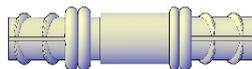


Product Presentation

Applicant Name: **Pulwell / McCalls**

Product Name: **Rebar Coupler**

Specification: **CoP2013 Clause 3.2.8.3 & Clause 3.2.8.4**



McCalls

- Core Functions: **Rebar Continuity**
- Technology Used: **Frictional Press**
- Construction Process involved: **Rebar Coupler**
- Key Improvement in Construction Process:
 - ✓ Productivity
 - ✓ Quality
 - ✓ Safety
 - ✓ Environmental
- Job Reference:
 - **The ASTRO, Un Chau Street, 2018 (Completion)**
 - **Wah Ying Cheong Central Building, Central, 2019 (Completion)**
 - **SABLIER, Fuk Chak Street, 2020 (Completion)**
 - **Alibaba Logistic Centre , Chek Lap Kok Airport, (Present to 2023)**

Innovative Features

- Core Technology:
 - **Frictional Press**
- Patent (if applicable):
 - **1500034.8, IPD H.K.**
- Comparison with current practice and popular models:
 - **Technology - Accurate, Consistence, Efficiency & Safety**
 - **Specification - Unique type to meet both Type 1 & Type 2 rebar coupler**
 - **Benefits including cost benefits (product prices vs merits) – Labour saving & fast production**
- Comparison with similar Pre-approved list products and competitors:
 - **Technology – No comparison**
 - **Specification – No comparison**
 - **Benefits including cost benefits (product prices vs merits) – No Comparison**
- First Launch Date: **2005 & 2015**
- Awards (if applicable):
 - **CE Approval**
 - **Hong Kong Building Department (B.D.) Approval**

- Project for Illustration:
 - SABLIER 5-17 Western St.
 - Alibaba Logistic Chek Lap Kok Airport
- Work Process:
 - Rebar Coupler
- Use/ Function in project:
 - Pile Cap (Foundation)
 - Column
 - Beam



On-site Rebar Coupler Fabrication by **ONE-GO PROCESS**



WK.LP Positional Coupler for Pile Cap Application
(When both rebars cannot be rotated)



WK.S Standard Coupler for Column Application

Benefits – Productivity

- Improve productivity by:
 - ✓ One go full automated production: At least 3 times faster than standard threading by 3-4 production processes (Cutting + Hardening + Chamfering + Threading)
 - ✓ High accuracy & consistence by one go full automated production: Non-circularity rebar cannot be fabricated with traditional threading process and one internal thread coupler cannot be suited to different outside diameter of imported rebars

- Traditional Output: (i.e. Y40)
 - 150 no. / manday
- Output by [Frictional Press Process]:
 - ✓ 400 no. / manday
- Total Saving in Mandays:
 - ✓ 250 no.
- Total Saving in Project Period:
 - ✓ 50% completion date for rebar coupler process

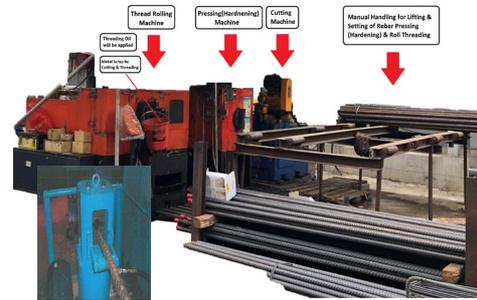
Step	Traditional Threading Process (Min)		Frictional-Press Process (Min)		Time Saving (Min)
1)	Hardening process by min. 2 directions	5.0	Nil	0.0	5.0
2)	Threading process	3.0	Frictional-press process	1.5	1.5
3)	Handling process (lifting & pushing rebars at the pressing/hardening & threading heads) for 1) & 2) by manual	6.0	Handling process for 2) only by automation	1.0	5.0
Total		14.0		2.5	11.5

Benefits – Quality

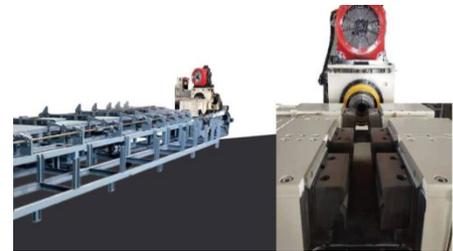
- Improve Quality by:
 - ✓ Prefabricated machine threads at factory with negligible errors.
 - ✓ High yield strength of coupler with 1000 Mpa = 2 Times of Rebar Strength (500 Mpa).
 - ✓ Good quality control of prefabricated threads at factory with less tolerance.
 - ✓ Non-skillful labor will be required for automated frictional press machine.



GOOD ACCURACY & CONSISTENCE OF THREADING QUALITY. PERFECT MATCHING MUST BE BETTER THAN TRADITIONAL THREADING



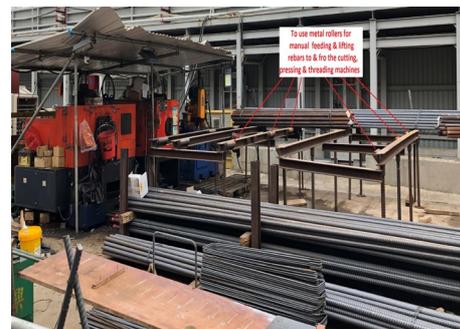
Good quality threads should be required by frequent change of tooling & strict inspection checking (QITP) which included go & no go gauge for thread length & pitch gauge for thread accuracy



One-go frictional-press process by fully automated (numerical control) operation with factory pre-fabricated (good quality) coupler

Benefits – Safety

- Improve Safety by:
 - ✓ Numerical control of revolution (speed) & pressure with CE approval for exact coupler's plus 1st shift internal tensile test. Safety tracking, detection and warning.
 - ✓ Safety stop & device for revolution parts, automated lifting & feeding device for loading & unloading rebars. To avoid dangerous work and improve safety working environment.
 - ✓ Full automation control will eliminate manual handling & improve labor safety.



TRADITIONAL METHOD Manual lifting & handling rebar is too dangerous & risky



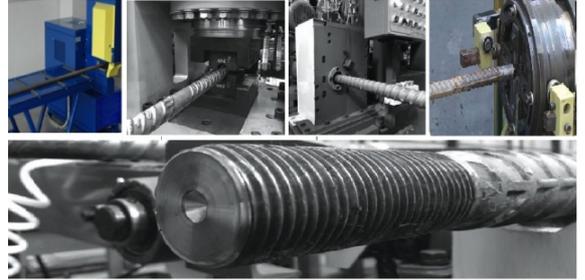
ADVANCED CONSTRUCTION TECHNOLOGY
Remote control for handling rebars (lifting, feeding & unloading) with good safety device

- Improve Environmental Performance by:

- ✓ Good quality of rebar coupler with lesser waste reduction. In general, No cut end & threading scrap will have good material saving.
- ✓ One-go fabrication process with noise reduction.
- ✓ No pressing oil & cutting lubricate. The hydraulic oil of frictional-press machine is only internal circulation.
- ✓ Good accuracy & one-go fabrication process will improve energy efficiency.
- ✓ No cut end, no threading scraps and the additional length of male & female coupler will reduce CO₂ emission & solid waste. Total reduction is around $\geq 20\%$.
- ✓ Fuel consumption will be reduced by one-go fabrication process.

Traditional Threading Process

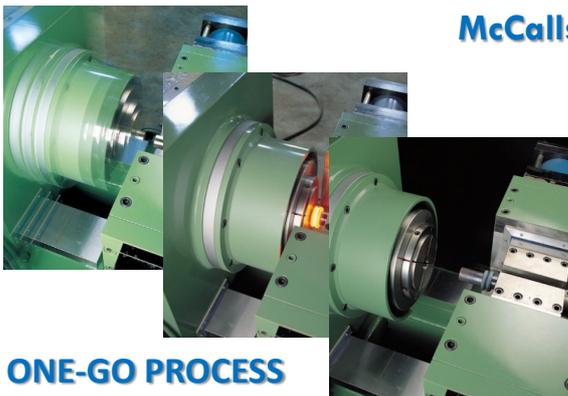
1) Cutting 2) Pressing 3) Chamfering 4) Roll Threading



Metal scraps & lubricant (cutting & threading) will be raised higher CO₂ EMISSION, NOISE & WATER POLLUTION



Advance Construction Technology (ACT) McCalls Rebar Coupler



ONE-GO PROCESS



PRECISE THREADS