**Listing 1. Modyfikacje pliku źródłowego dla przykładu 1**

/\* USER CODE BEGIN 2 \*/

const double voltage\_at\_25 **=** 0.76**;**

const double volts\_per\_degree **=** 0.0025**;**

const double max\_voltage **=** 3.3**;**

const double resolution **=** 4095.0**;**

HAL\_ADC\_Start**(&**hadc1**);**

/\* USER CODE END 2 \*/

/\* Infinite loop \*/

/\* USER CODE BEGIN WHILE \*/

**while** **(**1**)**

**{**

 /\* USER CODE END WHILE \*/

 /\* USER CODE BEGIN 3 \*/

 **if** **(**HAL\_ADC\_PollForConversion**(&**hadc1**,** 100**)** **==** HAL\_OK**)**

 **{**

 uint32\_t reading **=** HAL\_ADC\_GetValue**(&**hadc1**);**

 double voltage **=** **(**reading **/** resolution**)** **\*** max\_voltage**;**

 double temperature **=** **((**voltage **-** voltage\_at\_25**)** **/** volts\_per\_degree**)** **+** 25**;**

 uint8\_t text**[**10**];**

 sprintf**(**text**,** "%+5.2f \r"**,** temperature**);**

 HAL\_UART\_Transmit**(&**huart2**,** text**,** strlen**(**text**),** 100**);**

 HAL\_Delay**(**100**);**

 HAL\_ADC\_Start**(&**hadc1**);**

 **}**

**}**

/\* USER CODE END 3 \*/

**Listing 2. Modyfikacje pliku źródłowego dla przykładu 2**

/\* USER CODE BEGIN PV \*/

/\* Private variables \*/

const double voltage\_at\_25 **=** 0.76**;**

const double volts\_per\_degree **=** 0.0025**;**

const double max\_voltage **=** 3.3**;**

const double resolution **=** 4095.0**;**

volatile uint32\_t reading **=** 0**;**

/\* USER CODE END PV \*/

/\* USER CODE BEGIN 2 \*/

HAL\_ADC\_Start\_DMA**(&**hadc1**,** **&**reading**,** 1**);**

/\* USER CODE END 2 \*/

/\* Infinite loop \*/

/\* USER CODE BEGIN WHILE \*/

**while** **(**1**)**

**{**

/\* USER CODE END WHILE \*/

/\* USER CODE BEGIN 3 \*/

 double voltage **=** **(**reading **/** resolution**)** **\*** max\_voltage**;**

 double temperature **=** **((**voltage **-** voltage\_at\_25**)** **/** volts\_per\_degree**)** **+** 25**;**

 uint8\_t text**[**10**];**

 sprintf**(**text**,** "%+5.2f \r"**,** temperature**);**

 HAL\_UART\_Transmit**(&**huart2**,** text**,** strlen**(**text**),** 100**);**

 HAL\_Delay**(**100**);**

**}**

/\* USER CODE END 3 \*/