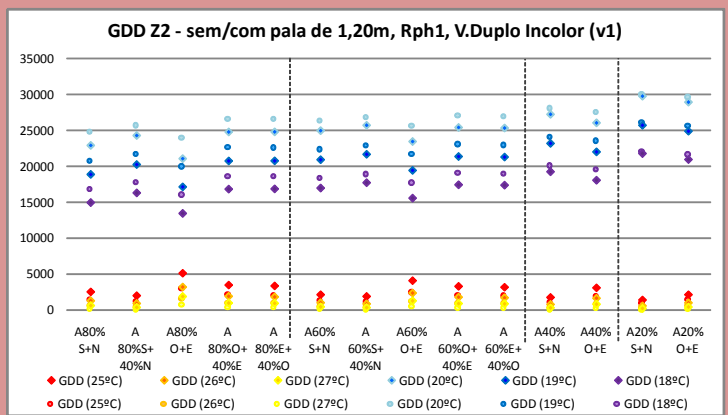
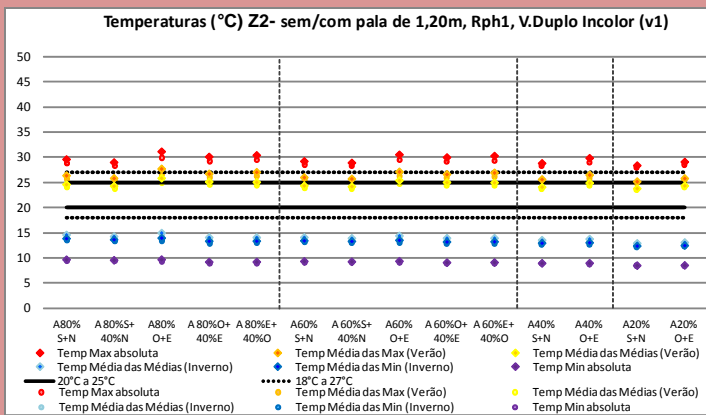
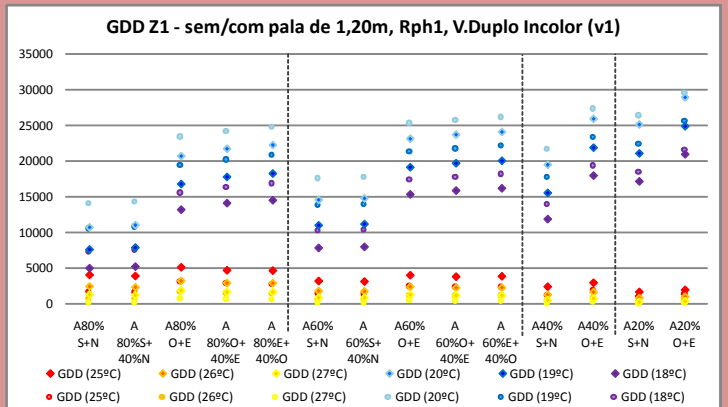
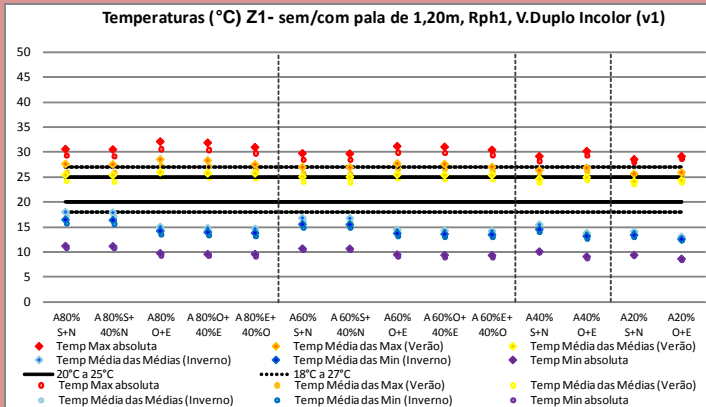


**Com Protecção Solar Interior Junto ao Envidraçado**

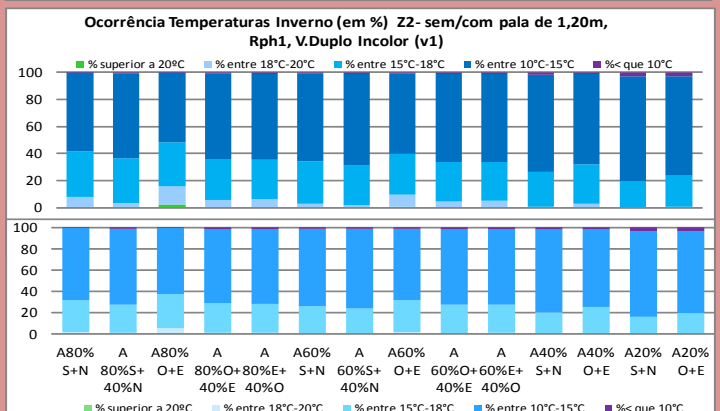
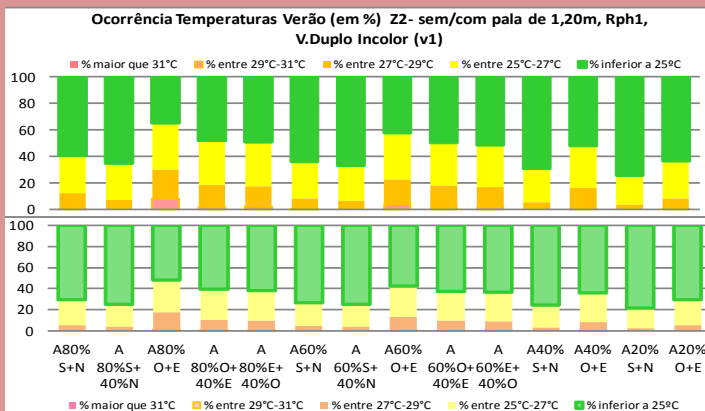
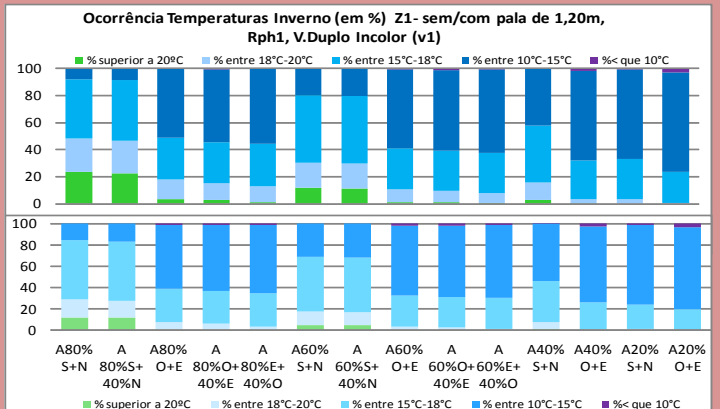
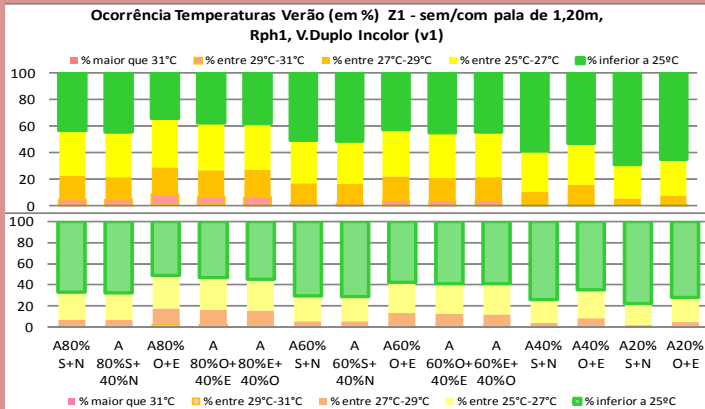


**Modelo2 Cobertura: Soluções Sem e Com Palas de 1,20m – vidro duplo incolor e Rph nocturno I**  
**Massa Térmica1, isolamento 30mm**

**Com Protecção Solar Exterior Junto ao Envidraçado**



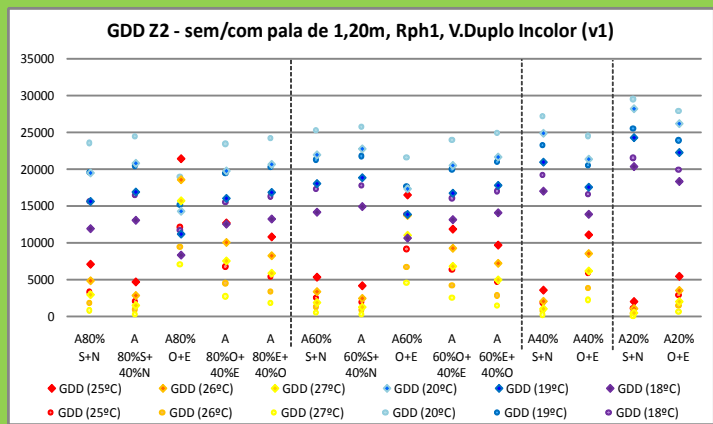
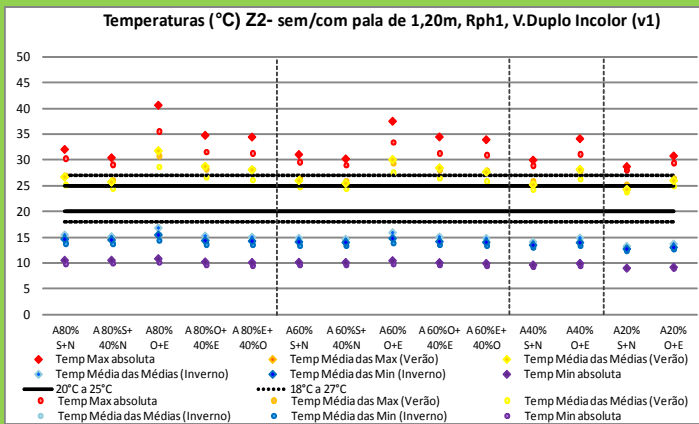
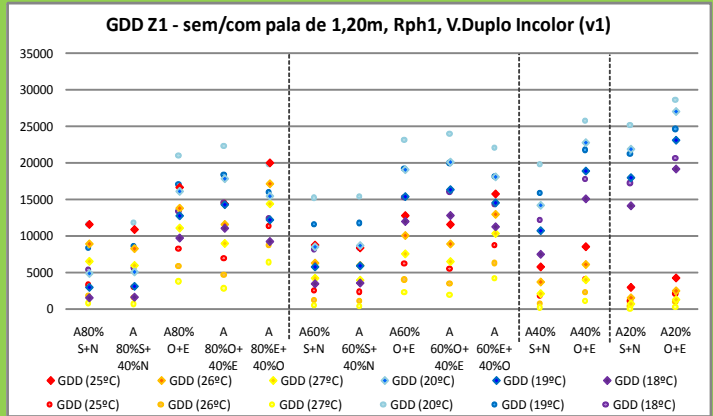
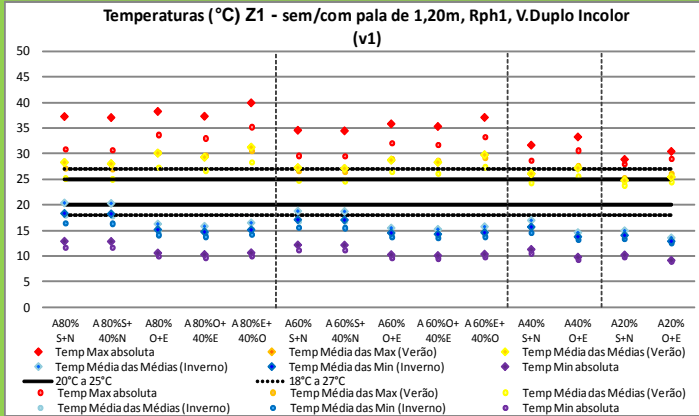
Com Protecção Solar Exterior Junto ao Envidraçado



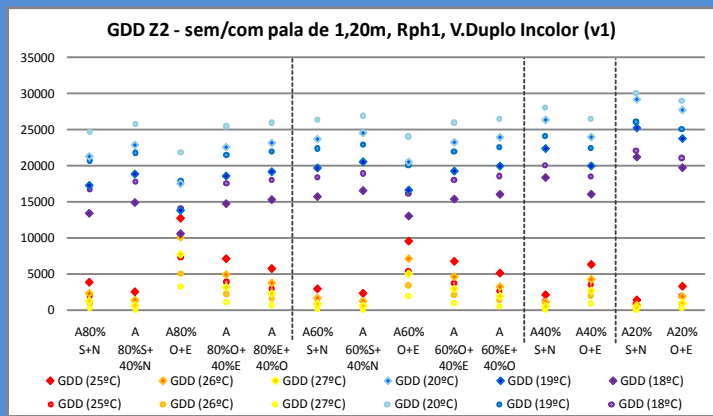
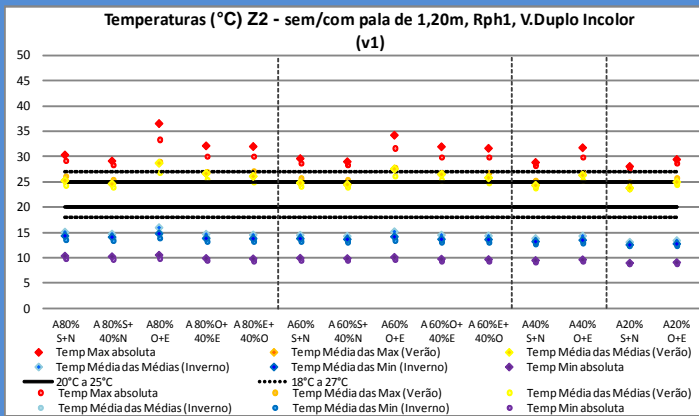
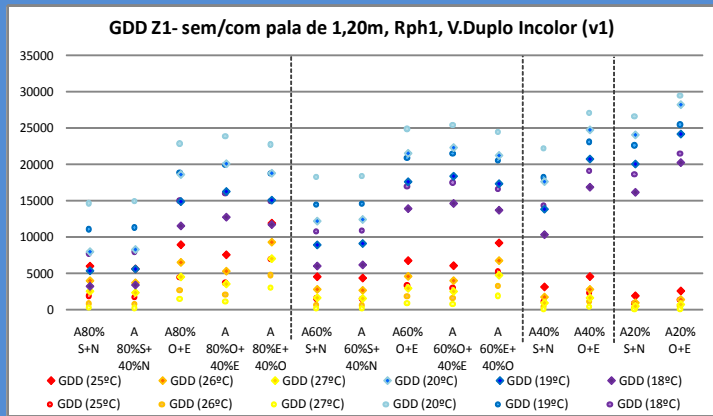
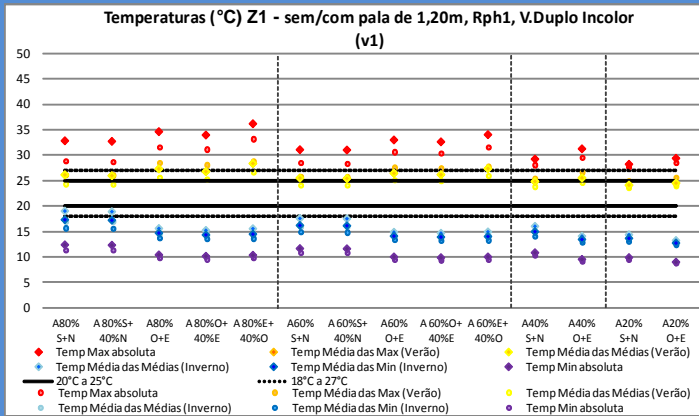


**Modelo2 Cobertura: Soluções Sem e Com Palas de 1,20m – vidro duplo incolor e Rph nocturno I**  
**Massa Térmica2, isolamento 30mm**

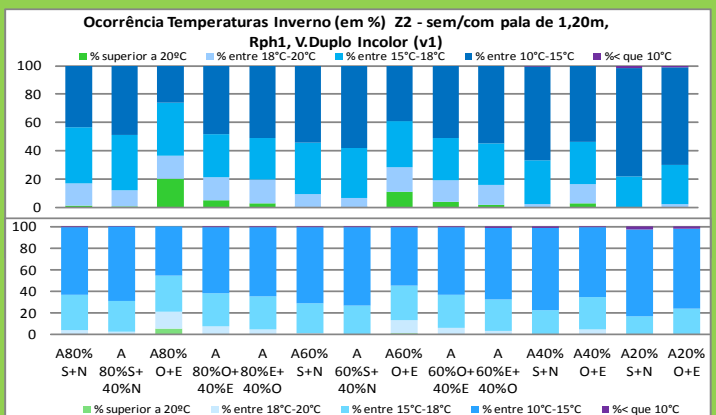
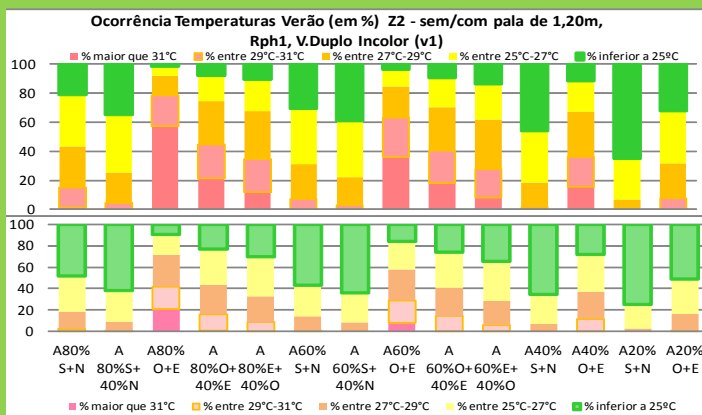
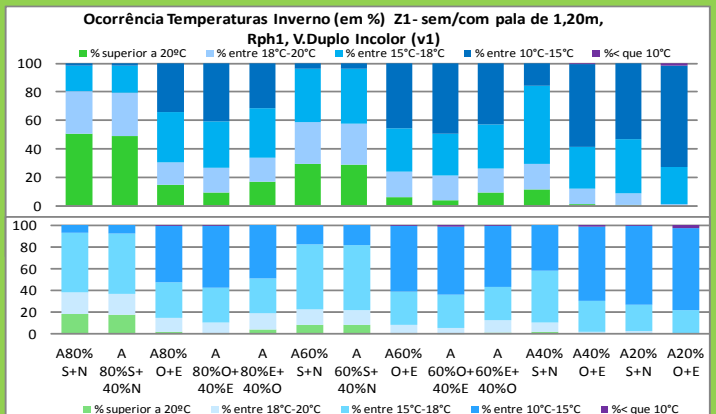
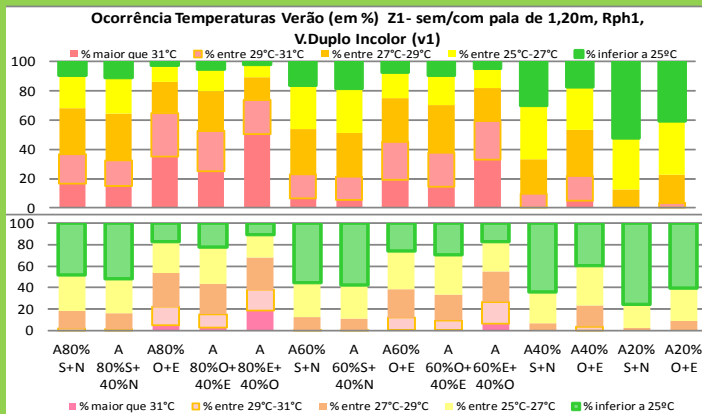
**Sem Protecção Solar Junto ao Envidraçado**



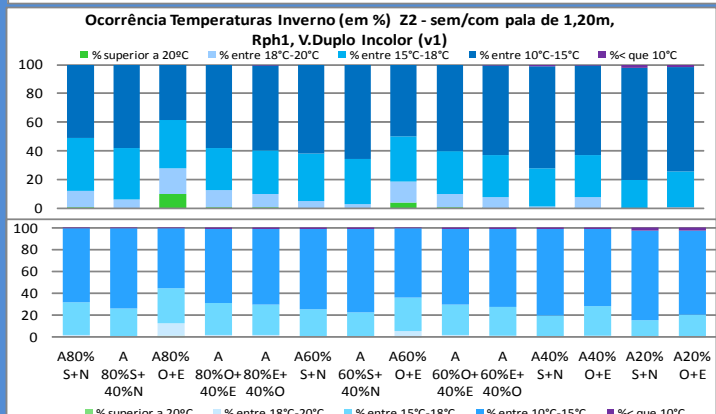
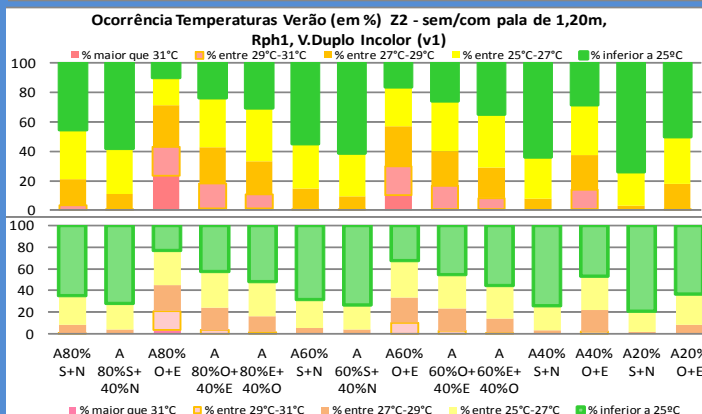
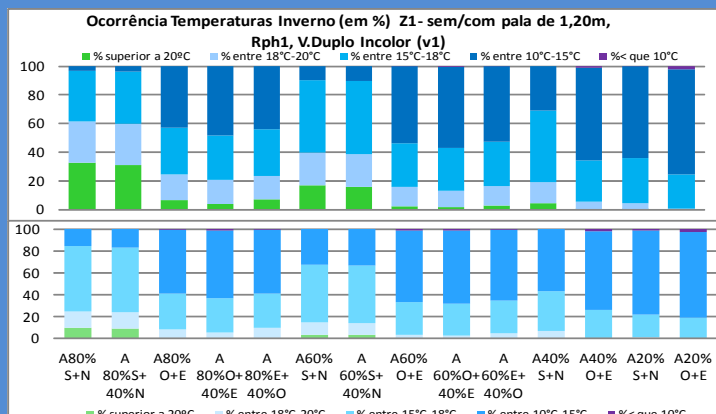
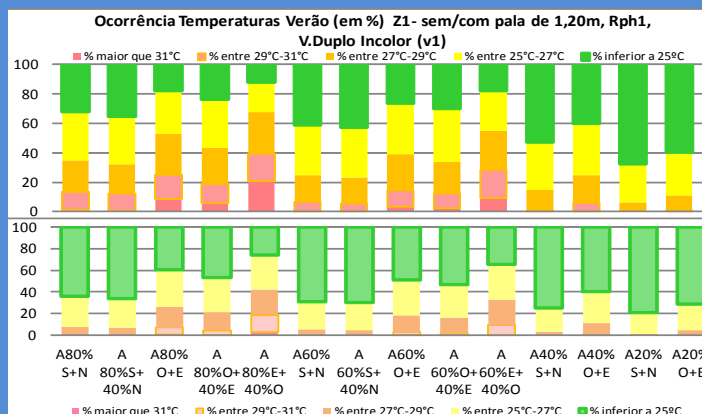
**Com Protecção Solar Interior Junto ao Envidraçado**



**Sem Protecção Solar Junto ao Envidraçado**

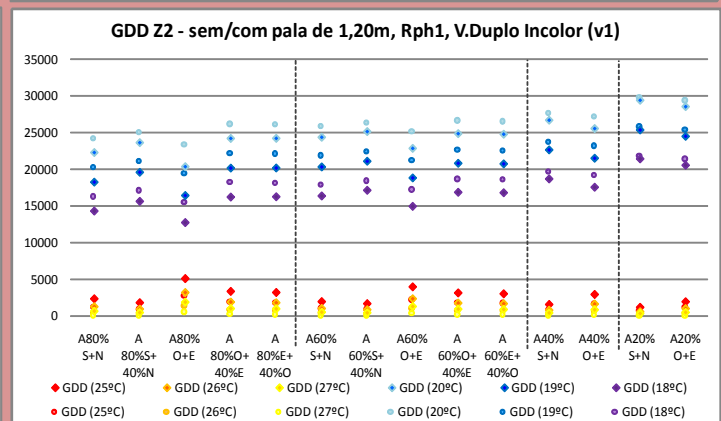
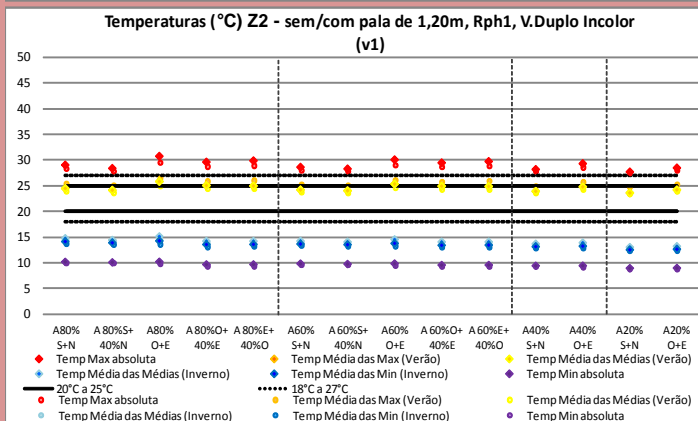
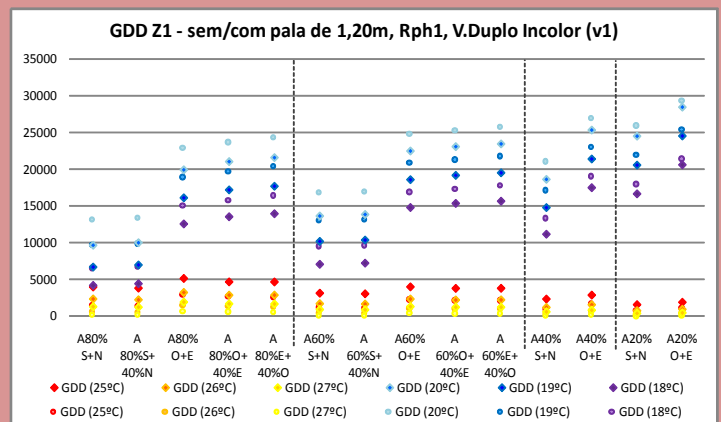
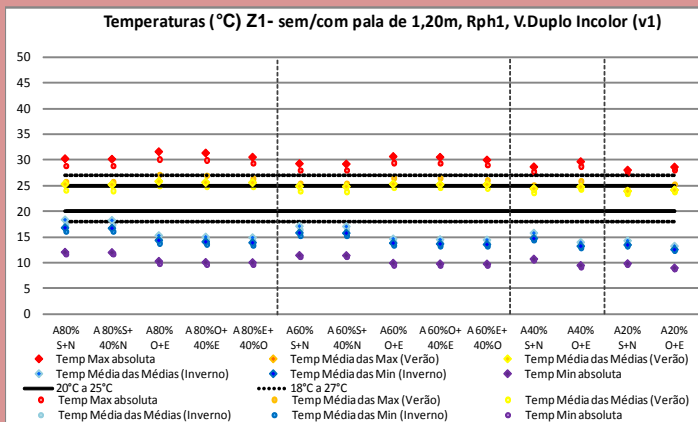


**Com Protecção Solar Interior Junto ao Envidraçado**

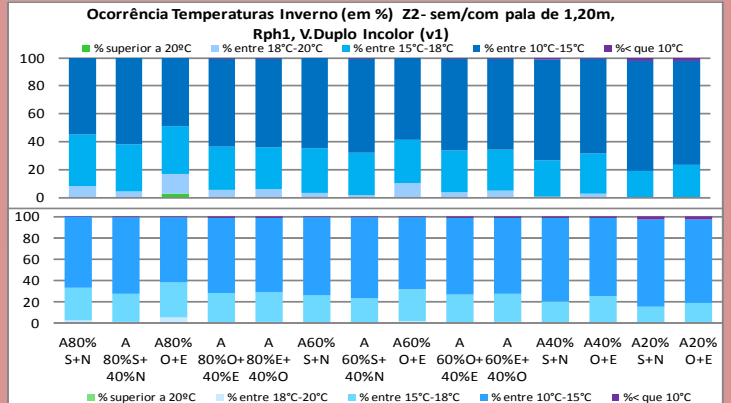
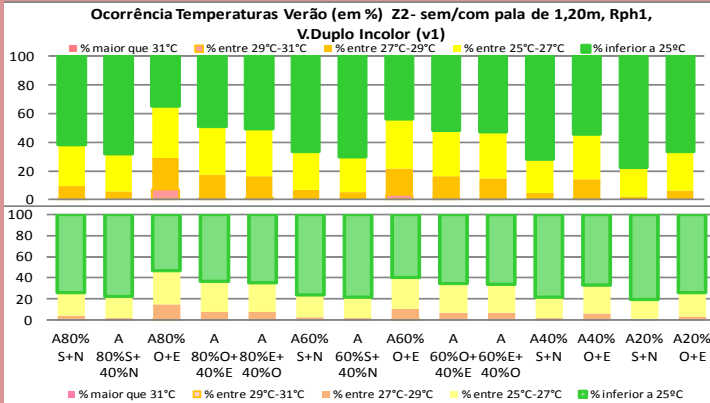
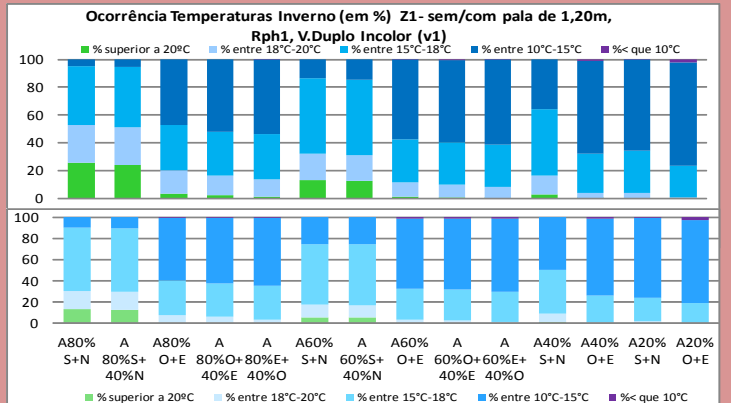
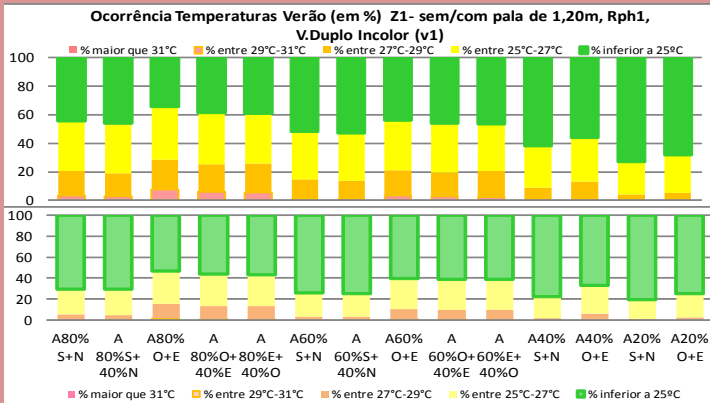


**Modelo2 Cobertura: Soluções Sem e Com Palas de 1,20m – vidro duplo incolor e Rph nocturno I**  
**Massa Térmica2, isolamento 30mm**

**Com Protecção Solar Exterior Junto ao Envidraçado**

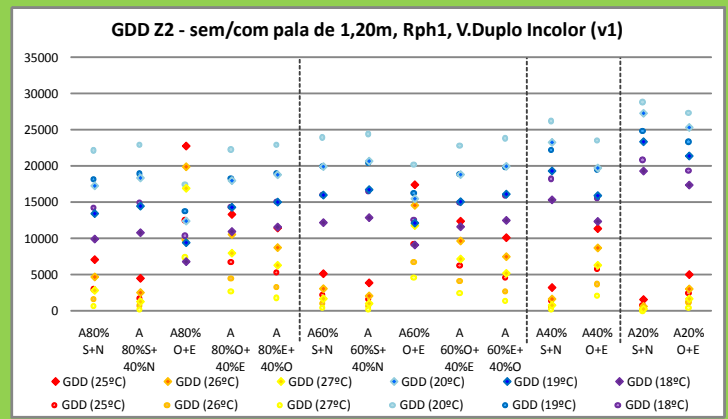
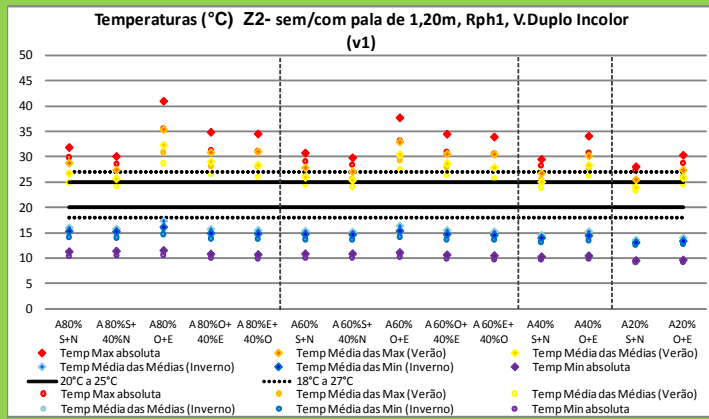
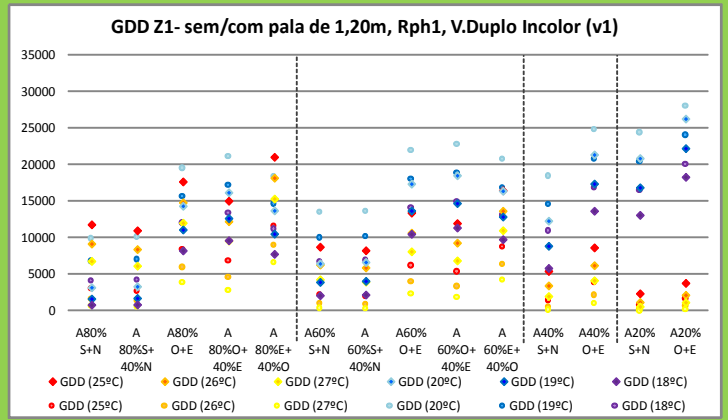
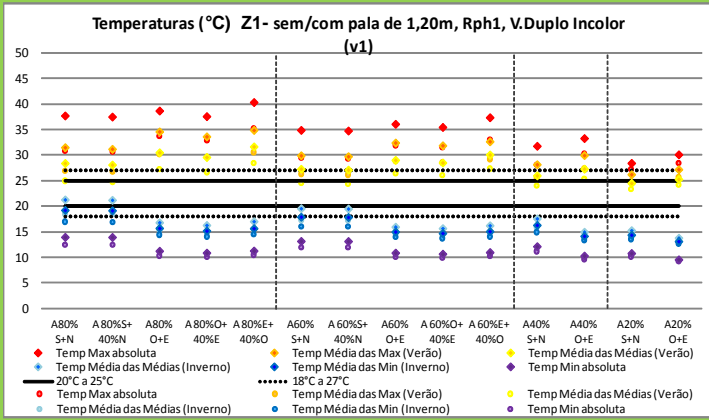


Com Protecção Solar Exterior Junto ao Envidraçado

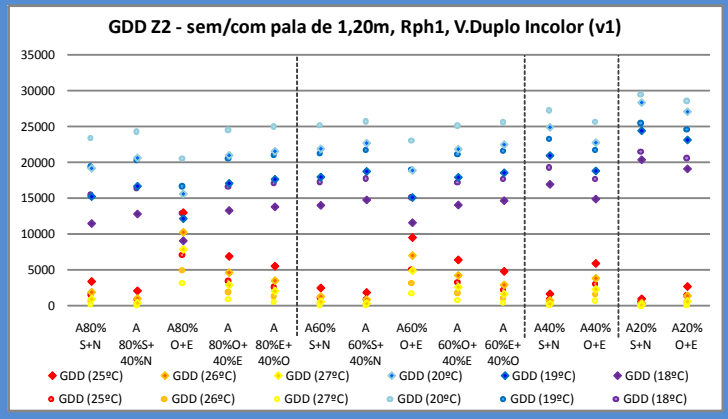
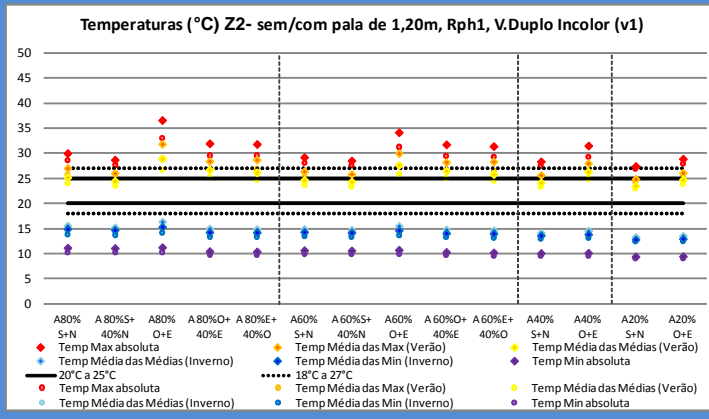
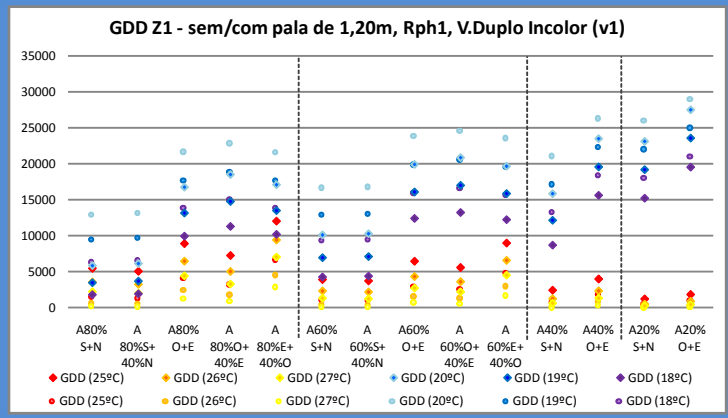
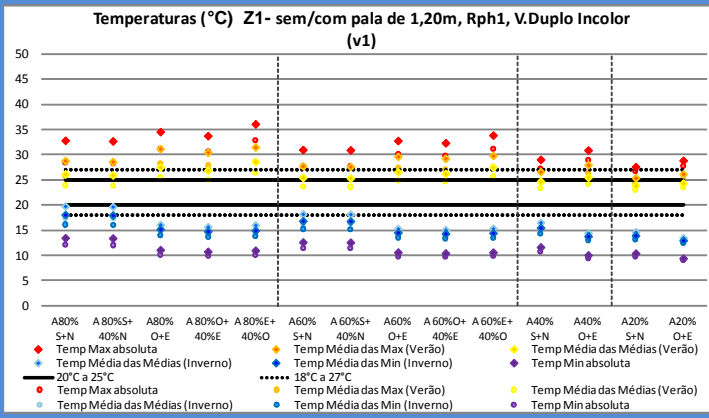


**Modelo2 Cobertura: Soluções Sem e Com Palas de 1,20m – vidro duplo incolor e Rph nocturno I**  
**Massa Térmica2, isolamento 60mm**

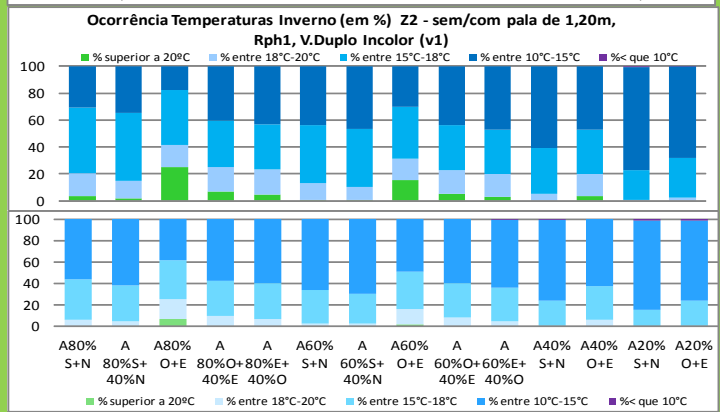
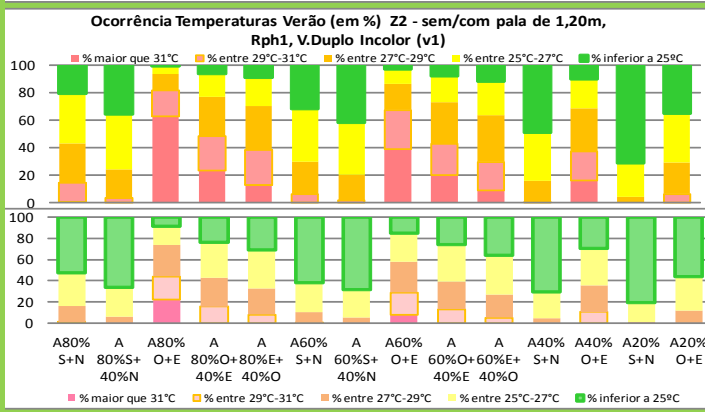
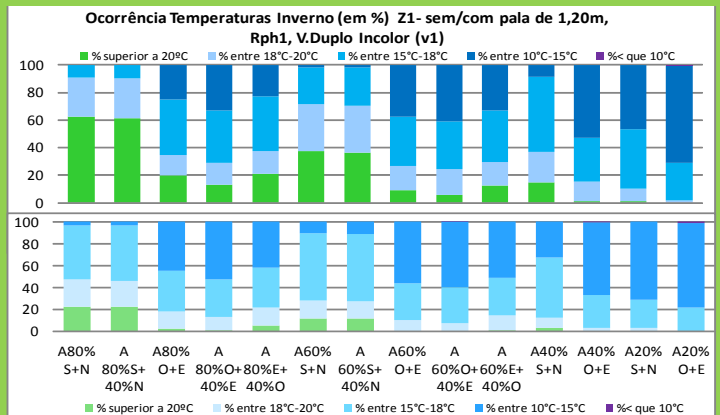
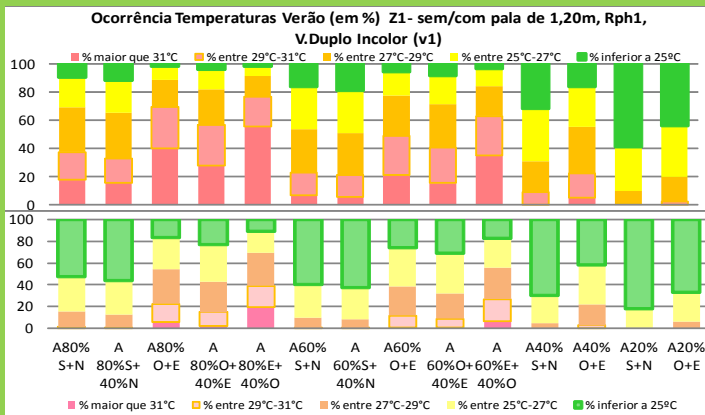
**Sem Protecção Solar Junto ao Envidraçado**



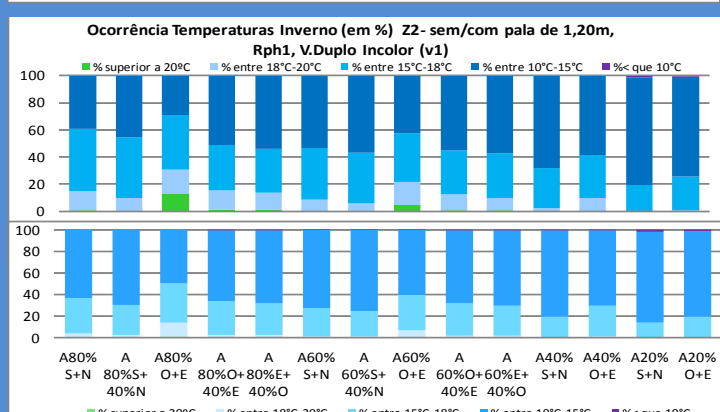
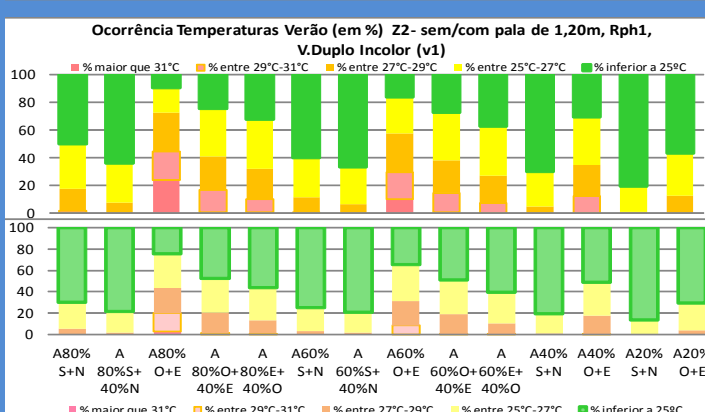
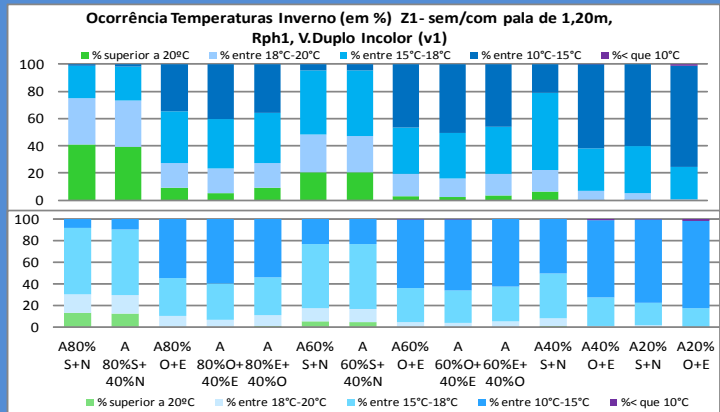
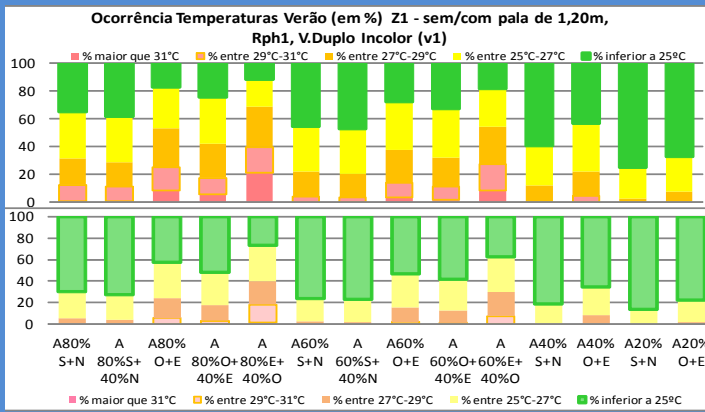
**Com Protecção Solar Interior Junto ao Envidraçado**



**Sem Protecção Solar Junto ao Envidraçado**

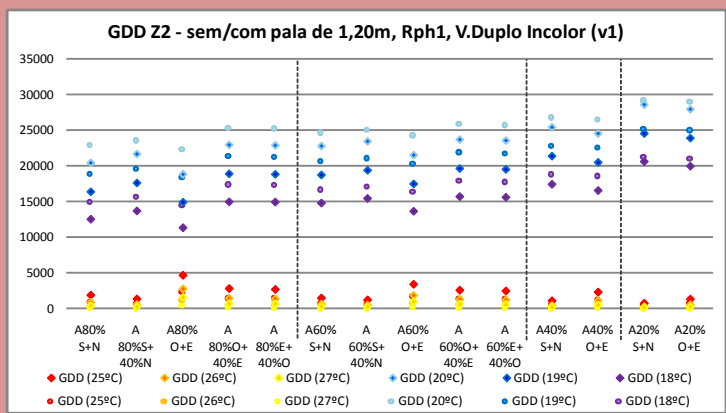
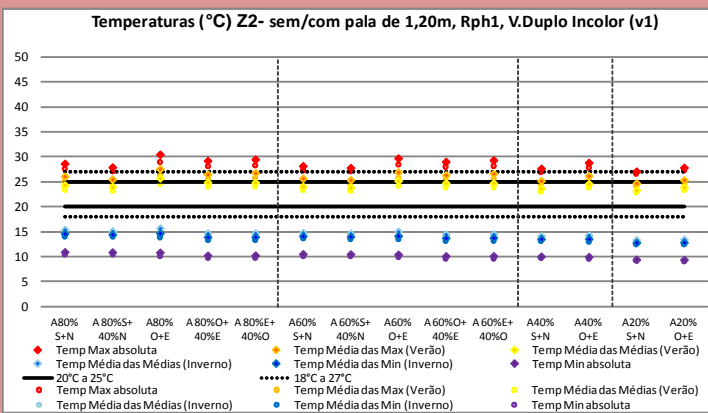
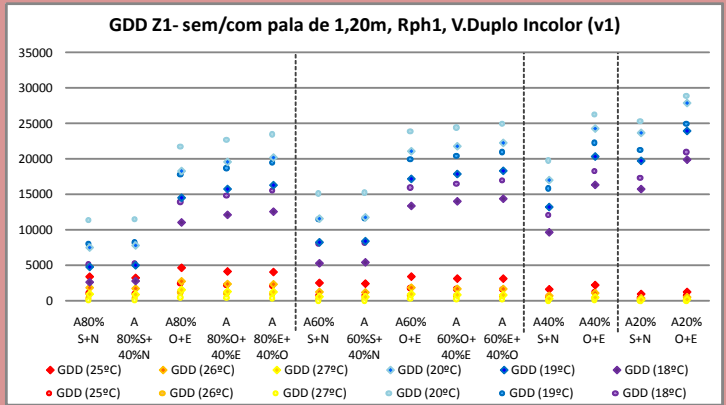
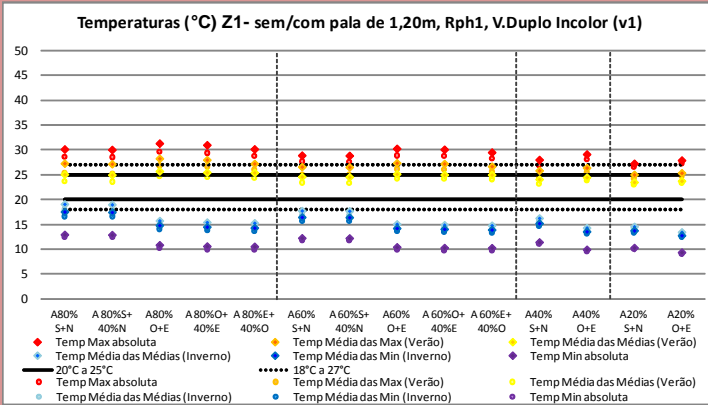


**Com Protecção Solar Interior Junto ao Envidraçado**

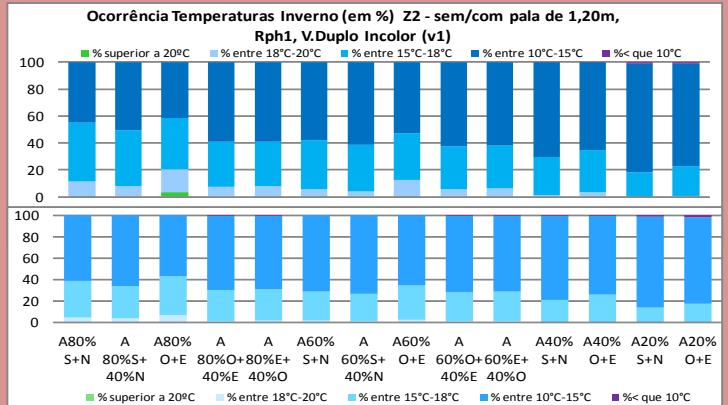
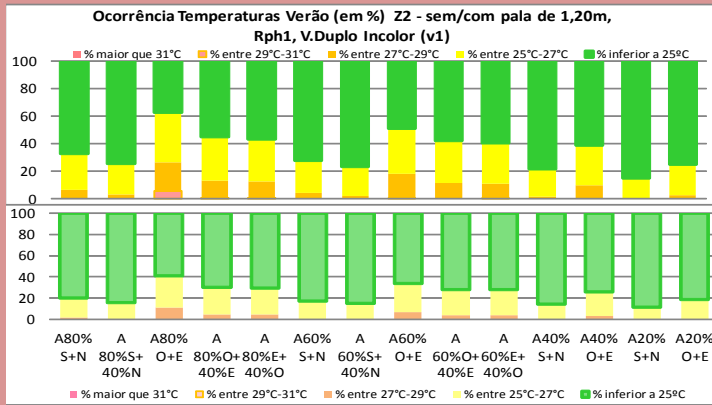
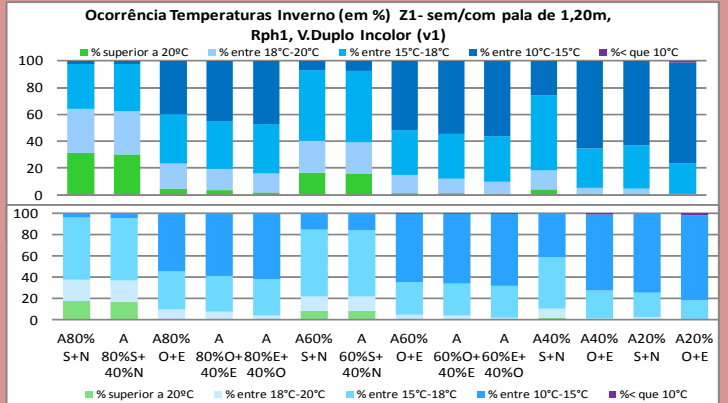
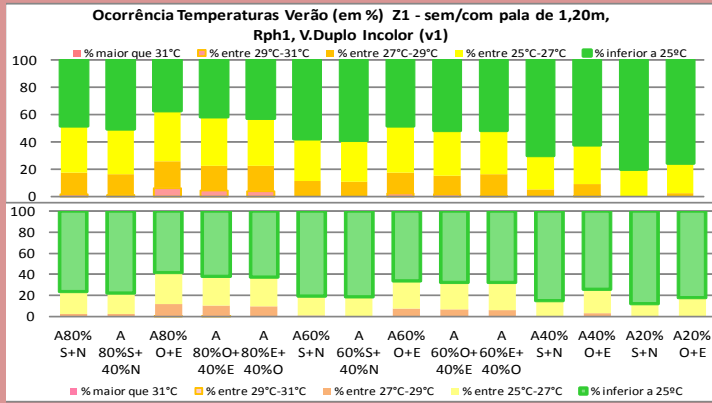


**Modelo2 Cobertura: Soluções Sem e Com Palas de 1,20m – vidro duplo incolor e Rph nocturno I**  
**Massa Térmica2, isolamento 60mm**

**Com Protecção Solar Exterior Junto ao Envidraçado**



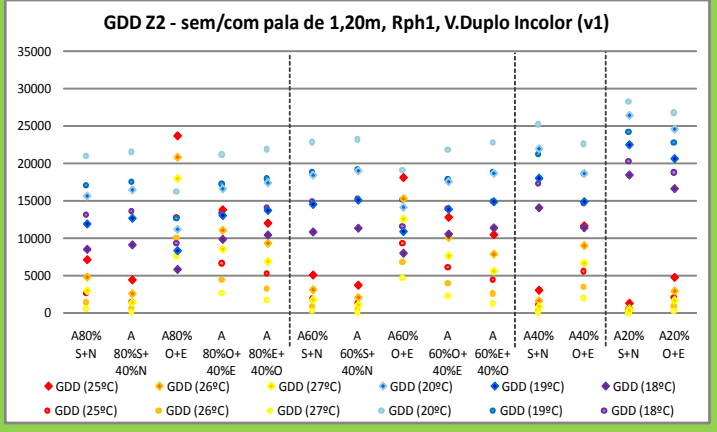
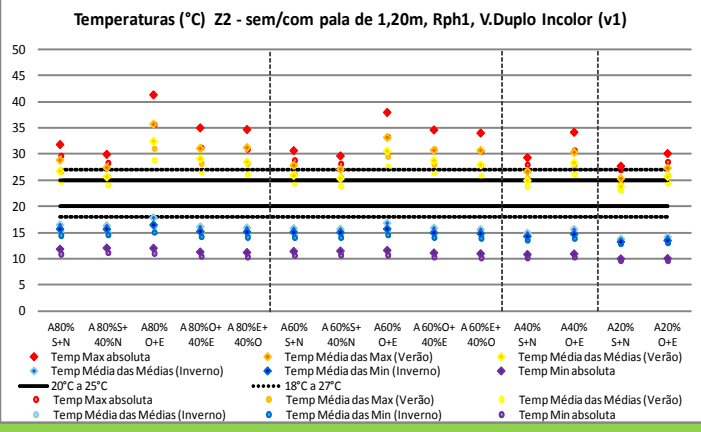
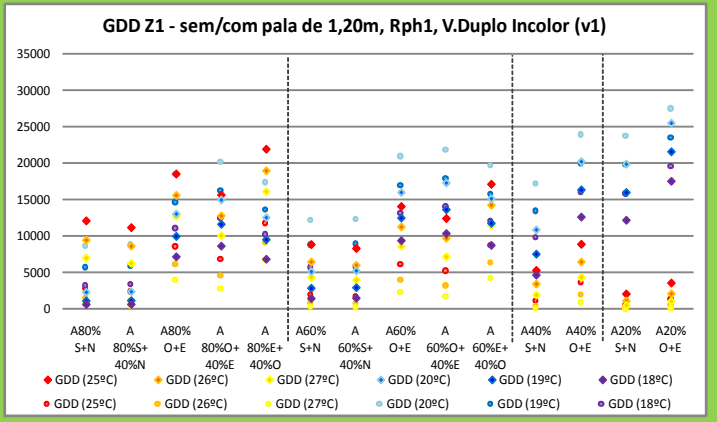
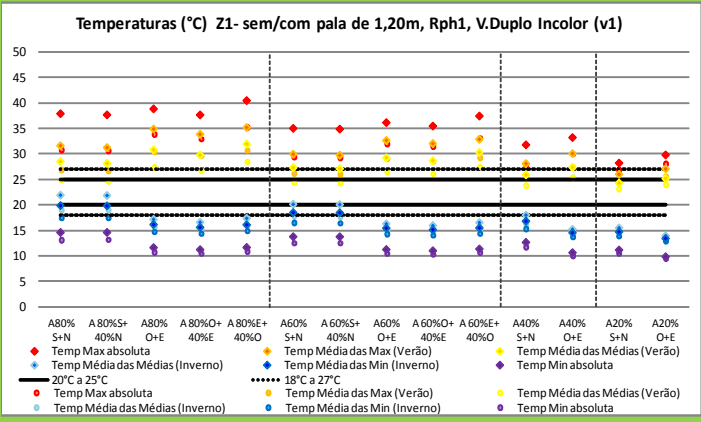
Com Protecção Solar Exterior Junto ao Envidraçado



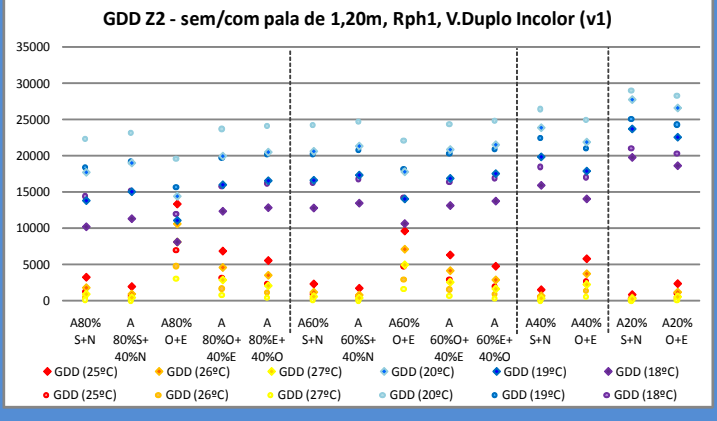
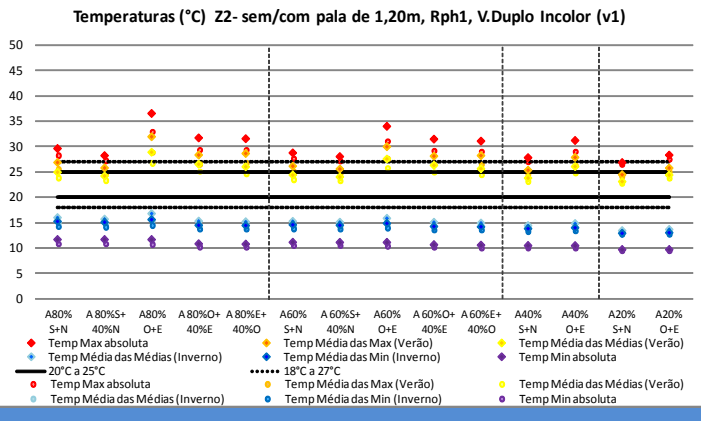
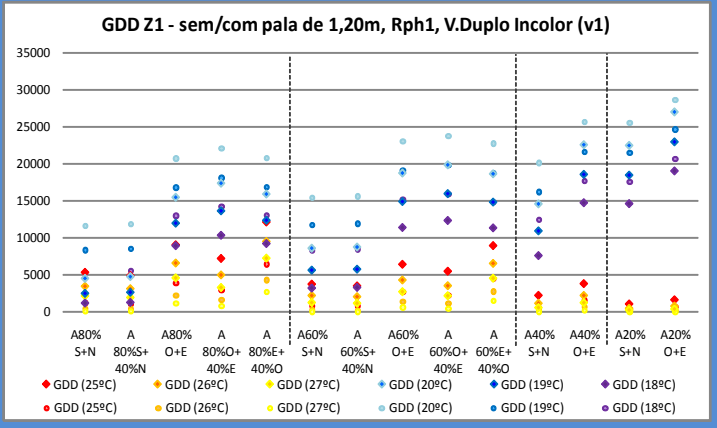
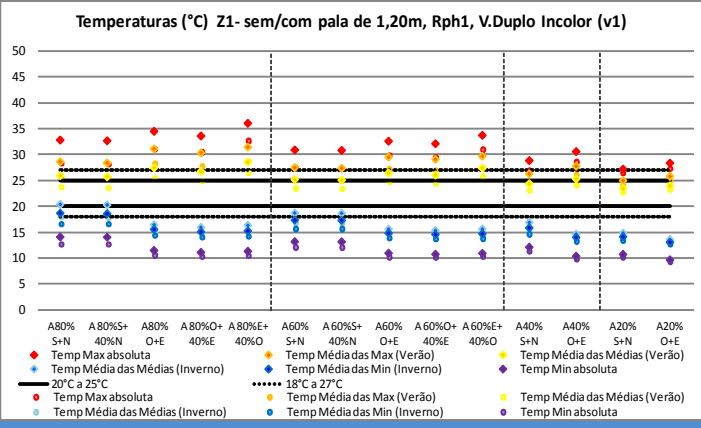


**Modelo2 Cobertura: Soluções Sem e Com Palas de 1,20m – vidro duplo incolor e Rph nocturno I**  
**Massa Térmica2, isolamento 100mm**

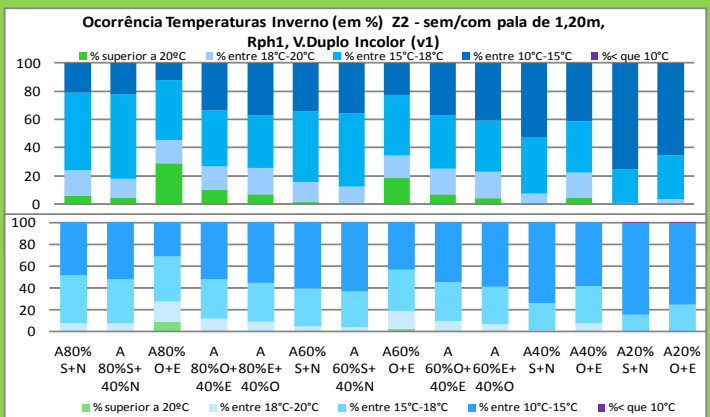
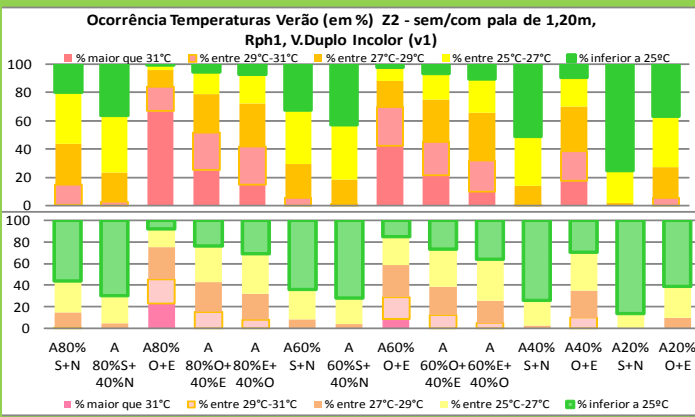
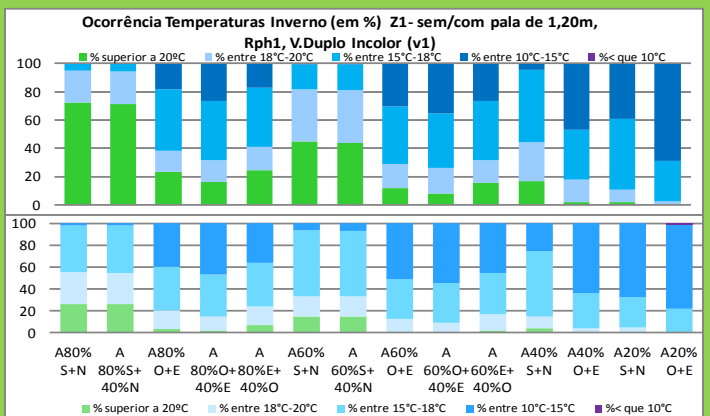
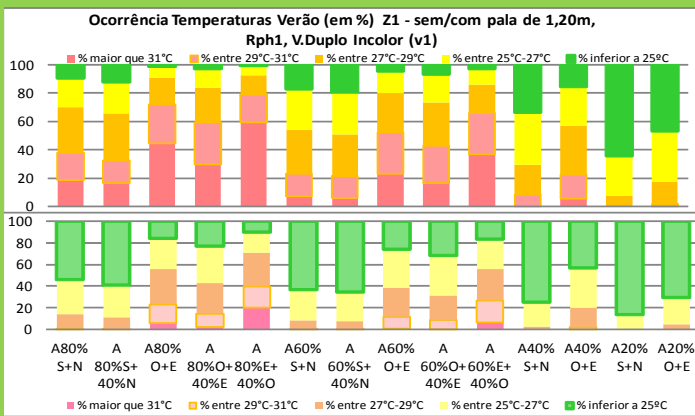
**Sem Protecção Solar Junto ao Envidraçado**



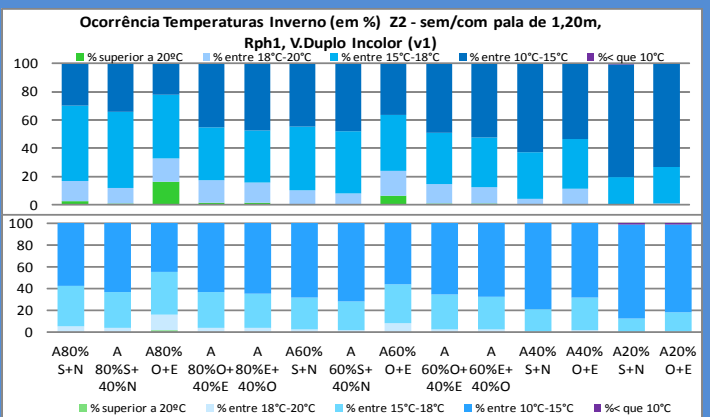
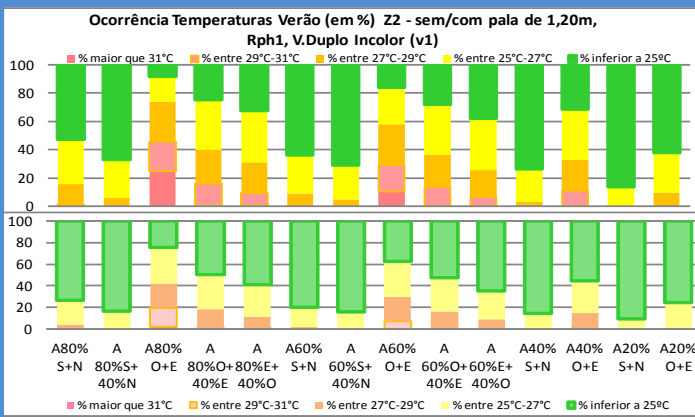
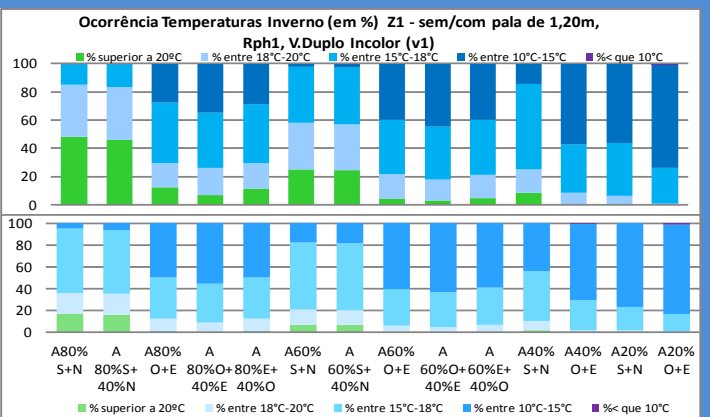
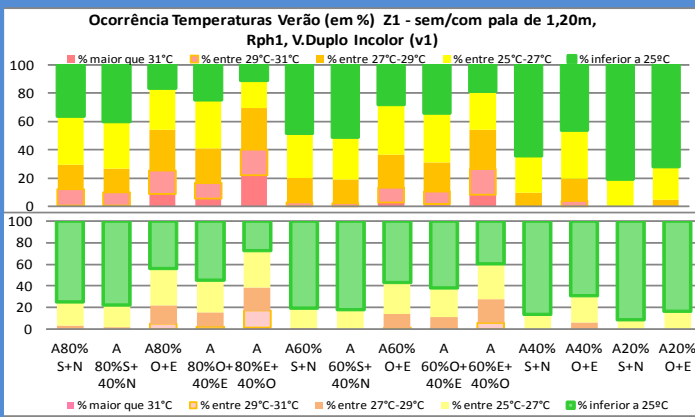
**Com Protecção Solar Interior Junto ao Envidraçado**



Sem Protecção Solar Junto ao Envidraçado

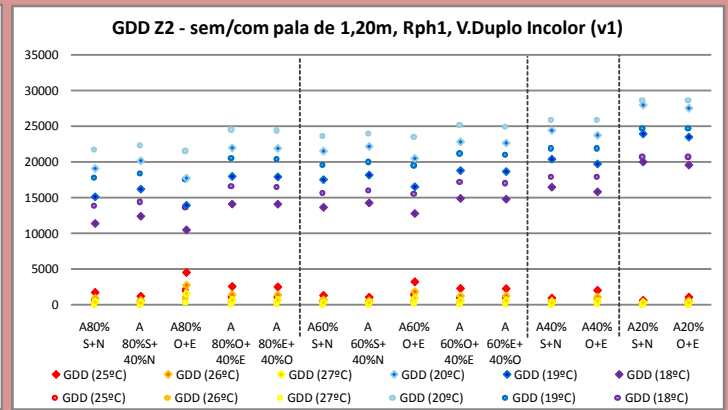
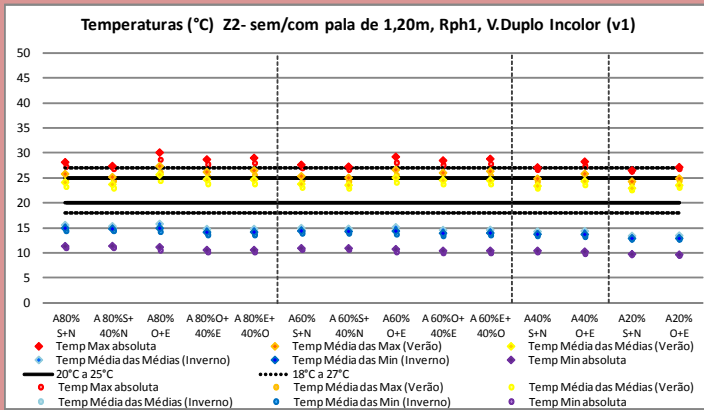
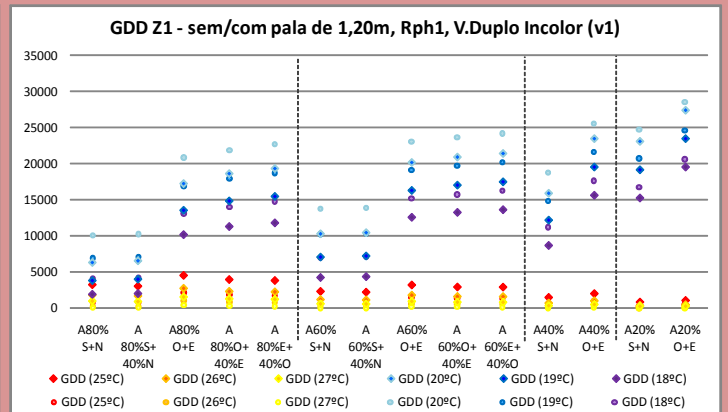
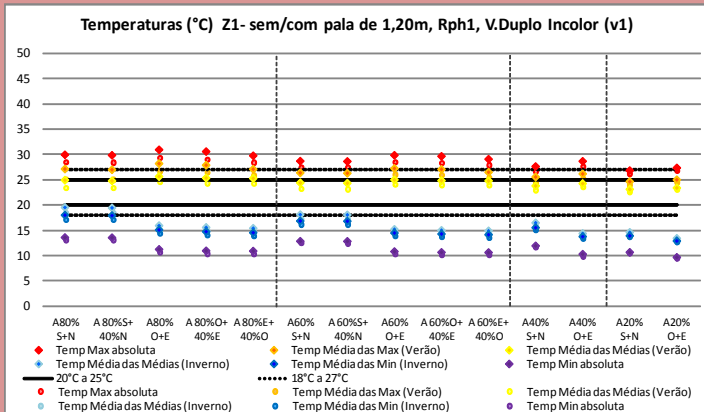


Com Protecção Solar Interior Junto ao Envidraçado

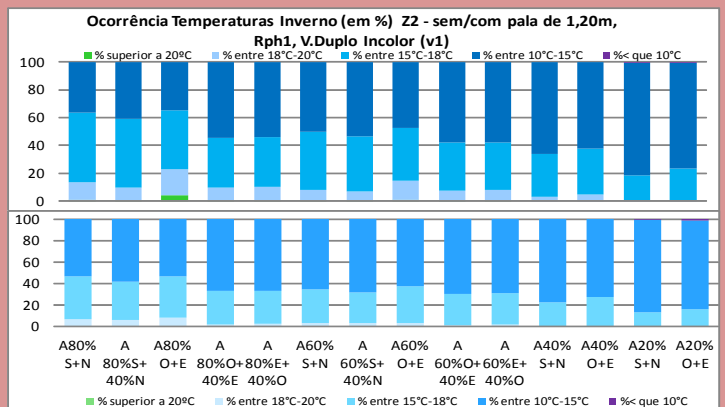
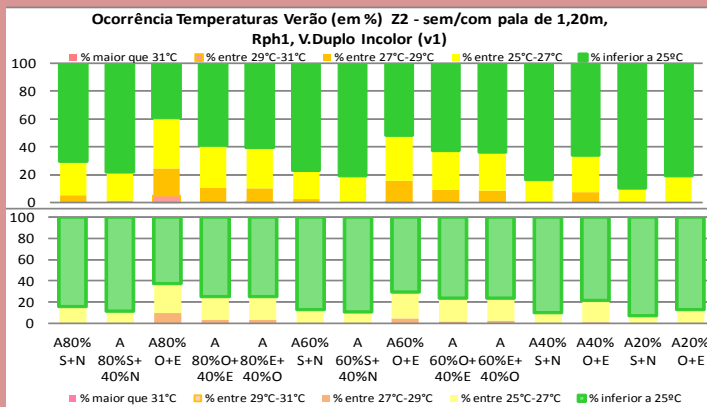
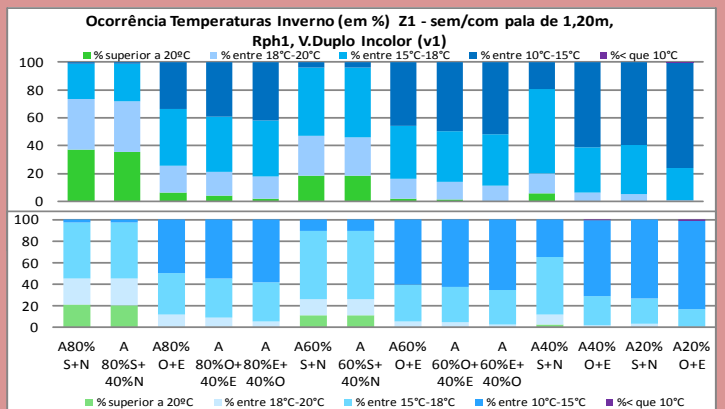
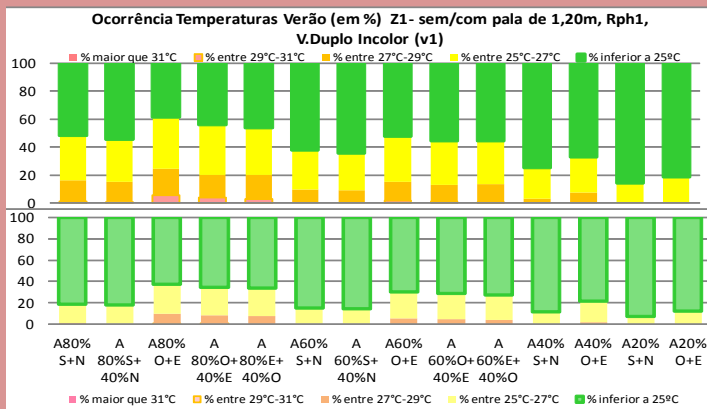


**Modelo2 Cobertura: Soluções Sem e Com Palas de 1,20m – vidro duplo incolor e Rph nocturno I**  
**Massa Térmica2, isolamento 100mm**

**Com Protecção Solar Exterior Junto ao Envidraçado**

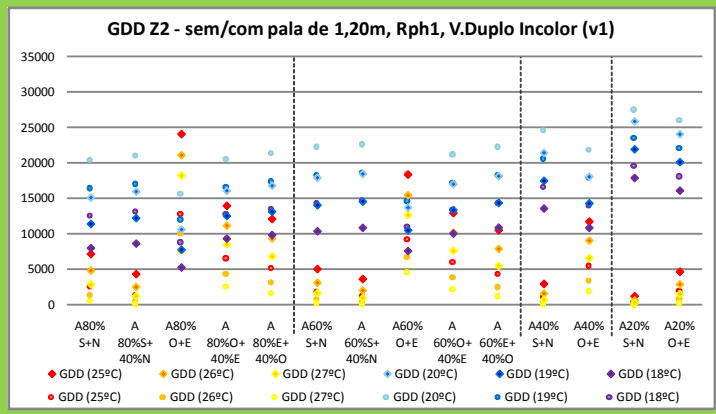
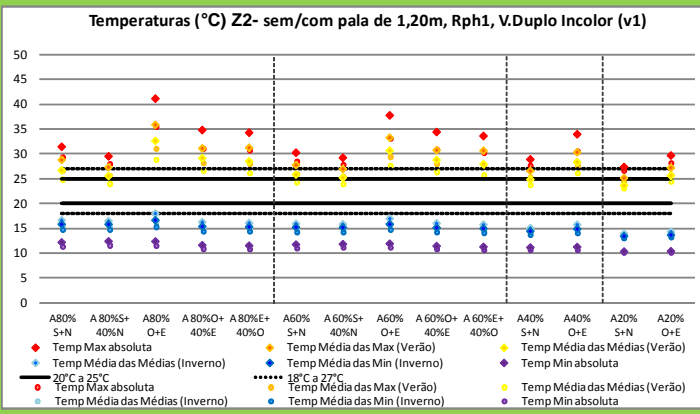
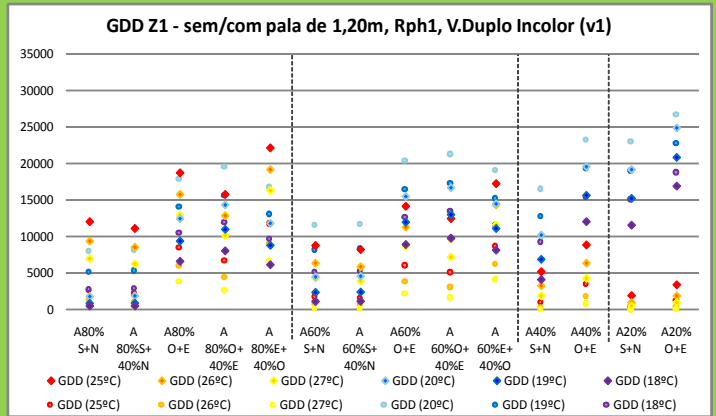
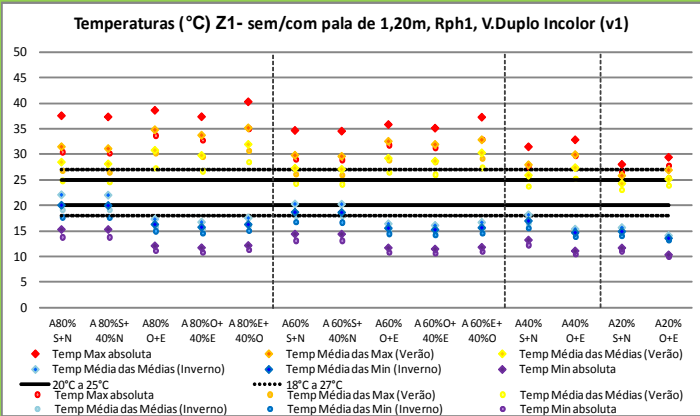


Com Protecção Solar Exterior Junto ao Envidraçado

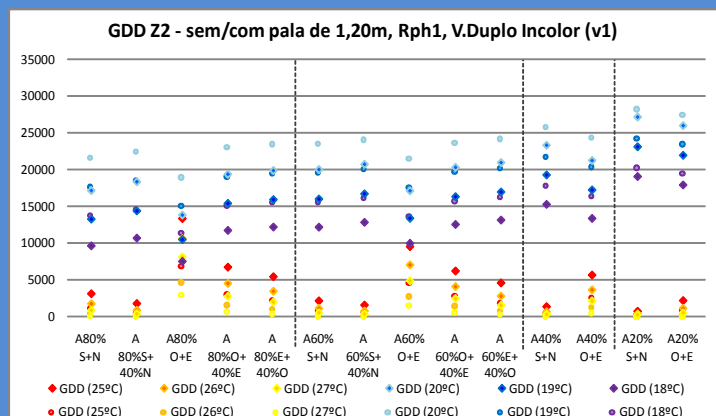
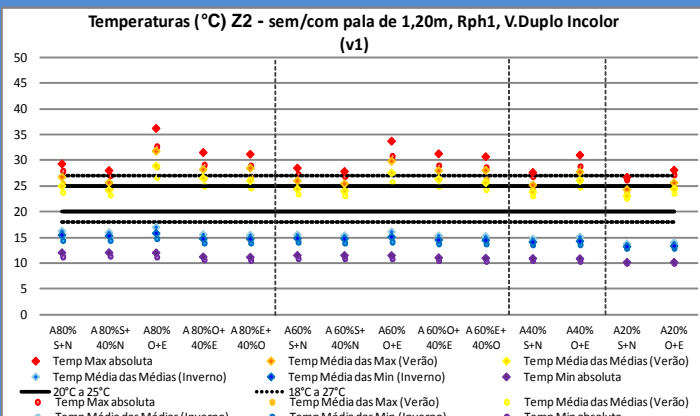
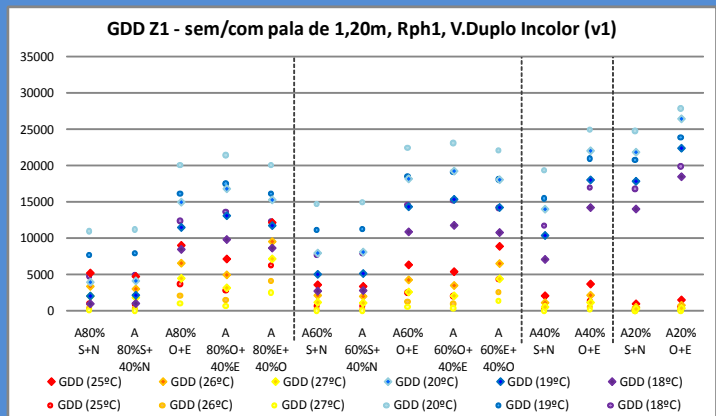
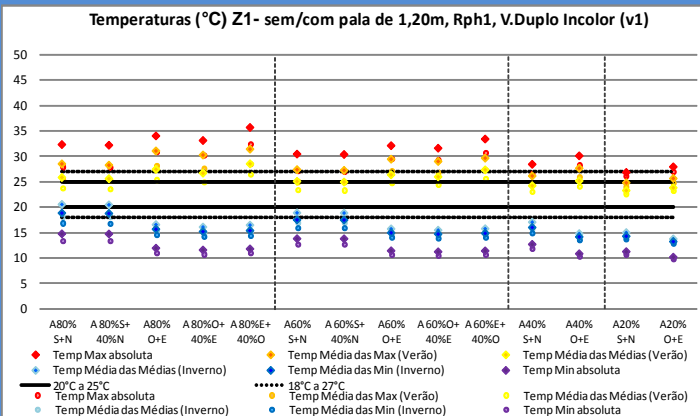


**Modelo2 Cobertura: Soluções Sem e Com Palas de 1,20m – vidro duplo incolor e Rph nocturno I**  
**Massa Térmica3, isolamento 100mm**

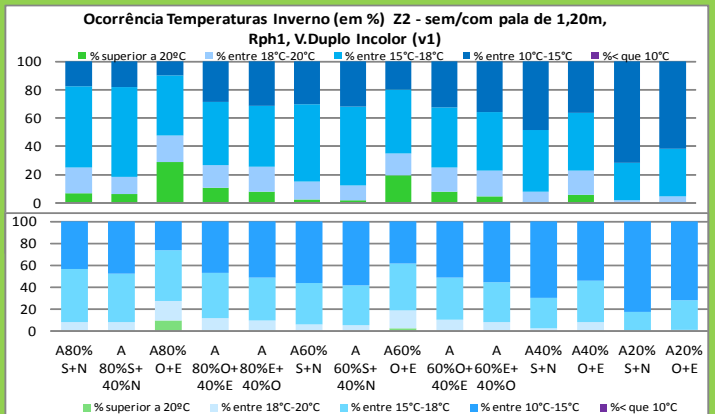
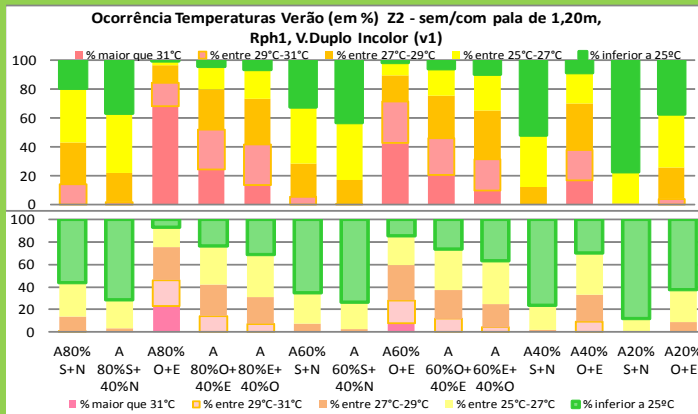
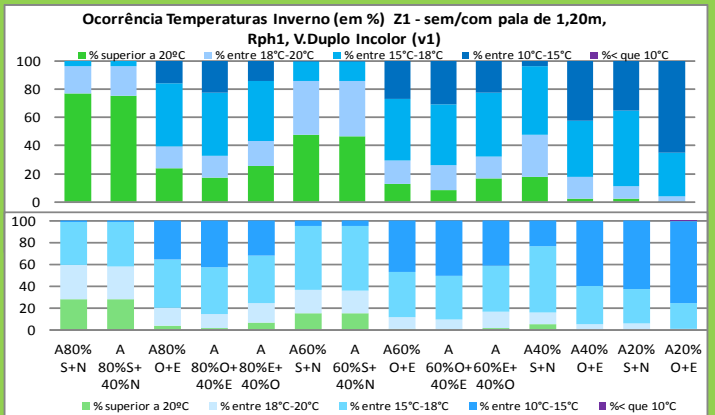
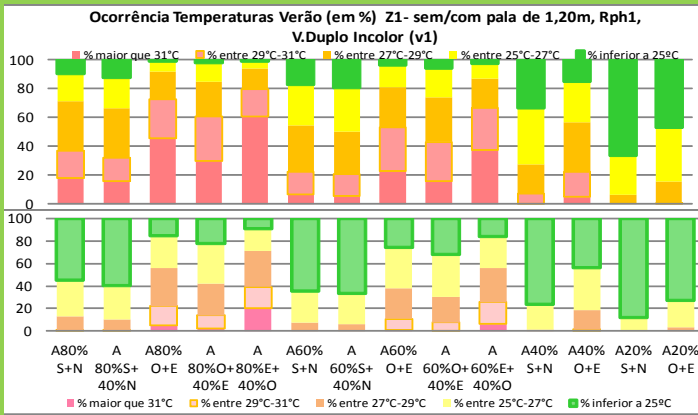
**Sem Protecção Solar Junto ao Envidraçado**



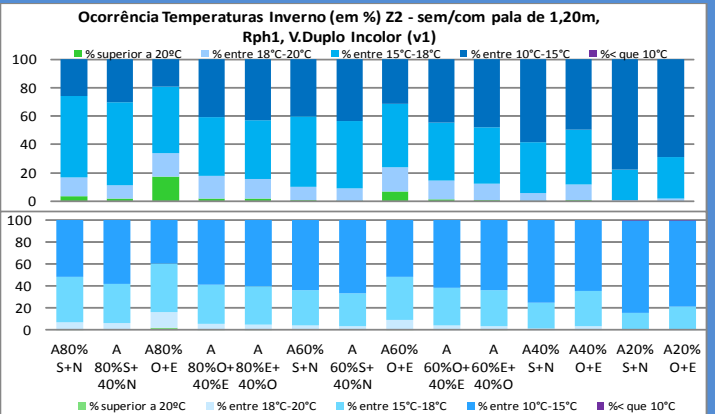
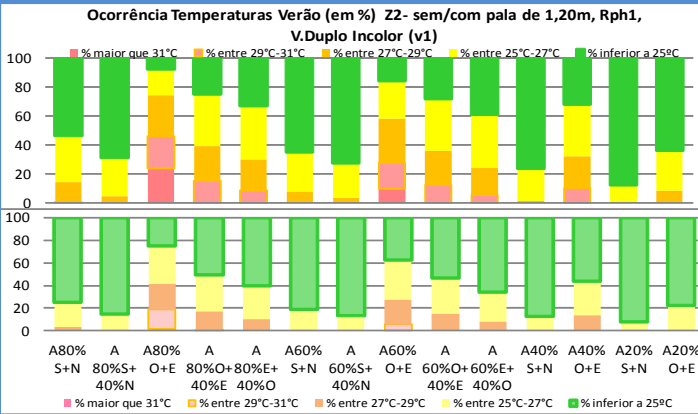
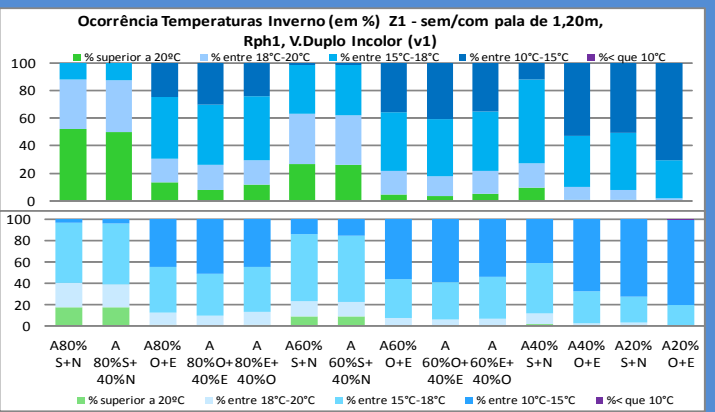
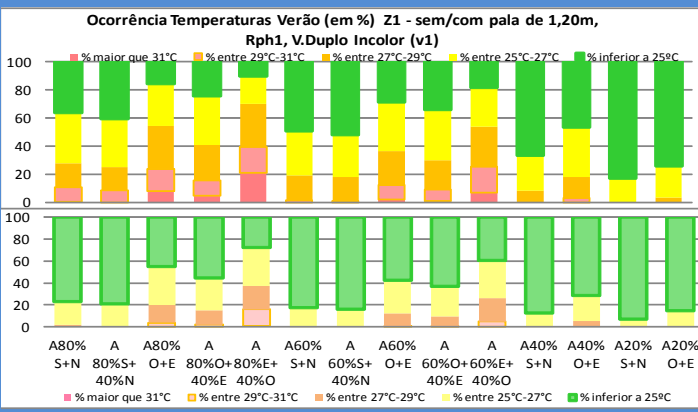
**Com Protecção Solar Interior Junto ao Envidraçado**



Sem Protecção Solar Junto ao Envidraçado

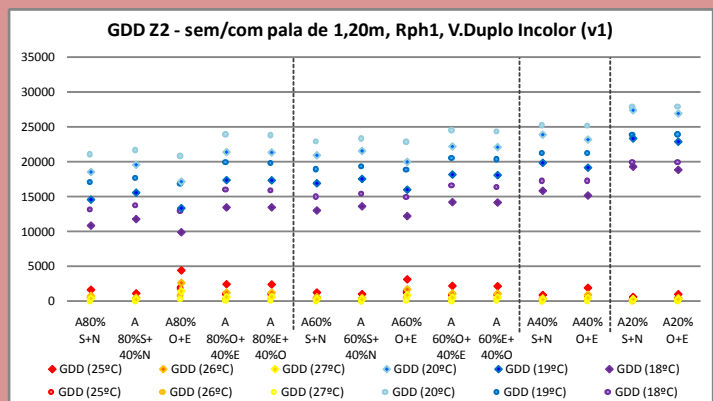
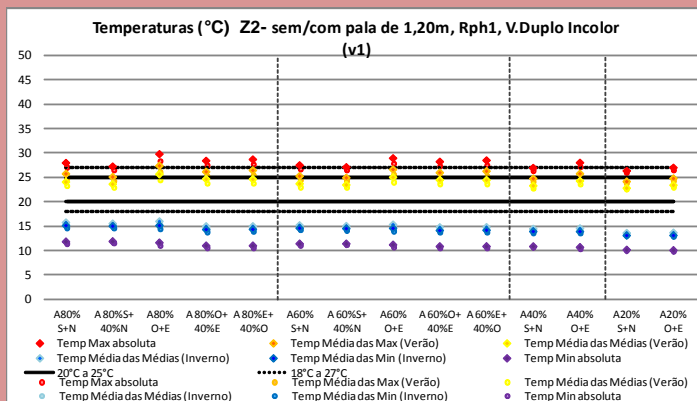
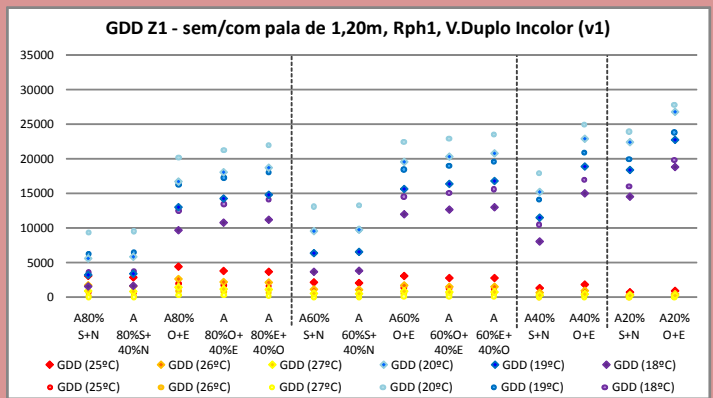
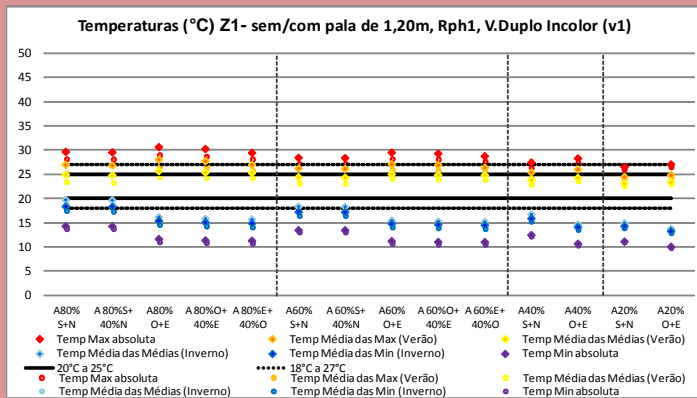


Com Protecção Solar Interior Junto ao Envidraçado



**Modelo2 Cobertura: Soluções Sem e Com Palas de 1,20m – vidro duplo incolor e Rph nocturno I**  
**Massa Térmica3, isolamento 100mm**

**Com Protecção Solar Exterior Junto ao Envidraçado**



Com Protecção Solar Exterior Junto ao Envidraçado

