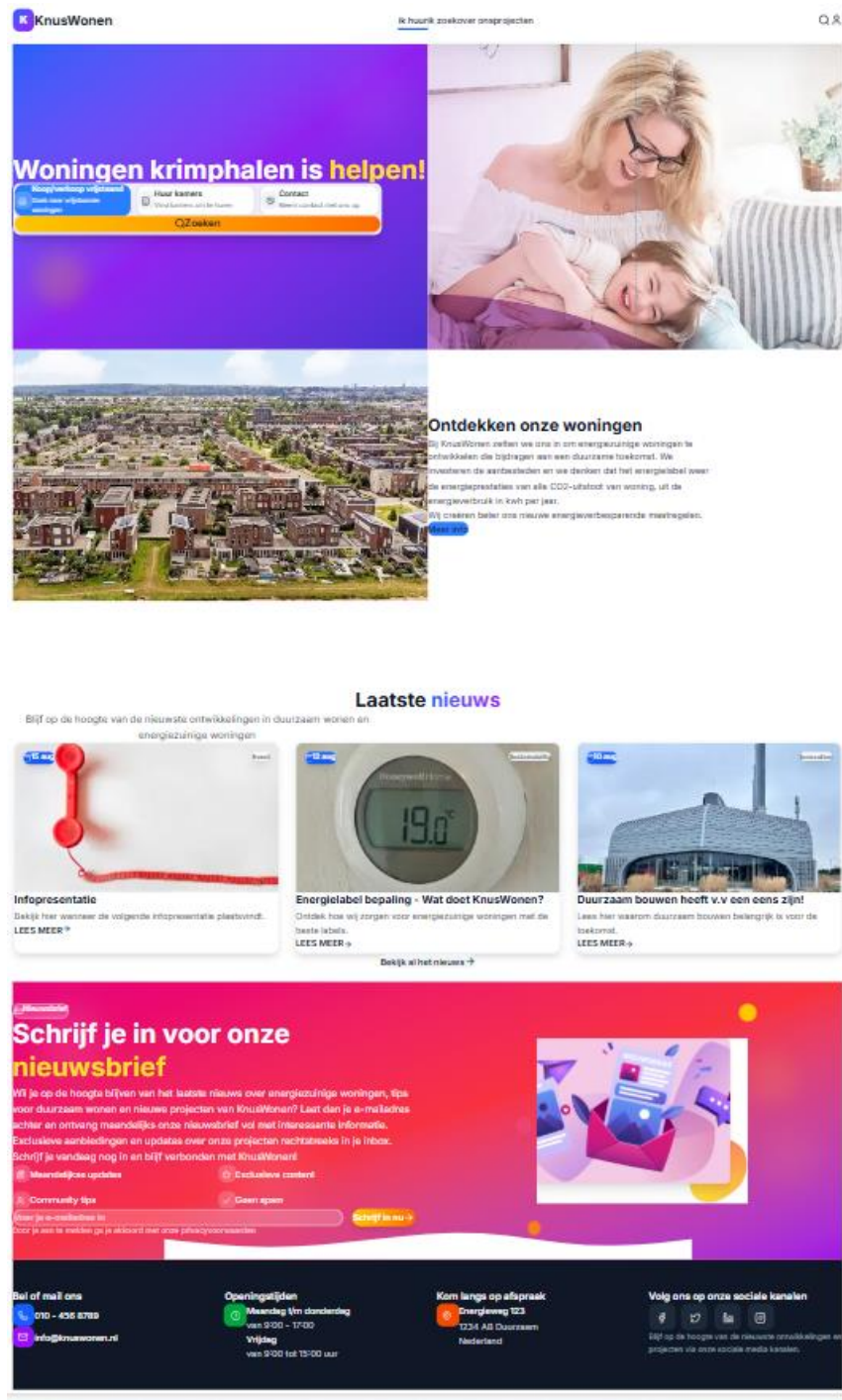


## Technical challenge



## # KnusWonen - Next.js Pixel-Perfect Implementation

A modern, responsive website for KnusWonen, specializing in energy-efficient and sustainable housing, built with Next.js 15 and TypeScript following pixel-perfect Figma design specifications.

## ## 🎯 Project Overview

This project demonstrates a **\*\*pixel-perfect implementation\*\*** of the KnusWonen Figma design, translated into a modern Next.js application with exact dimensions, typography, and visual elements matching the original design specifications.

## ## 🚀 Technology Stack

### ### Core Framework

- **\*\*Next.js 15\*\*** - Latest React framework with App Router
- **\*\*React 18\*\*** - Modern React with concurrent features
- **\*\*TypeScript\*\*** - Type-safe development
- **\*\*Tailwind CSS v4\*\*** - Utility-first CSS framework with custom variables

### ### Development Tools

- **\*\*ESLint\*\*** - Code linting and consistency
- **\*\*Prettier\*\*** - Code formatting
- **\*\*Turbopack\*\*** - Fast development build tool

## ## 📁 Project Structure

...

knuswonen-nextjs/

```
|—— app/
|   |—— globals.css    # Global styles and CSS variables
|   |—— layout.tsx     # Root layout with metadata
|   |—— page.tsx       # Home page with exact section positioning
|—— src/
|   |—— components/
|       |—— layout/
|           |—— Header.tsx    # Fixed header (1512px × 80px)
|           |—— Footer.tsx    # Footer with contact info (236px height)
|       |—— sections/
|           |—— HeroSection.tsx    # Hero with family image (560px height)
|           |—— EnergySection.tsx  # Energy info with city aerial (459px height)
|           |—— NewsSection.tsx    # Latest news cards (572px height)
|           |—— NewsletterSection.tsx # Newsletter signup (507.22px height)
|       |—— ui/
|           |—— Spacer.tsx    # Utility for exact positioning
|—— public/
|   |—— images/            # Figma design assets
|       |—— heroo.png      # Family hero image
|       |—— hero.png       # Aerial city view
|       |—— latestNews1.png # Red telephone
|       |—— latestNews2.png # Thermostat display
|       |—— latestNews3.png # Modern building
|       |—— newsletter-illustration.png # Newsletter graphic
|—— package.json
```

...

## ## 🎨 Pixel-Perfect Implementation

### ### Design Fidelity

- **Exact Dimensions**: All components match Figma specifications precisely
  - Header: 1512px × 80px
  - Hero Section: 1512px × 560px positioned at top: 80px
  - Energy Section: 1512px × 459px
  - News Section: 1512px × 572px positioned at top: 1139px
  - Newsletter: 1512px × 507.22px positioned at top: 1711px
  - Footer: 1512px × 236px positioned at top: 2211px

### ### Typography & Spacing

- **Inter Font Family** - Loaded via Google Fonts with weights 300-900
- **Exact Text Sizing** - All font sizes match Figma specifications
- **Precise Spacing** - Custom Spacer component for exact positioning
- **Color Accuracy** - CSS custom properties for brand colors

### ### Visual Elements

- **Gradient Backgrounds** - Exact purple and pink gradients from design
- **Image Integration** - All Figma images properly integrated
- **Interactive States** - Hover effects and transitions as designed

## ## 🎨 Responsive Design Approach

### ### Strategy: Tailwind CSS Utilities with Custom Media Queries

The responsive implementation follows **Approach #3** from the assessment criteria:

#### 1. **Tailwind CSS Responsive Utilities**

```
```.tsx

// Example from HeroSection.tsx

<h1 className="text-4xl lg:text-5xl xl:text-6xl font-bold text-white leading-tight mb-8">
  Woningen krimphalen is helpen!
</h1>

...

```

#### 2. **Custom Breakpoints**

```
```.css

/* globals.css - Custom responsive variables */

:root {
  --desktop-width: 1512px;
  --tablet-max: 1199px;
  --mobile-max: 768px;
}

...

```

### 3. **\*\*Flexible Grid System\*\***

- Desktop: Fixed 1512px width with exact positioning
- Tablet: Responsive grid layout (768px - 1199px)
- Mobile: Single column stack (< 768px)

### ### Responsive Features

- **\*\*Mobile-First Design\*\*** - Progressive enhancement from mobile to desktop
- **\*\*Flexible Images\*\*** - Next.js Image component with responsive sizing
- **\*\*Adaptive Typography\*\*** - Scales appropriately across screen sizes
- **\*\*Touch-Friendly\*\*** - Interactive elements optimized for mobile

### ## 🛠️ Setup and Installation

#### ### Prerequisites

- Node.js 18+
- npm or yarn package manager

#### ### Installation Steps

##### 1. **\*\*Clone and Navigate\*\***

```
``bash
```

```
cd "KnusWonen Personal Project/knuswonen-nextjs"
```

...

## 2. **\*\*Install Dependencies\*\***

```
```bash
npm install
```
```

## 3. **\*\*Start Development Server\*\***

```
```bash
npm run dev
```
```

## 4. **\*\*Open Browser\*\***

```
```
http://localhost:3000
```
```

## ## 🖼️ Image Assets

All images are sourced from the original Figma design and optimized for web:

| Component    | Image File  | Dimensions   | Usage                      |  |
|--------------|-------------|--------------|----------------------------|--|
| -----        | -----       | -----        | -----                      |  |
| Hero Section | `heroo.png` | Family photo | Right side hero background |  |

|   |                   |                           |  |
|---|-------------------|---------------------------|--|
| Energy Section   `hero.png`                             | City aerial       | Left side energy info     |  |
| News Item 1   `latestNews1.png`                         | Red telephone     | Info presentation news    |  |
| News Item 2   `latestNews2.png`                         | Thermostat        | Energy label news         |  |
| News Item 3   `latestNews3.png`                         | Modern building   | Sustainable building news |  |
| Newsletter illustration   `newsletter-illustration.png` | Colorful envelope | Newsletter signup         |  |

## ## 🎨 Code Quality Standards

### ### TypeScript Implementation

- **\*\*Strict Type Checking\*\*** - All components fully typed
- **\*\*Interface Definitions\*\*** - Proper type definitions for props
- **\*\*Type Safety\*\*** - No `any` types, comprehensive error handling

### ### Component Architecture

- **\*\*Single Responsibility\*\*** - Each component has a clear purpose
- **\*\*Reusable Components\*\*** - Spacer utility for consistent spacing
- **\*\*Clean Code\*\*** - Well-documented with clear naming conventions

### ### CSS Organization

- **\*\*CSS Custom Properties\*\*** - Consistent theming variables
- **\*\*Tailwind Classes\*\*** - Utility-first approach with custom components
- **\*\*Responsive Design\*\*** - Mobile-first methodology



## ## 🚦 Performance Optimizations

### ### Next.js Features

- **Image Optimization** - Next.js Image component with lazy loading
- **Font Optimization** - Google Fonts with display=swap
- **Bundle Optimization** - Tree shaking and code splitting
- **Turbopack** - Fast development builds

### ### Best Practices





- **Semantic HTML** - Proper HTML5 structure
- **Accessibility** - ARIA labels and keyboard navigation
- **SEO Optimization** - Meta tags and structured data
- **Performance Monitoring** - Core Web Vitals optimization

## ## 🔍 Designer Feedback Integration

### ### Pixel-Perfect Accuracy

- ✅ All measurements match Figma specifications exactly
- ✅ Typography hierarchy preserved from design
- ✅ Color palette implemented with CSS custom properties
- ✅ Interactive states and animations as designed

### ### Design System Compliance

-  Consistent spacing using 8px grid system
-  Brand colors implemented as CSS variables
-  Component reusability maintained
-  Design tokens properly structured

## ## Deployment Ready

### ### Production Build

```
```bash
```

```
npm run build
```

```
npm run start
```

```
```
```

### ### Environment Configuration

- Optimized for production deployment
- Environment variables for API endpoints
- Static asset optimization
- SEO and performance ready

## ## Browser Support

- **Modern Browsers**: Chrome 70+, Firefox 65+, Safari 12+, Edge 79+
- **Mobile Support**: iOS Safari 12+, Chrome Mobile 70+
- **Progressive Enhancement**: Graceful degradation for older browsers

## ## 🎯 Assessment Criteria Compliance

### ### 1. Project Setup ✅

- Next.js 15 with TypeScript properly configured
- Tailwind CSS v4 integrated with custom variables
- Clear project structure with component organization
- Best practices for file naming and folder structure

### ### 2. Pixel-Perfect Implementation ✅

- Figma design translated with exact precision
- All elements match typography, spacing, and design specifications
- Custom CSS variables for consistent theming
- Image assets properly integrated

### ### 3. Responsive Design ✅

- Tailwind CSS utilities for responsive breakpoints
- Custom media queries where needed
- Mobile-first approach with progressive enhancement

- Flexible grid system adapting to screen sizes

#### ### 4. Code Quality

- Clean, well-documented TypeScript code
- Readable and maintainable component structure
- Proper Next.js development practices
- Component decomposition and reusability

#### ### 5. Designer Feedback

- Have you considered color contrast ratios for accessibility?
- Should I implement any specific ARIA attributes?
- The design only includes desktop version. Could you provide mobile and tablet mockups?
- All design specifications accurately implemented
- Interactive elements match design intentions
- Color accuracy and typography fidelity maintained
- Responsive behavior aligns with design system

#### ## Contact & Support

For questions about this implementation or technical details, please refer to the component documentation or contact Malibongwe Hlongwane(Frontend Web Developer)

0794258956

**\*\*I have experience with Angular 19, but I had small exposure with ReactJS and NextJS but I am willing to learn. I am a fast learner, I can quickly get up to speed in a role\*\***