



# A home that makes its own power, heat and water

— Off-grid passive homes and communities in Kazakhstan

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## THE KEY POINT

# grid connections

No outside power, gas, heating or water supply. A community is built where the land is good, not where pipes and cables run.

power

heat

water

wastewater treatment

all on site



# Every resource on site



## Power

Solar modules,  
energy storage



## Heat

Heat pumps on own generation. No  
gas needed



## Water

Own well and treatment based on  
water analysis



## Wastewater

Biological treatment on site, no  
discharge to sewers or water bodies



## Wall

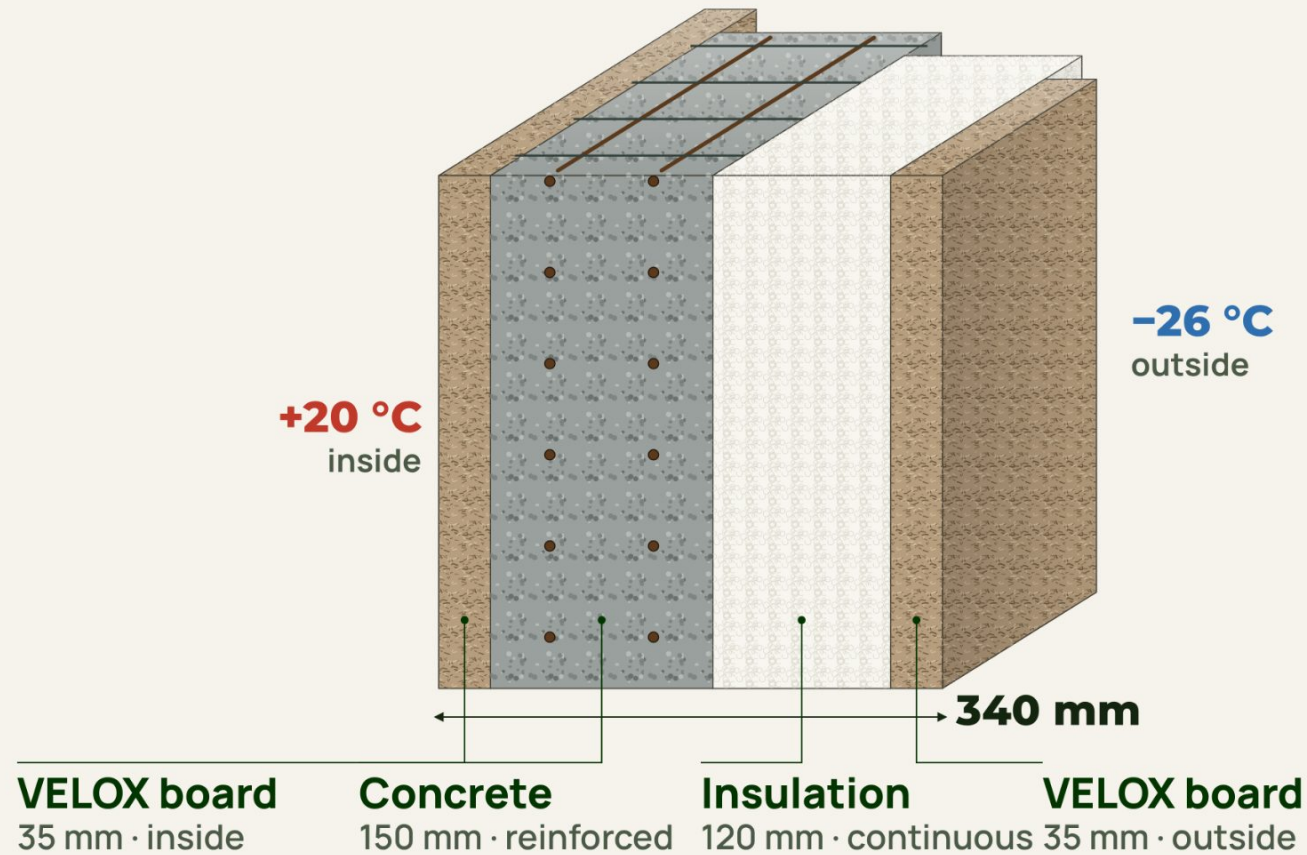
Warm monolithic wall, seismic  
design to 9 points



## Control

Single Modbus dispatch system,  
mobile app

# A wall that keeps the heat in



# 4.076

R, m<sup>2</sup>·K/W – thermal resistance

Insulation runs as a continuous layer outside the load-bearing concrete: no thermal bridges, no condensation inside the wall.



ARALSK · HOUSE-MUSEUM · 210 M<sup>2</sup>

47

working days, turnkey

# From an empty plot to a museum



**Start.** Empty plot



**Walls.** VELOX monolith



**Turnkey.** Finishing included



## TRACK RECORD

# The technology already works

# 7

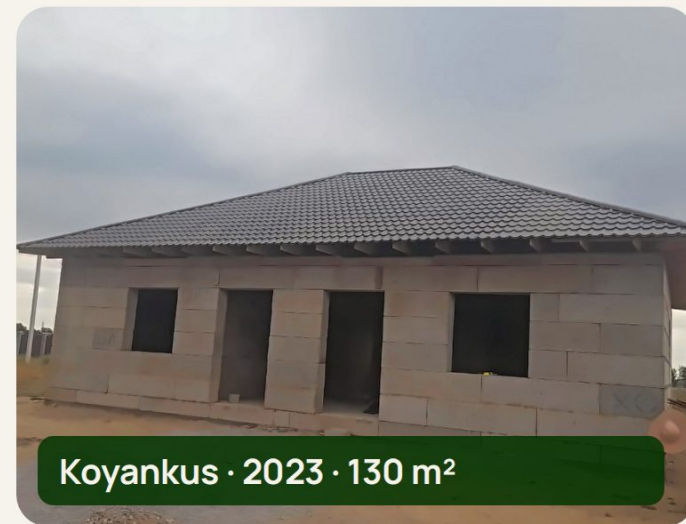
**buildings** — 2,430 m<sup>2</sup> in Kazakhstan since 2013

# 45

**working days** — building shell, at most

# 9

**points** — seismic design for every building





## PILOT PROJECT · “GORODOK”

# The first community by TUT

In progress; the site is being selected. Pilot solutions carry over to the next communities.

**1** Land and surveys

**2** Design and engineering

**3** Permit and state review

**4** Shell — monolith

**5** Off-grid systems

**6** Commissioning and monitoring



## **Full version — on request**

Figures and terms of participation — after a request on the website

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