

# Código Técnico de la Edificación (Spain)

## Summary

The existing building code (CTE) entered into force in 2006. Among the basic quality requirements for buildings, the CTE contains the DB-HE chapter which aims, among others, at the efficiency of thermal installations and the application of solar thermal systems for hot water preparation for domestic purposes and indoor swimming pools. It is applicable for all new buildings and integral renovation projects (>1000 m<sup>2</sup>) when the hot water demand is higher than 50 l/day at a reference temperature of 60 °C.

It is stated that for all new buildings and renovations a minimum solar fraction from 30 to 70% is required (depending on climate zone, hot tap water demand and energy source for back-up heating). The values established by the CTE are minimum values to cover the basic demand.



## Ordinance Facts

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| <b>Ordinance title</b>                           | Código Técnico de la Edificación (CTE).  |
| <b>Type of ordinance</b>                         | solar thermal ordinance  |
| <b>Starting date</b>                             | The CTE entered into force in March 2006.  |
| <b>Duration</b>                                  | Unlimited  |
| <b>Geographical area</b>                         | Spain  |
| <b>No. of inhabitants</b>                        | 45 millions ; 504,782 km <sup>2</sup>  |
| <b>Scope</b>                                     | Any type of buildings. It is applicable for all new buildings and integral renovation projects (>1000 m <sup>2</sup> ) when the hot water demand is higher than 50 l/day at a reference temperature of 60 °C.  |
| <b>Technology priorities</b>                     | Solar thermal; the solar contribution can be lowered if: 1)The building location does not have enough access to the sunlight; 2)In a renovation, the building has unchangeable constraints; 3)In new buildings, there are unchangeable constraints from urban regulations; 4)Historical/artistical buildings.  |
| <b>Size of the solar heating system required</b> | Solar fraction needed: 30-70%  |
| <b>Alternative measures</b>                      | Other renewables or cogeneration for hot water demand.   |
| <b>Executing authority</b>                       | Enacted by the national administration. Managed by Regional and local administrations.   |
| <b>Execution mechanism</b>                       | There were external (European strategy) and internal forces (the already in force Barcelona's and Madrid's Solar Ordinance) that pushed for the national STO. The STO is operated by the municipalities and there is a steering committee (RITE). The management structure and clarity of the role/obligation of each partner involved in the CTE compliance is not yet fully defined. |

## Development and Implementation

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|-------------------|--|
| <b>Background</b> | <p>Elements of pressure for having a national solar obligation:</p> <ul style="list-style-type: none"> <li>- The building stock in Spain is responsible of 40% of the energy consumption in Spain</li> <li>- The need to comply with the European Directive on energy efficiency</li> <li>-Several municipalities developed their STO</li> </ul> |
|-------------------|--|

- The Spanish Plan of Renewable Energies 2005-2010 (PER)

|                                     |   |
|-------------------------------------|---|
| <b>Objectives</b>                   | Technical and innovation development, decrease of expenses on fossil fuels, reduction of CO2 emissions, jobs creation and improvement in living quality.  |
| <b>Process</b>                      | The CTE is the transposition of the EPBD for renewable energies at national level. It has been implemented by the national government and elaborated by the Ministry of Housing, through the General Direction of Housing Policy and Architecture.<br>Also the Institute for Construction Science (CSIC), universities and other research institutions collaborated in its elaboration. |
| <b>Timing</b>                       | The starting date was on March 2006, but there was a time gap between the starting date and its application because one of the sub-chapters (HE2) only entered into force on July, 20th 2007.   |
| <b>Quality schemes product</b>      | yes   |
| <b>Quality schemes installation</b> | no  |
| <b>Quality schemes other</b>        | yes   |
| <b>Flanking measures</b>            | FAQs for end users; info days professionals; communication campaign; pre-dimensioning tool; checklist for technical parameters of solar in buildings; solar guide for installers.   |
| <b>Supervision</b>                  | Permission needed by the designer from its association; the project is then presented to the municipality; check after the building construction; inspections are foreseen regularly.   |
| <b>Sanctioning fees</b>             | Fines go from 3,000 to 100,000 €, depending on the level of violation.  |
| <b>Costs for implementing</b>       | No additional costs borne by the administration side, since the solar ordinance is embedded in the CTE.   |

## Monitoring and Results

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|-----------------------------------|--|
| <b>Monitoring</b>                 | The Institute of Diversification and Energy Saving (IDAE) launched the Plan of Renewable Energies and is responsible for monitoring.                                   |
| <b>Quantitative results</b>       | Expected: 4,900,000 m2 of solar thermal by 2010; CO2 reduction: 996,710 tCO2<br>Results: 2,195,000 cumulated solar area  |
| <b>Costs borne by the enduser</b> | 0,45-0,59% increase per m <sup>2</sup> built.  |
| <b>Effects on other sectors</b>   | The CTE brought positive effects for other thermal applications not included in the obligation (e.g. subsidies for solar thermal installations in existing buildings). |
| <b>Communication</b>              | See "Flanking measures".   |
| <b>Future outlook</b>             | No modifications were done in the solar thermal section.   |

## Lessons Learned

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| <b>Barriers faced and overcome</b> | First Spanish system certification, now EU certification scheme.                                       |
| <b>Success factors</b>             | The inclusion of energy efficiency and the use of RES in the national building code.                   |
| <b>Potential for improvement</b>   | - The regulation is still too complex<br>- Unclear controlling/monitoring mechanism for implementation |
| <b>Recommendations</b>             | Measures for overcoming barriers:<br>- Simplify the legislative framework                              |

- Better controlling and monitoring measures
- Capacity building of professionals

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