

1. Policy:

To fulfil the promise of higher education and the social responsibility of universities, the Innovation and Incubation Centre (the Centre) of our school's Research and Development Office actively promotes innovation and assists in traditional industries. In addition, in line with national policies, the Centre builds a diversified platform with the development of domains such as precision machinery, smart electric vehicles, and green energy industries as the technological core, forming a complete incubation network, and developing superior local industries. Meanwhile, through the relevant education or resources of our school, the Centre assists the entrepreneurship and growth of enterprises with sustainable development metrics. Furthermore, by providing long-term assistance in technology upgrades of the industry and assisting manufacturers in obtaining various government R&D subsidy resources, the Centre deepens industrial cooperation in the Taichung, Changhua, and Nantou area, and spreads the benefits of counselling.

In recent years (since 2018), the Centre has brought together multiple resources such as inter-departmental institutes in our school and nearby academic research units, the Changhua County Industrial Advancement Association, public associations, and park service centres, etc. The specialised teacher team with deep practical experience integrates resources, provides manufacturers with comprehensive and complete suggestions through the guidance of experts in different professional fields, and strives to implement them. The Centre established a cross-domain and cross-school cooperative "Changhua County Local Creative Organization Alliance" with the neighbouring school in Changhua (Da-Yeh University), in the expectation of assisting SMEs in the Taichung and Changhua area in R&D and innovation, constituting industry–university cooperation. They match the needs of manufacturers with teachers in related professional fields for cooperative R&D and encourage companies to apply for relevant government R&D subsidy programmes (such as SBIR and CITD) to reduce R&D costs, improve innovative R&D capabilities, and activate innovation momentum.

To account for the inheritance of experience and the effect of teaching, given that experts and scholars counsel manufacturers, they also lead master's students and college students working on the specialised topic to participate together. Through practical experience and practical work participation, students have a better understanding of the operation of the enterprises, thereby enhancing their international

perspective and professional practical ability, so as to prepare for entrance into the workplace of the future.

The Centre works with neighbouring academic and research units to assist in the relaunch of precision machinery manufacturing, process technology, and innovation and R&D capacity enhancement, strengthening market expansion to ensure industrial development momentum, while promoting the production of nodes on the industrial chains to allow the market economy to prosper, promoting employment opportunities, planning marketing strategies, and expanding international business for the enterprises.

2. Results

In 2020, the school promoted the “Care Project for Academia to Assist SMEs in Technology” and the “Industry Counselling Innovation Project in Industrial Parks” by advising on the industrial upgrade of local SMEs. The results of the counselling are as follows:

1. Developed the Care Project for Academia to Assist SMEs in Technology

1. Number of participating manufacturers / experts and scholars / students: **28 / 23 / 67**

2. New product / technology development cases: **11**

3. Number of technical and talent training courses: **4**

4. Proposals for government subsidy resources: **8 applied, 6 passed, 5,735 thousand yuan subsidy obtained**

5. Number of patent applications and usage: **9**

6. Number of national special topic competitions: **5**

7. Number of industry–university cooperation cases / exhibitions / achievement exhibitions: **4**

2. Developed the Industry Counselling Innovation Project in Industrial Parks

1. Number of participating manufacturers / experts and scholars: **80 / 20**

2. Technical counselling cases: **11**

3. Number of technical and talent training courses: **6**

4. Proposal for government subsidy resources: **4 applied; total applied subsidy is 7,812 thousand yuan**

5. Number of students’ special topics / national special topic competitions: **3**

6. Number of students having internships in enterprises: **31**

7. Number of industry–university cooperation cases / exhibitions / achievement exhibitions: **2**

3. Used the capabilities of local public associations to strengthen the value chain of

industrial clusters, linked them with the school's academic and research resources, and assisted them in the development of industry characteristics for local industrial areas in Changhua (industrial areas in Fuxing, Tianzhong, Pitou, and Quanxing), Changhua County Industry–University Advancement Association, Changhua Plumbing Association, Taiwan Sheet Metal Management Association, etc.

- Cooperated to counsel the industry in R&D and innovation, promote the exchange and sharing of industry–university information, counsel the industry to achieve smart manufacturing and design, and promote short-term technical counselling; developed various talent and practical training courses for manufacturers, so as to improve the skills required to meet the needs of existing trends, thereby achieving the goal of improving production efficiency, and assisted manufacturers to enhance industrial competitiveness.

Counselled manufacturers to apply for, qualify for, and receive funding under the government subsidy project in 2020. The details are as follows:

Manufacturer Name being Counselling	Subsidy Programme Name	Amount of Subsidy	Name of Counsellor
Hsi Jen Enterprise Co., Ltd.	Changhua County SBIR	950 thousand yuan	Professor Chen, Ming-Fei
Jon Power Manufacturing Co., Ltd.	Changhua County SBIR	1,000 thousand yuan	Professor Chen, Ming-Fei
Sensormate Enterprise Co., Ltd.	Changhua County SBIR	850 thousand yuan	Assistant Professor Wang, Kei-Wen
Beam Sensor Co., Ltd	Changhua County SBIR	900 thousand yuan	Professor Chiou, Chei-Chang Professor Wu, Chao-Chin
Chen Hsuan Technology Co., Ltd	Changhua County SBIR	1,225 thousand yuan	Professor Huang, I-Cheng
Day Spring Biotech Co., Ltd	Changhua County SBIR	810 thousand yuan	Professor Hsieh, Chiou-Lan

- Encouraged students, through industry–university cooperation and student internships, to participate in the National Industry–University Innovation Practice Competition for Colleges and Universities, leading students to explore their fields of expertise and apply what they have learned. Through the strategic cooperation of industry–university research, students strengthen their ties with the industry and

promote the integration of academic and industrial practices, and relevant practical technical talents are cultivated for the industry. Furthermore, on the basis of theory and practice, students gain an on-site understanding of the operation of the enterprises, as an early-stage preparation for entrance into the workplace of the future. In addition, in 2020, the Centre organised an exhibition of achievements in industry–government–university cooperation in the Taichung and Changhua area, and jointly organised “Changhua County Local Creation × Industry Development Forum cum Counselling Achievement Exhibition” with the Innovation and Incubation Centre of the neighbouring Da-Yeh University to help promote the results achieved by the school’s teachers and students at this event.

Name of Exhibited Work	Instructor	Participating Students	Awards Obtained
National Industry–University Innovation Practice Competition for Colleges and Universities	Professor Chen, Ming-Fei	Hsiao, Hsiu-I	Implementation award
National Industry–University Innovation Practice Competition for Colleges and Universities	Professor Chen, Ming-Fei	Chin, Hua-Wei	Third place
National Industry–University Innovation Practice Competition for Colleges and Universities	Professor Chen, Ming-Fei	Lin, Ying-Tzu	Implementation award
National Industry–University Innovation Practice Competition for Colleges and Universities	Professor Chen, Ming-Fei	Li, I-Chia Huang, Man-Yu	Masterpiece award
National Industry–University Innovation Practice Competition for Colleges and Universities	Professor Chen, Liang-Rui	Chang, Chih-Hao Chen, Che-Wei	—
Changhua County Local Creation × Industry Development Forum cum Counselling Achievement	Professor Chen, Ming-Fei	Lin, Ying-Tzu Hsu, Chih-I	—

Exhibition			
Changhua County Local Creation × Industry Development Forum cum Counselling Achievement Exhibition	Professor Chiu, Wen-Cheng	Chen, Yu-Feng Ku, Meng-Hsuan Chang, Chia-Hsiang Lin, Chia-Chen Liu, I-Ching	
Industry–University Cooperation Achievement Exhibition	Professor Yang, Wen-Jan	Li, Ying-I Shih, Meng-Lin	2020 – Taiwan Automation Intelligence and Robot Show (TAIROS)
Corresponding SDG indicator	<input checked="" type="checkbox"/> SDG01 <input type="checkbox"/> SDG02 <input type="checkbox"/> SDG03 <input type="checkbox"/> SDG04 <input type="checkbox"/> SDG05 <input type="checkbox"/> SDG06 <input type="checkbox"/> SDG07 <input type="checkbox"/> SDG08 <input type="checkbox"/> SDG09 <input type="checkbox"/> SDG10 <input type="checkbox"/> SDG11 <input type="checkbox"/> SDG12 <input type="checkbox"/> SDG13 <input type="checkbox"/> SDG14 <input type="checkbox"/> SDG15 <input type="checkbox"/> SDG16 <input type="checkbox"/> SDG017		

Supporting Photos



Caption: Creating a New Era of Artificial Intelligence—finish implementing AI in education and industry forum cum industrial park joint signing ceremony



Caption: Poster for the development trend and application of artificial intelligence

經濟部 亮點輔導案例-彰化縣在地產業創育機構

模組類別 ■ 亮點企業：乃興企業股份有限公司(民國58年成立)

NUVO n+1

- 產業領域：機械電機
- 產品與服務：自行車及汽機車配件內外銷
- 創新表現：通過108年度彰化縣SBIR計畫(獲補助91.3萬元)
- 通過110年度彰化縣SBIR計畫(獲補助86.2315萬元)

■ 企業遭遇瓶頸：產線製程自動化

- 對產之育成輔導重點/效益：(強調經濟效益)
- 協助申請政府研發補助計畫：通過108、110年度彰化縣SBIR，共獲補助177.5315萬元。
- 提升公司生產自動化能力：以自動化生產線取代人工，進行輔導之生產線上的自動包裝系統設備改進，在產能調節時避免造成人力閒置及時間浪費。
- 協助公司創新研發轉型：藉由輔導生產線上的自動包裝系統設備改進，期未來達成「產線自動化」、「產能最佳化」與「遠端監控」等智慧製造之流程。

■ 企業重要事項(請以條列方式說明)

- 彰師大機電系沈志雄教授協助申請108、110年彰化縣SBIR計畫獲通過政府補助款共177.5315萬元。
- 2019年通過BSCI社會責任稽核。
- 2019年產品n+1 BC191獲得歐洲發明專利。
- 近十年獲得之專利數超過40種。

Caption: Counselling case highlight—NUVO Enterprise Co., Ltd.

經濟部 亮點輔導案例-彰化縣在地產業創育機構

模組類別 ■ 亮點企業：溪仁企業股份有限公司(民國58年成立)

HSI JEN

- 產業領域：機械電機
- 產品與服務：科技五金、精密五金及精品級的禮品
- 創新表現：通過109年度彰化縣SBIR計畫(獲補助95萬元)

■ 企業遭遇瓶頸：產線製程自動化

- 對產之育成輔導重點/效益：(強調經濟效益)
- 生產製程智慧化：運用機械手臂研磨拋光銼合金門窗把手。
- 整合加工機台資訊：透過模擬研磨拋光路徑及製程中匯入加工機台及感測器訊號，作為機械手臂運作中斷或執行的依據，提升加工製程效率。
- 量測半成品的外部尺寸進行驗證：收集所有製程資訊，建置數據資料庫，將瑕疵檢測結果作為加工製程執行的品質標準，使用資料庫中加工參數進行窗戶把手批量加工，驗證資料庫中加工參數的準確性，達到智慧化的目的。

■ 企業重要事項(請以條列方式說明)

- 彰師大機電系陳明飛教授協助申請109年彰化縣SBIR計畫獲通過政府補助款共950仟元/智能化五金創新研習系統之研發
- 與進駐廠商「低碳科技有限公司」共同開設教育訓練課程：
 - 1.機械手臂基本操作及功能模組運用
 - 2.認識機械手臂電控箱

Caption: Counselling case highlight—Hsi Jen Enterprise Co., Ltd.

2020 TAIROS 台灣機器人與智慧自動化展

產學合作成果

專系/研究主題：紡織機上機器即時監測系統

學校系所：彰化師範大學 電機工程系

計畫主持人：楊文然 教授

合作廠商：台資機械股份有限公司、台安自動化股份有限公司

計畫重點：

- 以傳統工業機器應用範圍多端化、更多元化與智慧化等需求，配合智慧製造、機器視覺、AI、物聯網等技術，應用於工業產品生產過程，針對傳統工業機器即時監測系統，以智慧製造之方式提升生產效率，以智慧製造之方式提升生產效率。
- 針對傳統工業機器即時監測系統，以智慧製造之方式提升生產效率。

效益特色：

- 1. 智慧製造之方式提升生產效率，建立及優化生產，改善生產人機關係。
- 2. 透過機器視覺即時監測系統，以智慧製造之方式提升生產效率。
- 3. 透過機器視覺即時監測系統，以智慧製造之方式提升生產效率。

技術需求：

- 1. 電力系統
- 2. 物聯網
- 3. 機器視覺

Caption: 2020 TAIROS—achievements of industry—university cooperation

2020 10/21 彰化縣地方創生、產業發展論壇暨輔導成果展會

時間	地方創生論壇	輔導成果展會
09:00 - 09:30	開場	1. 彰化縣政府 2. 彰化縣產業發展處 3. 彰化縣地方創生辦公室
09:30 - 09:35	貴賓致詞	4. 彰化縣政府 5. 彰化縣產業發展處 6. 彰化縣地方創生辦公室
09:35 - 09:40	貴賓致詞	7. 彰化縣政府 8. 彰化縣產業發展處 9. 彰化縣地方創生辦公室
09:40 - 09:45	貴賓致詞	10. 彰化縣政府 11. 彰化縣產業發展處 12. 彰化縣地方創生辦公室
09:45 - 10:00	貴賓致詞	13. 彰化縣政府 14. 彰化縣產業發展處 15. 彰化縣地方創生辦公室
10:00 - 10:15	貴賓致詞	16. 彰化縣政府 17. 彰化縣產業發展處 18. 彰化縣地方創生辦公室
10:15 - 10:30	貴賓致詞	19. 彰化縣政府 20. 彰化縣產業發展處 21. 彰化縣地方創生辦公室
10:30 - 10:45	貴賓致詞	22. 彰化縣政府 23. 彰化縣產業發展處 24. 彰化縣地方創生辦公室
10:45 - 11:00	貴賓致詞	25. 彰化縣政府 26. 彰化縣產業發展處 27. 彰化縣地方創生辦公室
11:00 - 11:15	貴賓致詞	28. 彰化縣政府 29. 彰化縣產業發展處 30. 彰化縣地方創生辦公室
11:15 - 11:30	貴賓致詞	31. 彰化縣政府 32. 彰化縣產業發展處 33. 彰化縣地方創生辦公室
11:30 - 11:45	貴賓致詞	34. 彰化縣政府 35. 彰化縣產業發展處 36. 彰化縣地方創生辦公室
11:45 - 12:00	貴賓致詞	37. 彰化縣政府 38. 彰化縣產業發展處 39. 彰化縣地方創生辦公室
12:00 - 12:15	貴賓致詞	40. 彰化縣政府 41. 彰化縣產業發展處 42. 彰化縣地方創生辦公室
12:15 - 12:30	貴賓致詞	43. 彰化縣政府 44. 彰化縣產業發展處 45. 彰化縣地方創生辦公室
12:30 - 12:45	貴賓致詞	46. 彰化縣政府 47. 彰化縣產業發展處 48. 彰化縣地方創生辦公室
12:45 - 13:00	貴賓致詞	49. 彰化縣政府 50. 彰化縣產業發展處 51. 彰化縣地方創生辦公室
13:00 - 13:15	貴賓致詞	52. 彰化縣政府 53. 彰化縣產業發展處 54. 彰化縣地方創生辦公室
13:15 - 13:30	貴賓致詞	55. 彰化縣政府 56. 彰化縣產業發展處 57. 彰化縣地方創生辦公室
13:30 - 13:45	貴賓致詞	58. 彰化縣政府 59. 彰化縣產業發展處 60. 彰化縣地方創生辦公室
13:45 - 14:00	貴賓致詞	61. 彰化縣政府 62. 彰化縣產業發展處 63. 彰化縣地方創生辦公室
14:00 - 14:15	貴賓致詞	64. 彰化縣政府 65. 彰化縣產業發展處 66. 彰化縣地方創生辦公室
14:15 - 14:30	貴賓致詞	67. 彰化縣政府 68. 彰化縣產業發展處 69. 彰化縣地方創生辦公室
14:30 - 14:45	貴賓致詞	70. 彰化縣政府 71. 彰化縣產業發展處 72. 彰化縣地方創生辦公室
14:45 - 15:00	貴賓致詞	73. 彰化縣政府 74. 彰化縣產業發展處 75. 彰化縣地方創生辦公室
15:00 - 15:15	貴賓致詞	76. 彰化縣政府 77. 彰化縣產業發展處 78. 彰化縣地方創生辦公室
15:15 - 15:30	貴賓致詞	79. 彰化縣政府 80. 彰化縣產業發展處 81. 彰化縣地方創生辦公室
15:30 - 15:45	貴賓致詞	82. 彰化縣政府 83. 彰化縣產業發展處 84. 彰化縣地方創生辦公室
15:45 - 16:00	貴賓致詞	85. 彰化縣政府 86. 彰化縣產業發展處 87. 彰化縣地方創生辦公室
16:00 - 16:15	貴賓致詞	88. 彰化縣政府 89. 彰化縣產業發展處 90. 彰化縣地方創生辦公室
16:15 - 16:30	貴賓致詞	91. 彰化縣政府 92. 彰化縣產業發展處 93. 彰化縣地方創生辦公室
16:30 - 16:45	貴賓致詞	94. 彰化縣政府 95. 彰化縣產業發展處 96. 彰化縣地方創生辦公室
16:45 - 17:00	貴賓致詞	97. 彰化縣政府 98. 彰化縣產業發展處 99. 彰化縣地方創生辦公室
17:00 - 17:15	貴賓致詞	100. 彰化縣政府 101. 彰化縣產業發展處 102. 彰化縣地方創生辦公室

Caption: Process for Changhua County Local Creation × Industry Development Forum cum Counselling Achievement

Exhibition



Caption: Poster for 2020 National Industry–University Innovation Practice Competition for Colleges and Universities



Caption: Speech in 2020 National Industry–University Innovation Practice Competition for Colleges and Universities



Caption: Speech by an officer in the Ministry of Economic Affairs and VIPs



Caption: The industrial parks signing letters of cooperation intent (Quanxing and Fuxing Industrial Parks)



Caption: VIPs (the SME manufacturers in



Caption: President Ming-Fei Chen's

the industrial park, and teachers
and students of the alliance school
and our school) listening
attentively

speech “Achieving AI in Education
and Industry”

Related links

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